# NOTICE

**All drawings located at the end of the document.**

# FINAL CLOSEOUT REPORT FOR IHSS GROUP 800-6

**December 2002**

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## ENCLOSURE

Compact Disc – Analytical Data



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# ACRONYMS

| | |
|---|---|
| ACM | asbestos containing material |
| AL | action level |
| AOC | Area of Concern |
| CDPHE | Colorado Department of Public Health and Environment |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| CHWA | Colorado Hazardous Waste Act |
| COC | contaminant of concern |
| D&D | Decontamination and Decommissioning |
| DOE | U S Department of Energy |
| DQA | Data Quality Assessment |
| DQO | Data Quality Objective |
| EPA | U S Environmental Protection Agency |
| ER | Environmental Restoration |
| ER RSOP | Environmental Restoration RFCA Standard Operating Procedure |
| ft | feet |
| HDPE | high-density polyethylene |
| HEPA | high efficiency particulate absorption |
| IA | Industrial Area |
| IDC | Item Description Code |
| IASAP | Industrial Area Sampling and Analysis Plan |
| IHSS | Individual Hazardous Substance Site |
| K-H | Kaiser-Hill Company L L C |
| LLW | low-level waste |
| mg/kg | milligrams per kilogram |
| NLR | No Longer Representative |
| NPWL | New Process Waste Lines |
| OPWL | Original Process Waste Lines |
| PAC | Potential Area of Concern |
| PARCCS | precision, accuracy, representativeness, completeness, comparability and sensitivity |
| pCi/g | picocuries per gram |
| PCB | Polychlorinated Biphenyls |
| PCOC | potential contaminant of concern |
| PVC | polyvinyl chloride |
| RCRA | Resource Conservation and Recovery Act |
| RFCA | Rocky Flats Cleanup Agreement |
| RFETS | Rocky Flats Environmental Technology Site |
| RL | reporting limit |
| RSOP | RFCA Standard Operating Procedure |
| SAP | Sampling and Analysis Plan |
| Site | Rocky Flats Environmental Technology Site |
| SOR | sum of ratio |
| SVOC | semivolatile organic compound |
| UBC | Under Building Contamination |
| ug/kg | micrograms per kilogram |
| VOC | volatile organic compound |
| V&V | verification and validation |



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## EXECUTIVE SUMMARY

This closeout report summarizes accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 800-6, which is located at the Rocky Flats Environmental Technology Site Activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan, the IASAP Addendum #IA-02-01, and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol for Routine Remediation (ER RSOP) Notification of the planned characterization and removal activities was provided in ER RSOP Notification #02-02

Activities were conducted between May 8 and July 18, 2002, and involved the excavation of the Building 889 slab, footers, footer walls, upper portions of concrete pillars, sumps and tanks, a small portion of the New Process Waste Lines (NPWL), and a large portion of the Original Process Waste Lines (OPWL) in the area Two of the tanks (i e , Tanks 28 and 40) and the portion of the NPWL were regulated under the Colorado Hazardous Waste Act Portions of the NPWL and Valve Vault 4 within IHSS 164 3 were not removed as part of this action The NPWL, OPWL and valve vaults will be addressed based on site-wide decisions regarding these items Any related work and sampling results will be documented in another closeout report at a later date

The action also involved characterization, including characterization of excavations where items were removed and in areas sampled prior to the accelerated action Characterization analytical results indicate that all soil concentrations were below RFCA Tier II Action Levels, except for one beryllium concentration in a surface soil sample near Tank 40 that was collected prior to the accelerated action That sample location is no longer representative Results of the data quality assessment conducted confirmed that the data quality objectives were attained relative to sampling power (number and types of samples), confidence in decisions (>90%), and the various verification and validation criteria applied

Removal activities were consistent with and contributed to the ER RSOP overall long-term remedial action objectives for RFETS soil The removal of concrete items, including sumps and tanks, and portions of the OPWL and NPWL, and the disruption of remaining lines contributed to the protection of human health and the environment, because potential sources of contamination were removed or isolated These actions also minimized the need for long-term maintenance and institutional or engineering controls because potential sources of contamination were removed or isolated In addition, best management practices were used during the accelerated action to prevent the spread of contamination during the accelerated action (e g , erosion and duct controls) Air monitoring data during the accelerated action did not indicate any exceedances

No Group-specific, near-term term management techniques are required because of environmental conditions Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process Fencing and signs restricting access will be posted to minimize disturbance to newly-revegetated areas Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls

The presence of radionuclides, metals, VOCs, and SVOCs in soils will be analyzed in the Site Wide Comprehensive Risk Assessment, which is part of the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study that will be conducted for the Site The need for and extent of any, more general, long-term stewardship



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activities will also be analyzed in the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study-Feasibility Study and will be proposed as part of the preferred alternative in the Proposed Plan for the Site Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement

No specific long-term stewardship activities are recommended for IHSS Group 800-6 beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, or prohibitions on groundwater pumping in the area of IHSS Group 800-6

No specific engineered controls are anticipated as a result of the conditions remaining in IHSS Group 800-6

No specific environmental monitoring is anticipated as a result of the conditions remaining in IHSS Group 800-6

This closeout report and associated documentation will be retained as part of the Rocky Flats administrative record file These specific long-term stewardship recommendations will also be summarized in the Rocky Flats *Long Term Stewardship Strategy*



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# 1.0 INTRODUCTION

This closeout report summarizes characterization and accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 800-6 at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado IHSS Group 800-6 consists of the following IHSSs and Under Building Contamination (UBC) site

- UBC 889, Decontamination and Waste Reduction Facility,
- Original Process Waste Line (OPWL) Tanks 28 and 40, and
- IHSS 800-164 3, Radioactive Site 800 Area Site #2 Building 889 Storage Pad

The location of IHSS Group 800-6 is shown on Figure 1, and the UBC site, OPWL tanks and the IHSS are shown on Figure 2

Accelerated action activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (DOE 2001a), IASAP Addendum #IA-02-01 (DOE 2001b), and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a) Notification of the planned activities was provided in ER RSOP Notification #02-02 (DOE 2002b), which was approved by the Colorado Department of Public Health and Environment (CDPHE) on March 13, 2002 (CDPHE 2002)

This report contains the information necessary to demonstrate attainment of cleanup objectives and final closure of IHSS Group 800-6 This information includes

- Site Characterization Information
  - Description of site characterization activities, and
  - Site characterization data, including data tables and maps,
- Site Accelerated Action Information
  - Description of the accelerated action, including the rational for the action and map of the target remediation area,
  - Map of the actual remediation area, including bounds of the excavation, and dates and durations of specific remedial activities,
  - Photographs documenting site characterization, remediation, and reclamation activities,
- Confirmation sampling data, including data tables and location maps, as well as a comparison of the confirmation data to applicable cleanup goals,
- Description of Resource Conservation and Recovery Act (RCRA) unit closure activities,

- Description of deviations from the ER RSOP,
- Description of near-term stewardship actions and long-term stewardship recommendations,
- Description of site condition after remediation that includes a map of residual contamination above background plus two standard deviations, reporting limits (RLs), and Tier II Action Levels (ALs),
- Disposition of wastes,
- Site reclamation,
- Table of No Longer Representative locations and sample numbers that have been remediated These data will be used to mark database records so they are not used in the Comprehensive Risk Assessment or other Site analyses, and
- Data quality assessment (DQA), including comparison of confirmation data with project data quality objectives (DQOs)

## 2.0 SITE CHARACTERIZATION

IHSS Group 800-6 characterization information consists of historical knowledge and analytical data Historical information for the UBC site, OPWL tanks, and IHSS is presented below in Sections 2 1 through 2 3 Analytical data for IHSS Group 800-6 (pre-accelerated action and accelerated action data) are summarized in Sections 2 4 through 2 6 Appendix C includes a compact disk that contains a complete data set, including both pre-accelerated action and accelerated action data

Accelerated action analytical data were collected in accordance with IASAP Addendum #IA-02-01 (DOE 2001b) Sampling specifications, including potential contaminants of concern and media to be sampled, are presented in Table 1 Deviations from the IASAP Addendum are presented and explained in Table 2

### 2.1 UBC 889, Decontamination and Waste Reduction Facility

Building 889 was placed into service in 1969 and housed decontamination and waste reduction operations for wastes originating outside the Site's Protected Area Wastes entering Building 889 included surplus equipment that was decontaminated by steam cleaning for reuse on site or sale offsite HEPA filters, combustible wastes, and non-reusable equipment were compacted, placed in crates, and shipped offsite for disposal Tank 28 was constructed into the Building 889 slab

### 2.2 OPWL Tank 40

Tank T-40 is located in the 800 Area west of Building 889 T-40 was reportedly installed in the mid-1950s and was abandoned in 1981 or 1982 The tank consists of two 400-gallon underground concrete tanks located in a concrete vault The top of vault is approximately 7 feet below grade



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## 2.3 IHSS 800-164.3, Radioactive Site 800 Area Site #2 Building 889 Storage Pad

Building 889 is a decontamination facility that was first occupied in 1969 A storage pad north of the building was used to store uranium-contaminated equipment and contaminated drums prior to decontamination An area to the west was used for the same purpose A radioactive survey supports the fact that there was contamination at this western location

Two incidents occurred at Building 889 that involve contaminated drums On June 16, 1982, a waste drum spontaneously ignited, and on July 20, 1984, a chip fire started in an improperly packed drum Another incident occurred in September 1983, when nine machine tools were stored outside waiting for decontamination The plastic sheeting that was covering the equipment had blown off, possibly allowing contamination to spread

Building 884 was constructed in 1958 as a storage facility for Building 883 It was used as a mixed waste storage building In September 1966, drums were reported to be leaking in the drum storage area outside of this building Approximately 700 square feet ($ft^2$) of soil and rocks were contaminated It is thought that this information refers to a storage area east of Building 884 that was used prior to the construction of Building 889

Some drums that contained hazardous or non-hazardous environmentally safe waste were sent to Building 889 for decontamination and reuse The drum incidents in 1982 and 1984 involved uranium chip fires No contamination was reported released when the drum caught fire in 1982 No documentation was found that detailed responses related to the incidents in 1983 or 1984

**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| 800-6 | UBC 889 | CF38-005 | 2083878 | 749150 1 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF38-005 | 2083878 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-005 | 2083878 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-005 | 2083878 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-005 | 2083878 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF38-006 | 2083914 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-006 | 2083914 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-006 | 2083914 | 749150 1 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF38-006 | 2083914 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-006 | 2083914 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF38-007 | 2083896 | 749119 1 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-007 | 2083896 | 749119 1 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-007 | 2083896 | 749119 1 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF38-007 | 2083896 | 749119 1 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-007 | 2083896 | 749119 1 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF38-008 | 2083842 | 749087 8 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-008 | 2083842 | 749087 8 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-008 | 2083842 | 749087 8 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF38-008 | 2083842 | 749087 8 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-008 | 2083842 | 749087 8 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF38-011 | 2083848 | 749145 2 | Subsurface Soil | 7 33 | 7 33 | Radionuclides | HPGe |
| | | CF38-011 | 2083848 | 749145 2 | Subsurface Soil | 7 33 | 7 33 | SVOC | 8270 |
| | | CF38-011 | 2083848 | 749145 2 | Subsurface Soil | 7 33 | 7 33 | Metals | 6010 |
| | | CF38-011 | 2083848 | 749145 2 | Subsurface Soil | 7 33 | 7 33 | VOC | 8260 |



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**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-014 | 2083854 | 749121 | Subsurface Soil | 7 17 | 7 17 | Radionuclides | HPGe |
| | | CF38-014 | 2083854 | 749121 | Subsurface Soil | 7 17 | 7 17 | SVOC | 8270 |
| | | CF38-014 | 2083854 | 749121 | Subsurface Soil | 7 17 | 7 17 | Metals | 6010 |
| | | | | | | | | | |
| | | CF38-014 | 2083854 | 749121 | Subsurface Soil | 7 17 | 7 17 | VOC | 8260 |
| | | CF38-015 | 2083916 | 749137 5 | Subsurface Soil | 3 | 5 | Radionuclides | HPGe |
| | | CF38-015 | 2083916 | 749137 5 | Subsurface Soil | 3 | 5 | SVOC | 8270 |
| | | CF38-015 | 2083916 | 749137 5 | Subsurface Soil | 3 | 5 | Metals | 6010 |
| | | CF38-015 | 2083916 | 749137 5 | Subsurface Soil | 3 | 5 | VOC | 8260 |
| | IHSS 164 3 | CE38-001 | 2083698 | 749150 4 | Subsurface Soil | 0 5 | 0 67 | Radionuclides | HPGe |
| | | CE38-001 | 2083698 | 749150 4 | Subsurface Soil | 0 5 | 0 67 | SVOC | 8270 |
| | | CE38-001 | 2083698 | 749150 4 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CE38-001 | 2083698 | 749150 4 | Subsurface Soil | 0 5 | 0 67 | Metals | 6010 |
| | | CE38-001 | 2083698 | 749150 4 | Subsurface Soil | 0 5 | 0 67 | VOC | 8260 |
| | | CE38-002 | 2083734 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CE38-002 | 2083734 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CE38-002 | 2083734 | 749150 2 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CE38-002 | 2083734 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CE38-002 | 2083734 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CE39-001 | 2083698 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CE39-001 | 2083698 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CE39-001 | 2083698 | 749212 4 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CE39-001 | 2083698 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CE39-001 | 2083698 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |



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**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| | | CE39-002 | 2083716 | 749253 5 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CE39-002 | 2083716 | 749253 5 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CE39-002 | 2083716 | 749253 5 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CE39-002 | 2083716 | 749253 5 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CE39-002 | 2083716 | 749253 5 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CE39-003 | 2083716 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CE39-003 | 2083716 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | | | | | | | | |
| | | CE39-003 | 2083716 | 749181 3 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CE39-003 | 2083716 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CE39-003 | 2083716 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF38-001 | 2083770 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-001 | 2083770 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-001 | 2083770 | 749150 1 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF38-001 | 2083770 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-001 | 2083770 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF38-002 | 2083806 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-002 | 2083806 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-002 | 2083806 | 749150 2 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF38-002 | 2083806 | 749150 2 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-002 | 2083806 | 749150 2 | Surface Soil | 0 | 0 5 | VOC | 8260 |
| | | CF38-003 | 2083842 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF38-003 | 2083842 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF38-003 | 2083842 | 749150 1 | Surface Soil | 0 | 0 5 | Metals | 6010 |



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**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-003 | 2083842 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF38-003 | 2083842 | 749150 1 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-001 | 2083752 | 749243 4 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF39-001 | 2083752 | 749243 4 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-001 | 2083752 | 749243 4 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-001 | 2083752 | 749243 4 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-001 | 2083752 | 749243 4 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-003 | 2083788 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF39-003 | 2083788 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-003 | 2083788 | 749243 6 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-003 | 2083788 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-003 | 2083788 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-004 | 2083788 | 749181 4 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF39-004 | 2083788 | 749181 4 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-004 | 2083788 | 749181 4 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-004 | 2083788 | 749181 4 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-004 | 2083788 | 749181 4 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-006 | 2083824 | 749243 7 | Surface Soil | 0 | 0 5 | Radionuclides | HPGe |
| | | CF39-006 | 2083824 | 749243 7 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-006 | 2083824 | 749243 7 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-006 | 2083824 | 749243 7 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-006 | 2083824 | 749243 7 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |



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**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| | | CF39-007 | 2083824 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF39-007 | 2083824 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-007 | 2083824 | 749181 4 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-007 | 2083824 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-007 | 2083824 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-008 | 2083860 | 749243 8 | Surface Soil | 0 | 0 5 | Radionuclides | HPGe |
| | | CF39-008 | 2083860 | 749243 8 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-008 | 2083860 | 749243 8 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-008 | 2083860 | 749243 8 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-008 | 2083860 | 749243 8 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-009 | 2083860 | 749181 2 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF39-009 | 2083860 | 749181 2 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-009 | 2083860 | 749181 2 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-009 | 2083860 | 749181 2 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-009 | 2083860 | 749181 2 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-011 | 2083896 | 749243 6 | Surface Soil | 0 | 0 5 | Radionuclides | HPGe |
| | | CF39-011 | 2083896 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-011 | 2083896 | 749243 6 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-011 | 2083896 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-011 | 2083896 | 749243 6 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-012 | 2083896 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | Radionuclides | HPGe |
| | | CF39-012 | 2083896 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |



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**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| | | CF39-012 | 2083896 | 749181 3 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-012 | 2083896 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-012 | 2083896 | 749181 3 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | | CF39-013 | 2083914 | 749212 4 | Surface Soil | 0 | 0 5 | Radionuclides | HPGe |
| | | CF39-013 | 2083914 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | SVOC | 8270 |
| | | CF39-013 | 2083914 | 749212 4 | Surface Soil | 0 | 0 5 | Metals | 6010 |
| | | CF39-013 | 2083914 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | Metals | 6010 |
| | | CF39-013 | 2083914 | 749212 4 | Subsurface Soil | 0 5 | 2 5 | VOC | 8260 |
| | PAC 000-504, New Process Waste Line | CF38-025 | 2083885 | 749096 7 | Subsurface Soil | 5 | 5 | Radionuclides | HPGe |
| | | CF38-025 | 2083885 | 749096 7 | Subsurface Soil | 5 | 5 | Metals | 6010 |
| | | CF38-025 | 2083885 | 749096 7 | Subsurface Soil | 5 | 5 | VOC | 8260 |
| | IHSS 121, Original Process Waste Lines Tank T-40 | CF38-017 | 2083788 | 749124 4 | Subsurface Soil | 15 | 15 | Radionuclides | HPGe |
| | | CF38-018 | 2083788 | 749112 6 | Subsurface Soil | 15 | 15 | Radionuclides | HPGe |
| | | CF38-023 | 2083821 | 749131 1 | Subsurface Soil | 3 | 5 | Radionuclides | HPGe |
| | | CF38-023 | 2083821 | 749131 1 | Subsurface Soil | 3 | 5 | SVOC | 8270 |
| | | CF38-023 | 2083821 | 749131 1 | Subsurface Soil | 3 | 5 | Metals | 6010 |
| | | CF38-023 | 2083821 | 749131 1 | Subsurface Soil | 3 | 5 | VOC | 8260 |
| | | CF38-024 | 2083777 | 749119 8 | Subsurface Soil | 10 5 | 12 5 | SVOC | 8270 |
| | | CF38-024 | 2083777 | 749119 8 | Subsurface Soil | 10 5 | 12 5 | VOC | 8260 |
| | IHSS 121, Original Process Waste Lines Tank T-28 | CF38-019 | 2083844 | 749144 9 | Subsurface Soil | 6 7 | 6 7 | Radionuclides | HPGe |
| | | CF38-019 | 2083844 | 749144 9 | Subsurface Soil | 6 7 | 6 7 | SVOC | 8270 |



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**Table 1**
**IHSS Group 800-6 Characterization Sampling Specifications**

| IHSS Group | IHSS/PAC/UBC Site | Location | Easting | Northing | Media | Begin Depth (ft) | End Depth (ft) | Analyte | Method |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-019 | 2083844 | 749144 9 | Subsurface Soil | 6 7 | 6 7 | Metals | 6010 |
| | | CF38-019 | 2083844 | 749144 9 | Subsurface Soil | 6 7 | 6 7 | VOC | 8260 |
| | | CF38-020 | 2083852 | 749121 3 | Subsurface Soil | 6 7 | 6 7 | Radionuclides | HPGe |
| | | CF38-020 | 2083852 | 749121 3 | Subsurface Soil | 6 7 | 6 7 | SVOC | 8270 |
| | | CF38-020 | 2083852 | 749121 3 | Subsurface Soil | 6 7 | 6 7 | Metals | 6010 |
| | | CF38-020 | 2083852 | 749121 3 | Subsurface Soil | 6 7 | 6 7 | VOC | 8260 |
| | | CF38-021 | 2083849 | 749142 | Subsurface Soil | 6 7 | 6 7 | Radionuclides | HPGe |
| | | CF38-021 | 2083849 | 749142 | Subsurface Soil | 6 7 | 6 7 | SVOC | 8270 |
| | | CF38-021 | 2083849 | 749142 | Subsurface Soil | 6 7 | 6 7 | Metals | 6010 |
| | | CF38-021 | 2083849 | 749142 | Subsurface Soil | 6 7 | 6 7 | VOC | 8260 |
| | IHSS 121 Original Process Waste Lines | CF38-010 | 2083812 | 749115 | Subsurface Soil | 5 | 5 | Radionuclides | HPGe |
| | | CF38-010 | 2083812 | 749115 | Subsurface Soil | 5 | 5 | SVOC | 8270 |
| | | CF38-010 | 2083812 | 749115 | Subsurface Soil | 5 | 5 | Metals | 6010 |
| | | CF38-010 | 2083812 | 749115 | Subsurface Soil | 5 | 5 | VOC | 8260 |
| | | CF38-027 | 2083785 | 749132 2 | Subsurface Soil | 4 5 | 5 | Radionuclides | HPGe |
| | | CF38-027 | 2083785 | 749132 2 | Subsurface Soil | 4 5 | 5 | SVOC | 8270 |
| | | CF38-027 | 2083785 | 749132 2 | Subsurface Soil | 4 5 | 5 | Metals | 6010 |
| | | CF38-027 | 2083785 | 749132 2 | Subsurface Soil | 4 5 | 5 | VOC | 8260 |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| UBC 889 | CF38-005 | Surface Soil | 2083878 | 749150 08 | 2083878 | 749150 1 | 0 | 0 5 | Metals | No change |
| | CF38-005 | Subsurface Soil | 2083878 | 749150 08 | 2083878 | 749150 1 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-006 | Surface Soil | 2083914 | 749150 08 | 2083914 | 749150 1 | 0 | 0 5 | Metals | No change |
| | CF38-006 | Subsurface Soil | 2083914 | 749150 08 | 2083914 | 749150 1 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-007 | Surface Soil | 2083896 | 749118 94 | 2083896 | 749119 1 | 0 | 0 5 | Metals | No change |
| | CF38-007 | Subsurface Soil | 2083896 | 749118 94 | 2083896 | 749119 1 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-008 | Surface Soil | 2083842 | 749087 71 | 2083842 | 749087 8 | 0 | 0 5 | Metals | No change |
| | CF38-008 | Subsurface Soil | 2083842 | 749087 71 | 2083842 | 749087 8 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-011 | Subsurface Soil | 2083837 | 749114 68 | 2083848 | 749145 2 | 7 33 | 7 33 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Sample depth was estimated because the excavation could not be safely approached for a measurement Soil sample was collected manually from the bucket of a backhoe |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF38-014 | Subsurface Soil | 2083847 | 749113 82 | 2083854 | 749121 | 7 17 | 7 17 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Sample depth was estimated because the excavation could not be safely approached for a measurement Soil sample was collected manually from the bucket of a backhoe |
| | CF38-015 | Subsurface Soil | 2083920 | 749136 17 | 2083916 | 749137 5 | 3 | 5 | Radionuclides | No change |
| | CF38-016 | Subsurface Soil | 2083822 | 749130 81 | | | 2 5 | 4 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | This location is covered by location CF38-023 CF38-016 became the designation for a waste sample (sediment from south transite duct) |
| IHSS 164 3 | CE38-001 | Surface Soil | 2083698 | 749150 08 | 2083698 | 749150 4 | 0 | 0 5 | Metals | No change |
| | CE38 001 | Subsurface Soil | 2083698 | 749150 08 | 2083698 | 749150 4 | 0 5 | 0 67 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CE38-002 | Surface Soil | 2083734 | 749150 08 | 2083734 | 749150 2 | 0 | 0 5 | Metals | No change |
| | CE38-002 | Subsurface Soil | 2083734 | 749150 08 | 2083734 | 749150 2 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CE39-001 | Surface Soil | 2083698 | 749212 43 | 2083698 | 749212 4 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling The sample was collected within the deeper depth interval, but refusal of hand sampling equipment occurred at a depth short of the maximum planned depth |
| | CE39-001 | Subsurface Soil | 2083698 | 749212 43 | 2083698 | 749212 4 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CE39-002 | Surface Soil | 2083716 | 749243 16 | 2083716 | 749253 5 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CE39-002 | Subsurface Soil | 2083716 | 749243 16 | 2083716 | 749253 5 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CE39-003 | Surface Soil | 2083716 | 749181 26 | 2083716 | 749181 3 | 0 | 0 5 | Metals | No change |
| | CE39-003 | Subsurface Soil | 2083716 | 749181 26 | 2083716 | 749181 3 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-001 | Surface Soil | 2083770 | 749150 08 | 2083770 | 749150 1 | 0 | 0 5 | Metals | No change |
| | CF38-001 | Subsurface Soil | 2083770 | 749150 08 | 2083770 | 749150 1 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-002 | Surface Soil | 2083806 | 749150 08 | 2083806 | 749150 2 | 0 | 0 5 | Metals | No change |
| | CF38-002 | Subsurface Soil | 2083806 | 749150 08 | 2083806 | 749150 2 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-003 | Surface Soil | 2083842 | 749150 08 | 2083842 | 749150 1 | 0 | 0 5 | Metals | No change |
| | CF38-003 | Subsurface Soil | 2083842 | 749150 08 | 2083842 | 749150 1 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF38-004 | Surface Soil | 2083860 | 749118 90 | | | 0 | 0 5 | Radionuclides<br>Metals<br>SVOC | This location is covered by location CF38-014 |
| | CF38-004 | Subsurface Soil | 2083860 | 749118 90 | | | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF38-012 | Surface Soil | 2083864 | 749147 40 | | | 0 | 0 5 | Radionuclides<br>Metals<br>SVOC | This location is covered by location CF38-011 |
| | CF38-012 | Subsurface Soil | 2083864 | 749147 40 | | | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-001 | Surface Soil | 2083752 | 749243 61 | 2083752 | 749243 4 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-001 | Subsurface Soil | 2083752 | 749243 61 | 2083752 | 749243 4 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-003 | Surface Soil | 2083788 | 749243 61 | 2083788 | 749243 6 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling The sample was collected within the deeper depth interval, but refusal of hand sampling equipment occurred at a depth short of the maximum planned depth |
| | CF39-003 | Subsurface Soil | 2083788 | 749243 61 | 2083788 | 749243 6 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF39-004 | Surface Soil | 2083788 | 749181 26 | 2083788 | 749181 4 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-004 | Subsurface Soil | 2083788 | 749181 26 | 2083788 | 749181 4 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-006 | Surface Soil | 2083824 | 749243 61 | 2083824 | 749243 7 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-006 | Subsurface Soil | 2083824 | 749243 61 | 2083824 | 749243 7 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-007 | Surface Soil | 2083824 | 749181 26 | 2083824 | 749181 3 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-007 | Subsurface Soil | 2083824 | 749181 26 | 2083824 | 749181 3 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-008 | Surface Soil | 2083860 | 749243 61 | 2083860 | 749243 8 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-008 | Subsurface Soil | 2083860 | 749243 61 | 2083860 | 749243 8 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-009 | Surface Soil | 2083860 | 749181 26 | 2083860 | 749181 2 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-009 | Subsurface Soil | 2083860 | 749181 26 | 2083860 | 749181 2 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF39-011 | Surface Soil | 2083896 | 749243 61 | 2083896 | 749243 6 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-011 | Subsurface Soil | 2083896 | 749243 61 | 2083896 | 749243 6 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-012 | Surface Soil | 2083896 | 749181 26 | 2083896 | 749181 3 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-012 | Subsurface Soil | 2083896 | 749181 26 | 2083896 | 749181 3 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-013 | Surface Soil | 2083914 | 749212 43 | 2083914 | 749212 4 | 0 | 0 5 | Metals | Sample was relocated due to the presence of a utility or other impediment to sampling |
| | CF39-013 | Subsurface Soil | 2083914 | 749212 43 | 2083914 | 749212 4 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CE39-004 | Surface Soil | 2083734 | 749212 43 | 2083734 | 749177 5 | 0 | 0 5 | Metals | No change |
| | CE39-004 | Subsurface Soil | 2083734 | 749212 43 | 2083734 | 749177 5 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-002 | Surface Soil | 2083770 | 749212 43 | 2083716 | 749253 7 | 0 | 0 5 | Metals | No change |
| | CF39-002 | Subsurface Soil | 2083770 | 749212 43 | 2083716 | 749253 7 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF39-005 | Surface Soil | 2083806 | 749212 43 | 2083806 | 749177 5 | 0 | 0 5 | Metals | No change |
| | CF39-005 | Subsurface Soil | 2083806 | 749212 43 | 2083806 | 749177 5 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| | CF39-010 | Surface Soil | 2083878 | 749212 43 | 2083878 | 749182 4 | 0 | 0 5 | Metals | No change |
| | CF39-010 | Subsurface Soil | 2083878 | 749212 43 | 2083878 | 749182 4 | 0 5 | 2 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | |
| PAC 000-504, New Process Waste Line | CF38-025 | Subsurface Soil | | | 2083885 | 749096 7 | 5 | 5 | Radionuclides<br>Metals<br>VOCs | Location added Soil collected beneath New Process Waste Line |
| | CE39-005 | Subsurface Soil | 2083699 | 749167 92 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled, biased sample located under a process line that was not removed |
| | CE38-003 | Subsurface Soil | 2083704 | 749160 01 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled biased sample located under a process line that was not removed |
| | CF39-016 | Subsurface Soil | 2083790 | 749164 77 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled, biased sample located under a process line that was not removed |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF39-017 | Subsurface Soil | 2083801 | 749164 43 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled, biased sample located under a process line that was not removed |
| | CF39-018 | Subsurface Soil | 2083811 | 749165 31 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled, biased sample located under a process line that was not removed |
| | CF39-019 | Subsurface Soil | 2083852 | 749166 84 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled, biased sample located under a process line that was not removed |
| | CE38-009 | Subsurface Soil | 2083796 | 749155 51 | | | 8 5 | 10 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Not sampled, biased sample located under a process line that was not removed |
| IHSS 121, Original Process Waste Lines Tank T 40 | CF38-017 | Subsurface Soil | | | 2083788 | 749124 4 | 15 | 15 | Radionuclides | Location added Soil collected beneath northeastern corner of Tank 40 |
| | CF38-018 | Subsurface Soil | | | 2083788 | 749112 6 | 15 | 15 | Radionuclides | Location added Soil collected beneath southeastern corner of Tank 40 |
| | CF38-023 | Subsurface Soil | | | 2083821 | 749131 1 | 3 | 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Location added Location had been backfilled before sample was taken Geologist determined where base of fill existed (3'), then sampled a two-foot interval below the base |



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**Table 2**
**Deviations from the IASAP Addendum**

| IHSS/PAC/ UBC Site | Location | Media | Planned Easting | Planned Northing | Actual Easting | Actual Northing | Begin Depth (ft) | End Depth (ft) | Analyte | Comment |
|---|---|---|---|---|---|---|---|---|---|---|
| | CF38-024 | Subsurface Soil | | | 2083777 | 749119 8 | 10 5 | 12 5 | VOC & SVOC | Location added Soil collected beneath Tank 40 |
| | CF38-013 | Subsurface Soil | 2083784 | 749123 77 | | | 6 5 | 8 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | This location is covered by locations CF38-017 and CF38-024 CF38-013 became the designation for a waste sample (Tank 40 sludge) |
| IHSS 121, Original Process Waste Lines Tank T 28 | CF38-019 | Subsurface Soil | | | 2083844 | 749144 9 | 6 7 | 6 7 | Radionuclides<br>Metals<br>VOCs | Location added Soil collected beneath the Tank 28 West Process Waste Line |
| | CF38-020 | Subsurface Soil | | | 2083852 | 749121 3 | 6 7 | 6 7 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Location added Soil collected beneath the South Tank 28 leak |
| | CF38-021 | Subsurface Soil | | | 2083849 | 749142 | 6 7 | 6 7 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Location added Soil collected around the outside of the south transite duct where it entered the sump |
| IHSS 121, Original Process Waste Lines | CF38-010 | Subsurface Soil | 2083878 | 749212 43 | 2083812 | 749115 | 5 | 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Sample depth was estimated because the excavation could not be safely approached for a measurement Soil sample was collected manually from the bucket of a backhoe |
| | CF38-027 | Subsurface Soil | | | 2083785 | 749132 2 | 4 5 | 5 | Radionuclides<br>Metals<br>VOCs<br>SVOC | Location added Soil collected beneath the north-south OPWL |



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## 2.4 Analytical Data for UBC 889

The UBC was characterized during the accelerated action No historical samples had been collected Accelerated action sample locations and analytical results associated with UBC 889 are presented in Figure 3 and in Table 3 Only results greater than background mean plus two standard deviations or reporting limits are shown The data indicate no contamination All contaminant concentrations were below RFCA Tier II ALs

## 2.5 Analytical Data for OPWL Tank 40

OPWL Tank 40 was characterized prior to and during the accelerated action Pre-accelerated action sample locations and analytical results for Group 800-6 are presented in Figure 4 Only results greater than background mean plus two standard deviations or reporting limits are shown The data indicate no contamination (i e , concentrations were below RFCA Tier II ALs), with one exception The surface sample at Location 04995 had a beryllium concentration of 2 1 mg/kg The background concentration is 0 966 mg/kg, the Tier II AL is 1 04 mg/kg, and the Tier I AL is 104 mg/kg In addition, pre-accelerated action data indicated that SVOCs and chlorinated solvents were PCOCs at Tank 40 These compounds were not found at concentrations greater than RFCA Tier II ALs during the accelerated action sampling (see next paragraph) Furthermore, sampling locations around the tank have been impacted by the excavation activities and are no longer representative (refer to Section 11 0) After the tank was removed, the excavation was backfilled, and the area was graded, covered with clean fill, and seeded

Accelerated action sample locations and results for Group 800-6 are presented in Figure 3 and in Table 3 Only results greater than background mean plus two standard deviations or reporting limits are shown Data indicate no contamination All contaminant concentrations were below RFCA Tier II ALs, including those associated with Tank 40

## 2.6 Analytical Data for IHSS 800-164.3

IHSS 800-164 3 was characterized prior to and during the accelerated action Pre-accelerated action sample locations and analytical results for Group 800-6 are presented in Figure 4 Only results greater than background mean plus two standard deviations or reporting limits are shown The data indicate no contamination All contaminant concentrations were below RFCA Tier II ALs

Accelerated action sample locations and analytical results for Group 800-6 are presented in Figure 3 and in Table 3 Only results greater than background mean plus two standard deviations or reporting limits are shown The data indicate no contamination All contaminant concentrations were below RFCA Tier II ALs



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| 800-6 | IHSS 121 – Original Process Waste Lines | CF38-027 | METHYLENE CHLORIDE | 1 4 | 0 92 | N/A | 6 | 578 | ug/kg |
| | | CF38-010 | ACETONE | 16 | 4 7 | N/A | 272000 | 27200000 | ug/kg |
| 800-6 | IHSS 121 – Original Process Waste Lines Tank T-28 | CF38-019 | 1,2-DICHLOROPROPANE | 2 2 | 1 7 | N/A | 11 | 1130 | ug/kg |
| | | CF38-019 | ACETONE | 820 | 6 4 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-019 | BIS(2-ETHYLHEXYL)PHTHALATE | 120 | 99 | N/A | 3110000 | 311000000 | ug/kg |
| | | CF38-019 | CARBON DISULFIDE | 3 4 | 1 3 | N/A | 9880 | 988000 | ug/kg |
| | | CF38-019 | TETRACHLOROETHENE | 2 1 | 1 4 | N/A | 32 | 3150 | ug/kg |
| | | CF38-021 | 1,2,4-TRICHLOROBENZENE | 6 6 | 0 8 | N/A | 19200000 | 19200000 | ug/kg |
| | | CF38-021 | ACETONE | 13 | 5 2 | N/A | 192000000 | 192000000 | ug/kg |
| | | CF38-021 | BIS(2-ETHYLHEXYL)PHTHALATE | 160 | 77 | N/A | 320000 | 32000000 | ug/kg |
| | | CF38-021 | NAPHTHALENE | 5 3 | 0 97 | N/A | 76800000 | 76800000 | ug/kg |
| | | CF38-021 | TETRACHLOROETHENE | 1 1 | 1 1 | N/A | 86200 | 8620000 | ug/kg |
| | | CF38-020 | XYLENES (TOTAL) | 82 | 36 | N/A | 97400 | 9740000 | ug/kg |
| | | CF38-020 | NAPHTHALENE | 530 | 59 | N/A | 101000 | 10100000 | ug/kg |
| | | CF38-020 | PHENOL | 160 | 90 | N/A | 37500 | 3750000 | ug/kg |
| 800-6 | IHSS 121 – Original Process Waste Lines Tank T-40 | CF38-024 | BENZO(A)ANTHRACENE | 50 | 50 | N/A | 1600 | 160000 | ug/kg |
| | | CF38-024 | BIS(2-ETHYLHEXYL)PHTHALATE | 1900 | 88 | N/A | 3110000 | 311000000 | ug/kg |
| | | CF38-024 | CARBON DISULFIDE | 780 | 450 | N/A | 9880 | 988000 | ug/kg |
| | | CF38-024 | ETHYLBENZENE | 1200 | 930 | N/A | 9320 | 932000 | ug/kg |
| | | CF38-024 | NAPHTHALENE | 12000 | 360 | N/A | 101000 | 10100000 | ug/kg |
| | | CF38-024 | NAPHTHALENE | 6300 | 3400 | N/A | 101000 | 10100000 | ug/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-024 | PYRENE | 57 | 51 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF38-024 | XYLENES (TOTAL) | 7900 | 1600 | N/A | 97400 | 9740000 | ug/kg |
| 800-6 | IHSS 164.3 – Radioactive Site 800 Area Site #2, Building 886 Spills | CE38-001 | STRONTIUM | 55 1 | 0 0061 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CE38-002 | METHYLENE CHLORIDE | 1 4 | 0 8 | N/A | 6 | 578 | ug/kg |
| | | CE38-002 | TETRACHLOROETHENE | 1 | 0 99 | N/A | 32 | 3150 | ug/kg |
| | | CE39-001 | ALUMINUM | 17500 | 1 4 | 16902 | 1000000 | 1000000 | mg/kg |
| | | CE39-001 | CHROMIUM | 21 | 0 06 | 16 99 | 4410 | 44300 | mg/kg |
| | | CE39-001 | LITHIUM | 12 4 | 0 2 | 11 55 | 38400 | 38400 | mg/kg |
| | | CE39-001 | METHYLENE CHLORIDE | 0 9 | 0 82 | N/A | 6 | 578 | ug/kg |
| | | CE39-001 | SELENIUM | 1 4 | 0 5 | 1 22 | 9610 | 9610 | mg/kg |
| | | CE39-001 | STRONTIUM | 90 | 0 0067 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CE39-001 | STRONTIUM | 89 | 0 0069 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CE39-002 | ACETONE | 5 2 | 5 | N/A | 272000 | 27200000 | ug/kg |
| | | CE39-002 | ALUMINUM | 22100 | 1 4 | 16902 | 1000000 | 1000000 | mg/kg |
| | | CE39-002 | BARIUM | 208 | 0 043 | 141 26 | 133000 | 133000 | mg/kg |
| | | CE39-002 | CHROMIUM | 36 4 | 0 059 | 16 99 | 4410 | 44300 | mg/kg |
| | | CE39-002 | LITHIUM | 15 | 0 19 | 11 55 | 38400 | 38400 | mg/kg |
| | | CE39-002 | NICKEL | 21 3 | 0 72 | 14 91 | 38400 | 38400 | mg/kg |
| | | CE39-002 | STRONTIUM | 84 4 | 0 0068 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CE39-002 | VANADIUM | 49 4 | 0 27 | 45 59 | 13400 | 13400 | mg/kg |
| | | CE39-003 | STRONTIUM | 95 4 | 0 0065 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-001 | LITHIUM | 11 7 | 0 25 | 11 55 | 38400 | 38400 | mg/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-001 | METHYLENE CHLORIDE | 1 2 | 0 8 | N/A | 6 | 578 | ug/kg |
| | | CF38-002 | STRONTIUM | 71 8 | 0 0063 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-003 | BIS(2-ETHYLHEXYL)PHTHALATE | 1100 | 74 | N/A | 3110000 | 311000000 | ug/kg |
| | | CF38-003 | PYRENE | 74 | 43 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF38-003 | STRONTIUM | 75 2 | 0 0065 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-003 | TOLUENE | 0 94 | 0 83 | N/A | 7070 | 707000 | ug/kg |
| | | CF39-001 | BARIUM | 166 | 0 043 | 141 26 | 133000 | 133000 | mg/kg |
| | | CF39-001 | BARIUM | 800 | 0 042 | 289 38 | 133000 | 133000 | mg/kg |
| | | CF39-001 | CHROMIUM | 17 4 | 0 059 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF39-001 | STRONTIUM | 94 6 | 0 0068 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-003 | BARIUM | 147 | 0 043 | 141 26 | 133000 | 133000 | mg/kg |
| | | CF39-003 | CHROMIUM | 91 8 | 0 059 | 68 27 | 4410 | 44300 | mg/kg |
| | | CF39-003 | STRONTIUM | 78 | 0 0068 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-004 | ACETONE | 9 3 | 4 6 | N/A | 272000 | 27200000 | ug/kg |
| | | CF39-004 | METHYLENE CHLORIDE | 0 91 | 0 8 | N/A | 6 | 578 | ug/kg |
| | | CF39-006 | METHYLENE CHLORIDE | 1 3 | 0 9 | N/A | 6 | 578 | ug/kg |
| | | CF39-006 | PYRENE | 64 | 43 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF39-006 | STRONTIUM | 64 8 | 0 0068 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-006 | STRONTIUM | 65 2 | 0 0068 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-006 | VANADIUM | 53 8 | 0 27 | 45 59 | 13400 | 13400 | mg/kg |
| | | CF39-007 | ACETONE | 5 5 | 4 6 | N/A | 272000 | 27200000 | ug/kg |
| | | CF39-007 | METHYLENE CHLORIDE | 1 1 | 0 8 | N/A | 6 | 578 | ug/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF39-007 | STRONTIUM | 66 9 | 0 006 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-008 | CHROMIUM | 19 4 | 0 058 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF39-008 | METHYLENE CHLORIDE | 1 5 | 0 94 | N/A | 6 | 578 | ug/kg |
| | | CF39-008 | ZINC | 91 4 | 0 22 | 73 76 | 576000 | 576000 | mg/kg |
| | | CF39-009 | STRONTIUM | 86 6 | 0 006 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-011 | METHYLENE CHLORIDE | 1 5 | 0 9 | N/A | 6 | 578 | ug/kg |
| | | CF39-011 | PYRENE | 92 | 46 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF39-011 | STRONTIUM | 60 8 | 0 0066 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-012 | METHYLENE CHLORIDE | 0 96 | 0 8 | N/A | 6 | 578 | ug/kg |
| | | CF39-012 | STRONTIUM | 52 2 | 0 006 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-013 | CHROMIUM | 20 4 | 0 059 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF39-013 | CHRYSENE | 98 | 62 | N/A | 160000 | 16000000 | ug/kg |
| | | CF39-013 | FLUORANTHENE | 200 | 99 | N/A | 5370000 | 537000000 | ug/kg |
| | | CF39-013 | METHYLENE CHLORIDE | 2 1 | 1 | N/A | 5 78 | 578 | ug/kg |
| | | CF39-013 | PYRENE | 230 | 47 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF39-013 | STRONTIUM | 214 | 0 0069 | 211 38 | 1000000 | 1000000 | mg/kg |
| | | CF39-013 | STRONTIUM | 79 3 | 0 0069 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF39-002 | ALUMINUM | 23000 | 11 | 16902 | 1000000 | 1000000 | mg/kg |
| | | CF39-002 | LITHIUM | 18 | 5 7 | 11 55 | 38400 | 38400 | mg/kg |
| | | CF39-002 | MAGNESIUM | 4000 | 23 | 2849 3 | | | mg/kg |
| | | CF39-002 | NICKEL | 19 | 4 6 | 14 91 | 38400 | 38400 | mg/kg |
| | | CF39-002 | POTASSIUM | 4100 | 340 | 2967 2 | | | mg/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF39-002 | CHROMIUM | 19 | 0 57 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF39-002 | COBALT | 15 | 1 1 | 10 91 | 115000 | 115000 | mg/kg |
| | | CF39-002 | COPPER | 35 | 2 3 | 18 06 | 71100 | 71100 | mg/kg |
| | | CF39-002 | CALCIUM | 14000 | 23 | 4467 | | | mg/kg |
| | | CF39-002 | 2,4,6-TRIBROMOPHENOL | 3500 | 0 | | | | ug/kg |
| | | CF39-002 | XYLENES, TOTAL | 25 6847 | 12 | | 97400000 | 9740000 | ug/kg |
| | | CF39-002 | U-235 | 0 22 | 1 | 0 12 | 24 | 113 | pCi/g |
| | | CF39-002 | 1 2-DICHLOROETHANE D4 | 55 6767 | 0 | | | | ug/kg |
| | | CF39-002 | TERPHENYL-D14 | 2800 | 0 | | | | ug/kg |
| | | CF39-002 | TOLUENE-D8 | 56 90037 | 0 | | | | ug/kg |
| | | CF39-002 | CHLOROBENZENE-D5 | 61 18319 | 0 | | | | ug/kg |
| | | CF39-002 | 2-FLUOROBIPHENYL | 2400 | 0 | | | | ug/kg |
| | | CF39-002 | 2-FLUOROPHENOL | 4100 | 0 | | | | ug/kg |
| | | CF39-002 | 1,4-DICHLOROBENZENE-D4 | 61 18319 | 0 | | | | ug/kg |
| | | CF39-002 | NITROBENZENE-D5 | 2800 | 0 | | | | ug/kg |
| | | CF39-002 | PHENOL-D5 | 4100 | 0 | | | | ug/kg |
| | | CF39-002 | 4-BROMOFLUOROBENZENE | 55 9092 | 0 | | | | ug/kg |
| | | CF39-002 | FLUOROBENZENE | 61 18319 | 0 | | | | ug/kg |
| | | CF39-002 | CALCIUM | 64000 | 25 | 39382 27 | | | mg/kg |
| | | CE39-004 | LITHIUM | 14 | 6 4 | 11 55 | 38400 | 38400 | mg/kg |
| | | CE39-004 | MAGNESIUM | 4800 | 25 | 2849 3 | | | mg/kg |
| | | CE39-004 | STRONTIUM | 140 | 1 3 | 48 94 | 1000000 | 1000000 | mg/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CE39-004 | CALCIUM | 130000 | 25 | 4467 | | | mg/kg |
| | | CE39-004 | 2,4,6-TRIBROMOPHENOL | 3700 | 0 | | | | ug/kg |
| | | CE39-004 | U-235 | 0 35 | 1 | 0 12 | 24 | 113 | pCi/g |
| | | CE39-004 | 1,2-DICHLOROETHANE D4 | 60 55534 | 0 | | | | ug/kg |
| | | CE39-004 | TERPHENYL-D14 | 3000 | 0 | | | | ug/kg |
| | | CE39-004 | TOLUENE-D8 | 62 1414 | 0 | | | | ug/kg |
| | | CE39-004 | CHLOROBENZENE-D5 | 61 95554 | 0 | | | | ug/kg |
| | | CE39-004 | 2-FLUOROBIPHENYL | 2800 | 0 | | | | ug/kg |
| | | CE39-004 | 2-FLUOROPHENOL | 4400 | 0 | | | | ug/kg |
| | | CE39-004 | 1 4-DICHLOROBENZENE-D4 | 61 95554 | 0 | | | | ug/kg |
| | | CE39-004 | NITROBENZENE-D5 | 3100 | 0 | | | | ug/kg |
| | | CE39-004 | PHENOL-D5 | 4400 | 0 | | | | ug/kg |
| | | CE39-004 | 4-BROMOFLUOROBENZENE | 63 16986 | 0 | | | | ug/kg |
| | | CE39-004 | FLUOROBENZENE | 61 95554 | 0 | | | | ug/kg |
| | | CE39-004 | CALCIUM | 120000 | 25 | 39382 27 | | | mg/kg |
| | | CF39-005 | 2,4,6-TRIBROMOPHENOL | 2900 | 0 | | | | ug/kg |
| | | CF39-005 | XYLENES, TOTAL | 14 55005 | 13 | | 97400000 | 9740000 | ug/kg |
| | | CF39-005 | 1,2-DICHLOROETHANE-D4 | 67 53771 | 0 | | | | ug/kg |
| | | CF39-005 | TERPHENYL-D14 | 2400 | 0 | | | | ug/kg |
| | | CF39-005 | TOLUENE-D8 | 71 86161 | 0 | | | | ug/kg |
| | | CF39-005 | CHLOROBENZENE-D5 | 66 31747 | 0 | | | | ug/kg |
| | | CF39-005 | 2-FLUOROBIPHENYL | 2100 | 0 | | | | ug/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF39-005 | 2-FLUOROPHENOL | 3700 | 0 | | | | ug/kg |
| | | CF39-005 | 1,4-DICHLOROBENZENE-D4 | 66 31747 | 0 | | | | ug/kg |
| | | CF39-005 | NITROBENZENE-D5 | 2400 | 0 | | | | ug/kg |
| | | CF39-005 | PHENOL-D5 | 3600 | 0 | | | | ug/kg |
| | | CF39-005 | 4-BROMOFLUOROBENZENE | 78 41377 | 0 | | | | ug/kg |
| | | CF39-005 | FLUOROBENZENE | 66 31747 | 0 | | | | ug/kg |
| | | CF39-005 | CALCIUM | 140000 | 26 | 39382 27 | | | mg/kg |
| | | CF39-010 | ALUMINUM | 18000 | 12 | 16902 | 1000000 | 1000000 | mg/kg |
| | | CF39-010 | LITHIUM | 14 | 5 8 | 11 55 | 38400 | 38400 | mg/kg |
| | | CF39-010 | POTASSIUM | 3200 | 350 | 2967 2 | | | mg/kg |
| | | CF39-010 | CHROMIUM | 20 | 0 58 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF39-010 | COBALT | 12 | 1 2 | 10 91 | 115000 | 115000 | mg/kg |
| | | CF39-010 | COPPER | 30 | 2 3 | 18 06 | 71100 | 71100 | mg/kg |
| | | CF39-010 | CALCIUM | 6600 | 23 | 4467 | | | mg/kg |
| | | CF39-010 | 2,4,6-TRIBROMOPHENOL | 4300 | 0 | | | | ug/kg |
| | | CF39-010 | 1,2-DICHLOROETHANE-D4 | 60 68555 | 0 | | | | ug/kg |
| | | CF39-010 | TERPHENYL-D14 | 3300 | 0 | | | | ug/kg |
| | | CF39-010 | TOLUENE-D8 | 59 23508 | 0 | | | | ug/kg |
| | | CF39-010 | CHLOROBENZENE-D5 | 58 48646 | 0 | | | | ug/kg |
| | | CF39-010 | 2-FLUOROBIPHENYL | 2900 | 0 | | | | ug/kg |
| | | CF39-010 | 2-FLUOROPHENOL | 4800 | 0 | | | | ug/kg |
| | | CF39-010 | 1,4-DICHLOROBENZENE-D4 | 58 48646 | 0 | | | | ug/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF39-010 | NITROBENZENE-D5 | 3300 | 0 | | | | ug/kg |
| | | CF39-010 | PHENOL-D5 | 5000 | 0 | | | | ug/kg |
| | | CF39-010 | 4-BROMOFLUOROBENZENE | 71 75118 | 0 | | | | ug/kg |
| | | CF39-010 | FLUOROBENZENE | 58 48646 | 0 | | | | ug/kg |
| 800-6 | PAC 000-504, New Process Waste Line | CF38-025 | METHYLENE CHLORIDE | 5 7 | 0 88 | N/A | 6 | 578 | ug/kg |
| | UBC 889 | CF38-005 | BENZO(A)ANTHRACENE | 63 | 41 | N/A | 1600 | 160000 | ug/kg |
| | | CF38-005 | CHROMIUM | 17 | 0 059 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF38-005 | CHRYSENE | 67 | 56 | N/A | 160000 | 16000000 | ug/kg |
| | | CF38-005 | COPPER | 52 3 | 0 17 | 18 06 | 71100 | 71100 | mg/kg |
| | | CF38-005 | COPPER | 56 6 | 0 16 | 38 21 | 71100 | 71100 | mg/kg |
| | | CF38-005 | FLUORANTHENE | 160 | 88 | N/A | 5370000 | 537000000 | ug/kg |
| | | CF38-005 | IRON | 23400 | 1 6 | 18037 | 576000 | 576000 | mg/kg |
| | | CF38-005 | MANGANESE | 489 | 0 037 | 365 08 | 83600 | 83600 | mg/kg |
| | | CF38-005 | NICKEL | 18 1 | 0 72 | 14 91 | 38400 | 38400 | mg/kg |
| | | CF38-005 | PYRENE | 150 | 42 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF38-005 | STRONTIUM | 115 | 0 0068 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-005 | TETRACHLOROETHENE | 1 2 | 1 1 | N/A | 32 | 3150 | ug/kg |
| | | CF38-005 | VANADIUM | 66 8 | 0 27 | 45 59 | 13400 | 13400 | mg/kg |
| | | CF38-006 | CHROMIUM | 20 1 | 0 055 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF38-006 | COBALT | 11 4 | 0 082 | 10 91 | 115000 | 115000 | mg/kg |
| | | CF38-006 | COPPER | 73 | 0 16 | 18 06 | 71100 | 71100 | mg/kg |
| | | CF38-006 | COPPER | 65 8 | 0 16 | 38 21 | 71100 | 71100 | mg/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-006 | COPPER | 75 4 | 0 16 | 38 21 | 71100 | 71100 | mg/kg |
| | | CF38-006 | IRON | 31300 | 1 5 | 18037 | 576000 | 576000 | mg/kg |
| | | CF38-006 | MANGANESE | 556 | 0 034 | 365 08 | 83600 | 83600 | mg/kg |
| | | CF38-006 | METHYLENE CHLORIDE | 1 1 | 0 87 | N/A | 6 | 578 | ug/kg |
| | | CF38-006 | METHYLENE CHLORIDE | 1 5 | 0 93 | N/A | 6 | 578 | ug/kg |
| | | CF38-006 | NICKEL | 24 6 | 0 67 | 14 91 | 38400 | 38400 | mg/kg |
| | | CF38-006 | STRONTIUM | 131 | 0 0064 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-006 | VANADIUM | 76 9 | 0 26 | 45 59 | 13400 | 13400 | mg/kg |
| | | CF38-007 | ACETONE | 5 5 | 4 9 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-007 | CHROMIUM | 18 4 | 0 057 | 16 99 | 4410 | 44300 | mg/kg |
| | | CF38-007 | COPPER | 39 6 | 0 16 | 18 06 | 71100 | 71100 | mg/kg |
| | | CF38-007 | COPPER | 69 2 | 0 16 | 38 21 | 71100 | 71100 | mg/kg |
| | | CF38-007 | IRON | 22800 | 1 5 | 18037 | 576000 | 576000 | mg/kg |
| | | CF38-007 | MANGANESE | 418 | 0 035 | 365 08 | 83600 | 83600 | mg/kg |
| | | CF38-007 | NICKEL | 18 6 | 0 69 | 14 91 | 38400 | 38400 | mg/kg |
| | | CF38-007 | STRONTIUM | 106 | 0 0066 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-007 | TETRACHLOROETHENE | 2 6 | 1 1 | N/A | 32 | 3150 | ug/kg |
| | | CF38-007 | VANADIUM | 60 7 | 0 26 | 45 59 | 13400 | 13400 | mg/kg |
| | | CF38-007 | VANADIUM | 90 8 | 0 25 | 88 49 | 13400 | 13400 | mg/kg |
| | | CF38-008 | ACETONE | 110 | 5 5 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-008 | BARIUM | 194 | 0 041 | 141 26 | 133000 | 133000 | mg/kg |
| | | CF38-008 | BENZO(A)ANTHRACENE | 77 | 44 | N/A | 1600 | 160000 | ug/kg |



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**Table 3**
**IHSS Group 800-6 Accelerated Action Characterization Data**

| IHSS Group | IHSS/PAC/UBC Site | Location Code | Analyte Name | Result | Reporting Limit | Background Plus Two Standard Deviations | Tier II Action Level | Tier I Action Level | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | CF38-008 | CHROMIUM | 88 1 | 0 059 | 68 27 | 4410 | 44300 | mg/kg |
| | | CF38-008 | CHRYSENE | 93 | 60 | N/A | 160000 | 16000000 | ug/kg |
| | | CF38-008 | FLUORANTHENE | 160 | 95 | N/A | 5370000 | 537000000 | ug/kg |
| | | CF38-008 | MANGANESE | 803 | 0 035 | 365 08 | 83600 | 83600 | mg/kg |
| | | CF38-008 | MERCURY | 4 9 | 0 014 | 1 52 | 576 | 576 | mg/kg |
| | | CF38-008 | NICKEL | 23 8 | 0 68 | 14 91 | 38400 | 38400 | mg/kg |
| | | CF38-008 | PYRENE | 160 | 45 | N/A | 3970000 | 397000000 | ug/kg |
| | | CF38-008 | STRONTIUM | 75 2 | 0 0065 | 48 94 | 1000000 | 1000000 | mg/kg |
| | | CF38-008 | ZINC | 391 | 0 22 | 73 76 | 576000 | 576000 | mg/kg |
| | | CF38-011 | ACETONE | 30 | 5 6 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-011 | STRONTIUM | 224 | 0 0073 | 211 38 | 1000000 | 1000000 | mg/kg |
| | | CF38-011 | TETRACHLOROETHENE | 2 7 | 1 2 | N/A | 32 | 3150 | ug/kg |
| | | CF38-014 | ACETONE | 5 7 | 5 5 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-014 | ACETONE | 6 4 | 5 6 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-014 | STRONTIUM | 268 | 0 0074 | 211 38 | 1000000 | 1000000 | mg/kg |
| | | CF38-014 | STRONTIUM | 291 | 0 0074 | 211 38 | 1000000 | 1000000 | mg/kg |
| | | CF38-015 | 1,2,4-TRICHLOROBENZENE | 6 5 | 0 76 | N/A | 4330 | 433000 | ug/kg |
| | | CF38-015 | ACETONE | 5 2 | 4 9 | N/A | 272000 | 27200000 | ug/kg |
| | | CF38-015 | BIS(2-ETHYLHEXYL)PHTHALATE | 96 | 75 | N/A | 3110000 | 311000000 | ug/kg |
| | | CF38-015 | COPPER | 48 4 | 0 16 | 38 21 | 71100 | 71100 | mg/kg |
| | | CF38-015 | NAPHTHALENE | 5 5 | 0 93 | N/A | 101000 | 10100000 | ug/kg |



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## 2.7 Sum of Ratios and Area of Concern

RFCA Tier II and Tier I sum of ratios (SORs) were calculated for the IHSS Group 800-6 locations SOR calculations were based on accelerated action analytical data and the following list of contaminants of concern (COCs)

- Radionuclides (americium-241, plutonium-239/240, uranium-234, uranium-235, and uranium-238),
- Metals (arsenic, copper, mercury, lead, etc ), and
- Organics [volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs)]

The COCs are based on data that exceed background mean plus two standard deviations or RLs Metals and organics were grouped together for nonradionuclide SOR calculations Plutonium, americium, and uranium were grouped together for radionuclide SOR calculations Table 4 presents the SORs for surface soil, and Table 5 presents the SORs for subsurface soils SORs were calculated for all locations with analytical results greater than background mean plus two standard deviations or reporting limits All SORs were less than 1 SORs based on pre-accelerated action and accelerated action analytical data are presented in Section 8 0, Post-Remediation Condition

The Area of Concern (AOC), shown on Figure 5, was determined based on analytical results presented in Section 2 0 (i e , pre-accelerated action and accelerated action data) The AOC is defined as the area with any contaminant concentration greater than background mean plus two standard deviations or RLs Data from sample locations that are no longer representative were excluded



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**Table 4**
**RFCA Tier II Sum of Ratios for IHSS Group 800-6 Surface Soil**

| Location | Tier II SOR Radionuclides | Tier II SOR Non-Radionuclides |
|---|---|---|
| CE38-001 | N/A | 0 000 |
| CE39-001 | N/A | 0 018 |
| CE39-002 | N/A | 0 028 |
| CE39-003 | N/A | 0 000 |
| CE39-004 | N/A | 0 015 |
| CF38-001 | N/A | 0 000 |
| CF38-002 | N/A | 0 000 |
| CF38-003 | N/A | 0 000 |
| CF38-005 | N/A | 0 053 |
| CF38-006 | N/A | 0 069 |
| CF38-007 | N/A | 0 050 |
| CF38-008 | N/A | 0 012 |
| CF39-001 | N/A | 0 001 |
| CF39-002 | N/A | 0 038 |
| CF39-003 | N/A | 0 001 |
| CF39-006 | N/A | 0 004 |
| CF39-007 | N/A | 0 000 |
| CF39-008 | N/A | 0 000 |
| CF39-009 | N/A | 0 000 |
| CF39-010 | N/A | 0 023 |
| CF39-011 | N/A | 0 000 |
| CF39-012 | N/A | 0 000 |
| CF39-013 | N/A | 0 000 |

N/A – Not applicable Contaminants may be present but at concentrations below background plus two standard deviations or RL



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**Table 5**
**RFCA Tier II Sum of Ratios for IHSS Group 800-6 Subsurface Soil**

| Location | Tier II SOR Radionuclides | Tier II SOR Non-Radionuclides | Depth Interval |
|---|---|---|---|
| CE38-002 | N/A | 0 27 | 0 5 -2 5' |
| CE39-001 | N/A | 0 16 | 0 5'-2 5' |
| CE39-002 | N/A | 0 00 | 0 5 -2 5 |
| CE39-003 | N/A | 0 00 | 0 5 -2 5' |
| CF38-001 | N/A | 0 21 | 0 5 -2 5' |
| CF38-003 | N/A | 0 00 | 0 5'-2 5' |
| CF38-005 | N/A | 0 08 | 0 5'-2 5' |
| CF38-006 | N/A | 0 19 | 0 5'-2 5' |
| CF38-007 | N/A | 0 09 | 0 5'-2 5' |
| CF38-008 | N/A | 0 06 | 0 5 -2 5' |
| CF39-001 | N/A | 0 01 | 0 5'-2 5' |
| CF39-004 | N/A | 0 16 | 0 5'-2 5' |
| CF39-005 | N/A | 0 00 | 0 5 -2 5' |
| CF39-006 | N/A | 0 23 | 0 5'-2 5' |
| CF39-007 | N/A | 0 19 | 0 5'-2 5' |
| CF39-008 | N/A | 0 26 | 0 5'-2 5' |
| CF39-009 | N/A | 0 14 | 0 5'-2 5' |
| CF39-011 | N/A | 0 26 | 0 5'-2 5' |
| CF39-012 | N/A | 0 17 | 0 5'-2 5' |
| CF39-013 | N/A | 0 41 | 0 5'-2 5' |
| CF38-010 | N/A | 0 00 | 4 5'-6 5' |
| CF38-015 | N/A | 0 00 | 4 5'-6 5' |
| CF38-025 | N/A | 0 99 | 4 5'-6 5' |
| CF38-027 | N/A | 0 24 | 4 5'-6 5' |
| CF38-019 | N/A | 0 27 | 6 5'-8 5' |
| CF38-020 | N/A | 0 01 | 6 5'-8 5' |
| CF38-021 | N/A | 0 04 | 2 5 -4 5 |
| CF38-014 | N/A | 0 00 | 6 5'-8 5 |
| CF38-011 | N/A | 0 09 | 6 5'-8 5' |
| CF38-024 | N/A | 0 50 | 6 5 -8 5' |

N/A – Not applicable Contaminants may be present but at concentrations below background plus two standard deviations or RL



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## 3.0 ACCELERATED ACTION

Accelerated action objectives were developed and described in ER RSOP Notification #02-02 (DOE 2002b) 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 Group 800-6 include the following

1 Remove the UBC 889 floor slab, which will be dispositioned in accordance with the RSOP for Recycling Concrete (DOE 1999a),

2 Remove two concrete sumps (Tank 28),

3 Remove RCRA Interim Status Tank 40 (emptied, rinsed, and foamed in July 1996),

4 Remove the tank/sump beneath the eastern portion of the B889 slab if contaminated above RFCA Tier I ALs or if within 3 feet of the surface,

5 Remove portions of OPWL P10 that are beneath the slab and within IHSS 800-164 3,

6 Potentially remove portions of New Process Waste Line (NPWL) and Valve Vault 4 within IHSS 800-164 3 to as close to Valve Vaults 3, 5, and 6 as possible, and

7 Remediate surface and subsurface soil contamination to below RFCA Tier I ALs

Accelerated action activities were conducted between May 8 and July 18, 2002 Start and end dates of significant activities are listed in Table 6 Key components associated with the accelerated action are shown in Figure 6 Photographs of site activities are provided in Appendix A

**Table 6**
**Dates of Accelerated Action Activities**

| Activity | Start Date | End Date | Duration |
|---|---|---|---|
| Characterization Sampling | May 8, 2002 | October 16, 2002 | 37 Day |
| Removal Activities | June 7, 2002 | June 27, 2002 | 14 Days |
| Backfill Excavations | May 22, 2002 | July 3, 2002 | 31 Days |
| Reseed | July 18, 2002 | July 18, 2002 | 1 Day |



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## 3.1 Removal Activities

All accelerated action objectives were achieved, except those associated with IHSS 800-164 3 Portions of the NPWL and Valve Vault 4 within IHSS 164 3 were not removed as part of this action The NPWL and valve vaults will be addressed based on site-wide decisions regarding the NPWL and valve vaults Any related work and sampling results will be documented in another closeout report at a later date Removal activities are described below

Soil within excavations was sampled and found to be uncontaminated (refer to Sections 2 4 – 2 6) Therefore, no soil that was sampled was removed Excavations were then backfilled, and the area was graded and seeded (refer to Section 10 0) Documentation regarding approval to backfill is provided in ER Regulatory Contact Records dated May 14, 2002, May 21, 2002, and September 11, 2002 (refer to Appendix B) Approximately 70 cubic yards of fill was brought to the project site Approximately 330 cubic yards of topsoil was brought to the project site

*Building 889 Slab, Sumps, Air Ducts, and Underground Utilities*

The Building 889 slab was removed, as well as the footer walls, footers, and portions of the concrete pillars (i e , the top 5 ft) These items were surveyed and disposed of at an off-site sanitary landfill Because the slab surface contained paint, it was classified as Polychlorinated Biphenyl (PCB) Bulk Product Waste The two Tank 28 sumps (exhaust pits) were sprayed with Instacote™ and disposed of as low level radioactive waste The four smaller sumps and the trough connecting all the sumps were disposed of as low level radioactive waste Underground utilities encountered (e g , utility alarm, communication, and electric lines) were surveyed, and based on results, disposed of as sanitary waste

Two large, transite air ducts (24-inch outer diameter) were also removed (approximately 40 ft) Prior to removal, holes were made into the ducts, and a large amount of water was found in each (a total of approximately 900 gallons) This water was pumped to a poly tank and sampled Low levels of radioactivity and VOCs were detected, and based on results, the water was taken to the Building 891 wastewater treatment plant A black tarry sediment also was found in the ducts This material was sampled and found to also contain low levels of radioactivity and VOCs The material was not removed from the ducts Based on process knowledge and analytical results, the ducts were classified as asbestos containing material (ACM) and non-hazardous, low level radioactive waste They were filled with foam and disassembled, and the ends were wrapped in plastic sheeting

*Waste Lines*

A portion of line P-10, which is part of the OPWL and made of stainless steel, was tapped and drained, filled with epoxy, and removed The portion removed included the portion under the Building 889 slab, the portion going to Tank 40, and the portion going to an area southwest of Valve Vault 4 (refer to Figure 8) The end of the portion remaining was filled with grout (2 ft into the line) The removed section was cut up and placed in a low-level radioactive waste container The container was then filled with foam



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An 8-foot section of metal housing around the NPWL (RCRA Unit 40) adjacent to Building 889 was removed The housing was disposed of as low level radioactive site The remaining line consists of a high-density polyethylene (HDPE) line in which the actual waste line resides The waste line is polyvinyl chloride (PVC) pipe The waste line was capped, and the space between the waste line and the HDPE line was filled with grout The disposition of the waste line will be determined as part of the Building 865 D&D Project

*Tank/Sump Beneath the Eastern Portion of the Building 889 Slab and Tank 40*

The tank/sump located beneath the eastern portion of Building 889 was removed No pipes were attached It had been previously filled with concrete After the tank had been removed, it was broken up and surveyed Based on survey results, the debris was disposed of at an off-site sanitary landfill

Tank 40 was sprayed with Instacote™ and removed The two tanks within the structure had been previously emptied and rinsed, and the entire structure foamed in 1996 The upper portion of the structure had been previously surveyed and classified as sanitary waste The debris from the upper portion was disposed of at an off-site sanitary landfill The remainder of the vault contained two tanks and was disposed of as low level radioactive waste based on previous survey data

Following the excavation of Tank 40, groundwater, with an oily layer on top, was observed at the bottom of the excavation A sample was collected and analyzed, and results indicated the presence of various polyaromatic hydrocarbons Based on the results, the material may be diesel fuel Using the consultative process, CDPHE approved backfilling the excavation (refer to Appendix B)

## 4.0 CONFIRMATION SAMPLING

Because all results from characterization sampling indicate no contamination above RFCA Tier II Als, no soils that were sampled were removed Therefore, there was no need to conduct confirmation sampling to ensure that residual contaminant concentrations were below ALs

## 5.0 RCRA UNIT CLOSURE

Two tanks, which were part of the OPWL system and regulated under the Colorado Hazardous Waste Act (CHWA), and a portion of the NPWL, also regulated under the CHWA, were removed (refer to Figure 6)

- Tank 28, which consisted of two concrete sumps (exhaust pits) within the slab, was sprayed with "Instacote™" and disposed of as low level radioactive waste Process knowledge was used to determine that the debris was not radioactive mixed waste

- Tank 40 had been previously emptied, rinsed and foamed in 1996 The upper vault also had been previously surveyed and classified as sanitary waste The vault debris was sent to an off-site sanitary landfill The two tanks were disposed of as low level radioactive waste



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- An 8-foot section of metal housing around the NPWL (RCRA Unit 40) adjacent to Building 889 was removed The remaining line consists of a HDPE line in which the actual waste line resides The waste line is PVC pipe The waste line was capped, and the space between the waste line and the HDPE line was filled with grout The disposition of the waste line will be determined as part of the Building 865 Decontamination and Decommissioning (D&D) Project

## 6.0 STEWARDSHIP ANALYSIS

### 6.1 Current Site Conditions

As discussed in Section 3 1, accelerated actions at IHSS Group 800-6 consisted of excavation of the Building 889 slab, footers, footer walls, upper portions of concrete pillars, sumps and tanks, a small portion of the NPWL, and a large portion of the OPWL in the area (refer to Figure 6) Portions of the NPWL and Valve Vault 4 within IHSS 164 3 were not removed as part of this action The NPWL, OPWL and valve vaults will be addressed based on site-wide decisions regarding these items Any related work and sampling results will be documented in another closeout report at a later date

No contamination was found under the items removed (refer to Figure 3 and Table 3) and in areas sampled prior to the accelerated action (refer to Figure 4) The only exception was the elevated beryllium concentration in the surface soil sample near Tank 40, however, that sample location is no longer representative (refer to Section 2 5)

### 6.2 Near Term Management Recommendations

The accelerated action for IHSS Group 800-6 met the objectives of the action The concentration levels of soil contamination remaining in the IHSS Group do not trigger any further accelerated action Potential contaminant sources and pathways have been removed, mitigated or found not to have existed Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process Fencing and signs restricting access will be posted to minimize disturbance to newly-revegetated areas Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls No other near-term management techniques are required because of environmental conditions

### 6.3 Long Term Stewardship Recommendation

The presence of radionuclides, metals, VOCs and SVOCs in soils will be analyzed in the Site Wide Comprehensive Risk Assessment, which is part of the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study that will be conducted for the Site The need for and extent of any, more general, long-term stewardship activities will also be analyzed in the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study-Feasibility Study and will be proposed as part of the preferred alternative in the Proposed Plan for the Site Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement



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No specific long-term stewardship activities are recommended for IHSS Group 800-6 beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, or prohibitions on groundwater pumping in the area of IHSS Group 800-6

No specific engineered controls are anticipated as a result of the conditions remaining in IHSS Group 800-6

No specific environmental monitoring is anticipated as a result of the conditions remaining in IHSS Group 800-6

This closeout report and associated documentation will be retained as part of the Rocky Flats administrative record file These specific long-term stewardship recommendations will also be summarized in the Rocky Flats *Long Term Stewardship Strategy*

## 7.0 DEVIATIONS FROM THE ER RSOP

All accelerated action objectives were achieved, except those associated with IHSS 800-164 3 Portions of the NPWL and Valve Vault 4 within IHSS 164 3 were not removed as part of this action The NPWL and valve vaults will be addressed based on site-wide decisions regarding the NPWL and valve vaults Any related work and sampling results will be documented in another closeout report at a later date

## 8.0 POST-REMEDIATION CONDITIONS

Post remediation conditions at UBC 889, Tanks 28 and 40, and IHSS 800-164 3 are described below

### 8.1 UBC 889

The Building 889 slab, footing walls, and footers were removed, as well as the top five feet of the concrete pillars The lower portions of the pillars, therefore, remain Sumps, waste lines, transite ducts, and underground utilities also were removed, including the tank/sump beneath the eastern portion of the Building 889 slab Most of the NPWL located east of the Building 889 site remains, including Valve Vault 4, as well as the portion traversing IHSS 164 3 (refer to Figure 6) The remaining line consists of a HDPE line in which the actual waste line resides The waste line is PVC pipe The waste line was capped, and the space between the waste line and the HDPE line was filled with grout The disposition of the waste line will be determined as part of the Building 865 D&D Project Portions of the OPWL also remain Sampling results from the soil beneath the items removed (e g , slab, footing walls, footers, sumps, and waste lines) indicate that all contaminant concentrations are less than RFCA Tier II ALs

### 8.2 OPWL Tanks 28 and 40

Tanks 28 and 40 were removed, as well as a portion of OPWL P-10 This line was removed to an area southwest of Valve Vault 4 (refer to Figure 6) The end of the portion



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remaining was filled with grout (2 ft into the line) Sampling results from the soil beneath the items removed (i e , tanks, sumps and waste lines) indicate no contaminant concentrations above RFCA Tier II ALs There was one elevated surface beryllium concentration found prior to the accelerated action, but it did not exceed the Tier II AL by much (2 1 mg/kg vs 1 04 mg/kg) and was considerably less than the Tier I AL (104 mg/kg) (refer to Section 2 5) In addition, the sample location where the elevated concentration was found is not longer representative

## 8.3 IHSS 800-164.3

Sampling results in the IHSS indicate that all contaminant concentrations are less than RFCA Tier II ALs Portions of the NPWL and Valve Vault 4 within IHSS 164 3 were not removed as part of this action The NPWL and valve vaults will be addressed based on site-wide decisions regarding the NPWL and valve vaults Any related work and sampling results will also be documented in another closeout report at a later date

## 8.4 Residual Contamination

Residual contamination was determined based on pre-accelerated action and accelerated action characterization Pre-accelerated action characterization indicate no contaminant concentrations in surface and subsurface soils greater than RFCA Tier II ALs, except for beryllium in the surface soil adjacent to Tank 40 However, as stated in Section 8 2, the sample is no longer representative Accelerated action characterization indicate no contaminant concentrations in surface and subsurface soils greater than RFCA Tier II ALs Concentrations greater than background plus two standard deviations or RLs at IHSS Group 800-6 are presented in Table 7 and shown on Figures 7 and 8 Pipelines that were not removed during the accelerated action are shown on Figure 6 As discussed in Section 3 1, pipeline ends were grouted

SORs for Tier I and Tier II action levels, based on pre-accelerated action and accelerated action data, are listed in Tables 8 and 9 for surface and subsurface soils, respectively Data from sample locations that are no longer representative were excluded As shown, SORs are less than 1 SORs for non-radionuclides are presented in Figure 9 SORs for radionuclides are not presented, because results were less than background plus two standard deviations or reporting limits

# 9.0 WASTE MANAGEMENT

Waste from the IHSS Group 800-6 accelerated action consisted of concrete, asphalt, soil, and pipeline Asphalt, underground utilities, and uncontaminated concrete were disposed of as sanitary waste Because the slab surface contained paint and caulk, it was classified and disposed of as PCB Bulk Product Waste Contaminated concrete was loaded into metal waste boxes for disposal as low-level waste The two Tank 28 sumps and the two Tank 40 tanks were first sprayed with Instacote™ Pipeline was placed in metal waste containers for disposal as low-level waste (LLW) These containers were then filled with foam The transite air ducts were filled with foam, cut up, and disposed of as non-hazardous low-level radioactive waste Water found in the ducts was pumped into poly tanks and trucked to the Building 891 wastewater treatment plant Waste types, volumes,



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and disposition are presented in Table 10 Waste characterization data are summarized in Table 11

## 10.0 SITE RECLAMATION

All excavated areas within IHSS Group 800-6 were backfilled Excavated soil was used as backfill in the excavation from which it was removed An additional 70 cubic yards (approximate) of fill was brought to the project site for use In addition, approximately 330 cubic yards of topsoil was brought to the project site to bring excavated areas up to grade The area was rough graded before the topsoil was distributed over the site The topsoil was graded, then scarified, and a seed mix consisting of Canada bluegrass was spread over the site using broadcast seeding methods Hydromulch was applied to conserve moisture and prevent erosion

## 11.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS

Sampling locations that are no longer representative include the four historical locations next to Tank 40 (i e , 04795, 04895, 04995 and 05095) These locations were impacted when Tank 40 was excavated No longer representative sampling locations are shown on Figure 10



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| 42992 | Plutonium-239/240 | Surface Soil | 0 025 | pci/g | 0 02 | 0 01 | 1088 | 252 |
| 42992 | Copper | Surface Soil | 20 7 | mg/kg | 18 06 | 5 | 71100 | 71100 |
| 42992 | Strontium | Surface Soil | 135 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| 42992 | Toluene | Subsurface Soil | 210 | ug/kg | NA | 5 | 707000 | 7070 |
| 42992 | Toluene | Subsurface Soil | 83 | ug/kg | NA | 5 | 707000 | 7070 |
| 42992 | Toluene | Subsurface Soil | 140 | ug/kg | NA | 5 | 707000 | 7070 |
| CE38-001 | Strontium | Surface Soil | 55 1 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CE38-002 | Methylene Chloride | Subsurface Soil | 1 4 | ug/kg | NA | 0 8 | 578 | 5 78 |
| CE38-002 | Tetrachloroethene | Subsurface Soil | 1 | ug/kg | NA | 0 99 | 3150 | 31 5 |
| CE39-001 | Selenium | Surface Soil | 1 4 | mg/kg | 1 224 | 0 5 | 9610 | 9610 |
| CE39-001 | Lithium | Surface Soil | 12 4 | mg/kg | 11 55 | 0 2 | 38400 | 38400 |
| CE39-001 | Strontium | Surface Soil | 89 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CE39-001 | Strontium | Surface Soil | 90 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CE39-001 | Aluminum | Surface Soil | 17500 | mg/kg | 16902 | 1 4 | 1000000 | 1000000 |
| CE39-001 | Methylene Chloride | Subsurface Soil | 0 9 | ug/kg | NA | 0 82 | 578 | 5 78 |
| CE39-002 | Lithium | Surface Soil | 15 | mg/kg | 11 55 | 0 19 | 38400 | 38400 |
| CE39-002 | Vanadium | Surface Soil | 49 4 | mg/kg | 45 59 | 0 27 | 13400 | 13400 |
| CE39-002 | Strontium | Surface Soil | 84 4 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CE39-002 | Nickel | Surface Soil | 21 3 | mg/kg | 14 91 | 0 72 | 38400 | 38400 |
| CE39-002 | Barium | Surface Soil | 208 | mg/kg | 141 26 | 0 043 | 133000 | 133000 |
| CE39-002 | Aluminum | Surface Soil | 22100 | mg/kg | 16902 | 1 4 | 1000000 | 1000000 |
| CE39-002 | Acetone | Subsurface Soil | 5 2 | ug/kg | NA | 5 | 27200000 | 272000 |
| CE39-003 | Strontium | Surface Soil | 95 4 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-001 | Methylene Chloride | Subsurface Soil | 1 2 | ug/kg | NA | 0 8 | 578 | 5 78 |
| CF38-002 | Strontium | Surface Soil | 71 8 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-003 | Pyrene | Subsurface Soil | 74 | ug/kg | NA | 43 | 397000000 | 3970000 |
| CF38-003 | Strontium | Surface Soil | 75 2 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-003 | Toluene | Subsurface Soil | 0 94 | ug/kg | NA | 0 83 | 707000 | 7070 |
| CF38-003 | Bis(2-ethylhexyl)phthalate | Subsurface Soil | 1100 | ug/kg | NA | 74 | 311000000 | 3110000 |
| CF38-005 | Vanadium | Surface Soil | 66 8 | mg/kg | 45 59 | 0 27 | 13400 | 13400 |
| CF38-005 | Nickel | Surface Soil | 18 1 | mg/kg | 14 91 | 0 72 | 38400 | 38400 |
| CF38-005 | Copper | Surface Soil | 52 3 | mg/kg | 18 06 | 0 17 | 71100 | 71100 |
| CF38-005 | Manganese | Surface Soil | 489 | mg/kg | 365 08 | 0 037 | 83600 | 83600 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| CF38-005 | Iron | Surface Soil | 23400 | mg/kg | 18037 | 1 6 | 576000 | 576000 |
| CF38-005 | Tetrachloroethene | Subsurface Soil | 1 2 | ug/kg | NA | 1 1 | 3150 | 31 5 |
| CF38-005 | Benzo(a)anthracene | Subsurface Soil | 63 | ug/kg | NA | 41 | 160000 | 1600 |
| CF38-005 | Chrysene | Subsurface Soil | 67 | ug/kg | NA | 56 | 16000000 | 160000 |
| CF38-005 | Pyrene | Subsurface Soil | 150 | ug/kg | NA | 42 | 397000000 | 3970000 |
| CF38-005 | Strontium | Surface Soil | 115 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-005 | Fluoranthene | Subsurface Soil | 160 | ug/kg | NA | 88 | 537000000 | 5370000 |
| CF38-005 | Copper | Subsurface Soil | 56 6 | mg/kg | 38 21 | 0 16 | 71100 | 71100 |
| CF38-006 | Vanadium | Surface Soil | 76 9 | mg/kg | 45 59 | 0 26 | 13400 | 13400 |
| CF38-006 | Strontium | Surface Soil | 131 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-006 | Nickel | Surface Soil | 24 6 | mg/kg | 14 91 | 0 67 | 38400 | 38400 |
| CF38-006 | Copper | Surface Soil | 73 | mg/kg | 18 06 | 0 16 | 71100 | 71100 |
| CF38-006 | Manganese | Surface Soil | 556 | mg/kg | 365 08 | 0 034 | 83600 | 83600 |
| CF38-006 | Cobalt | Surface Soil | 11 4 | mg/kg | 10 91 | 0 082 | 115000 | 115000 |
| CF38-006 | Iron | Surface Soil | 31300 | mg/kg | 18037 | 1 5 | 576000 | 576000 |
| CF38-006 | Methylene Chloride | Subsurface Soil | 1 1 | ug/kg | NA | 0 87 | 578 | 5 78 |
| CF38-006 | Copper | Subsurface Soil | 65 8 | mg/kg | 38 21 | 0 16 | 71100 | 71100 |
| CF38-007 | Vanadium | Surface Soil | 60 7 | mg/kg | 45 59 | 0 26 | 13400 | 13400 |
| CF38-007 | Strontium | Surface Soil | 106 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-007 | Nickel | Surface Soil | 18 6 | mg/kg | 14 91 | 0 69 | 38400 | 38400 |
| CF38-007 | Copper | Surface Soil | 39 6 | mg/kg | 18 06 | 0 16 | 71100 | 71100 |
| CF38-007 | Manganese | Surface Soil | 418 | mg/kg | 365 08 | 0 035 | 83600 | 83600 |
| CF38-007 | Iron | Surface Soil | 22800 | mg/kg | 18037 | 1 5 | 576000 | 576000 |
| CF38-007 | Tetrachloroethene | Subsurface Soil | 2 6 | ug/kg | NA | 1 1 | 3150 | 31 5 |
| CF38-007 | Acetone | Subsurface Soil | 5 5 | ug/kg | NA | 4 9 | 27200000 | 272000 |
| CF38-007 | Vanadium | Subsurface Soil | 90 8 | mg/kg | 88 49 | 0 25 | 13400 | 13400 |
| CF38-007 | Copper | Subsurface Soil | 69 2 | mg/kg | 38 21 | 0 16 | 71100 | 71100 |
| CF38-008 | Nickel | Surface Soil | 23 8 | mg/kg | 14 91 | 0 68 | 38400 | 38400 |
| CF38-008 | Manganese | Surface Soil | 803 | mg/kg | 365 08 | 0 035 | 83600 | 83600 |
| CF38-008 | Barium | Surface Soil | 194 | mg/kg | 141 26 | 0 041 | 133000 | 133000 |
| CF38-008 | Zinc | Surface Soil | 391 | mg/kg | 73 76 | 0 22 | 576000 | 576000 |
| CF38-008 | Benzo(a)anthracene | Subsurface Soil | 77 | ug/kg | NA | 44 | 160000 | 1600 |
| CF38-008 | Chrysene | Subsurface Soil | 93 | ug/kg | NA | 60 | 16000000 | 160000 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| CF38-008 | Pyrene | Subsurface Soil | 160 | ug/kg | NA | 45 | 397000000 | 3970000 |
| CF38-008 | Fluoranthene | Subsurface Soil | 160 | ug/kg | NA | 95 | 537000000 | 5370000 |
| CF38-008 | Strontium | Surface Soil | 75 2 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-008 | Mercury | Subsurface Soil | 4 9 | mg/kg | 1 52 | 0 014 | 576 | 576 |
| CF38-008 | Chromium | Subsurface Soil | 88 1 | mg/kg | 68 27 | 0 059 | 44300 | 4410 |
| CF38-008 | Acetone | Subsurface Soil | 110 | ug/kg | NA | 5 5 | 27200000 | 272000 |
| CF38-010 | Acetone | Subsurface Soil | 16 | ug/kg | NA | 4 7 | 27200000 | 272000 |
| CF38-011 | Tetrachloroethene | Subsurface Soil | 2 7 | ug/kg | NA | 1 2 | 3150 | 31 5 |
| CF38-011 | Acetone | Subsurface Soil | 30 | ug/kg | NA | 5 6 | 27200000 | 272000 |
| CF38-011 | Strontium | Subsurface Soil | 224 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-014 | Acetone | Subsurface Soil | 5 7 | ug/kg | NA | 5 5 | 27200000 | 272000 |
| CF38-014 | Strontium | Subsurface Soil | 268 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF38-015 | 1,2,4-Trichlorobenzene | Subsurface Soil | 6 5 | ug/kg | NA | 0 76 | 433000 | 4330 |
| CF38-015 | Naphthalene | Subsurface Soil | 5 5 | ug/kg | NA | 0 93 | 10100000 | 101000 |
| CF38-015 | Acetone | Subsurface Soil | 5 2 | ug/kg | NA | 4 9 | 27200000 | 272000 |
| CF38-015 | Bis(2-ethylhexyl)phthalate | Subsurface Soil | 96 | ug/kg | NA | 75 | 311000000 | 3110000 |
| CF38-015 | Copper | Subsurface Soil | 48 4 | mg/kg | 38 21 | 0 16 | 71100 | 71100 |
| CF38-019 | 1,2-Dichloropropane | Subsurface Soil | 2 2 | ug/kg | NA | 1 7 | 1130 | 11 3 |
| CF38-019 | Tetrachloroethene | Subsurface Soil | 2 1 | ug/kg | NA | 1 4 | 3150 | 31 5 |
| CF38-019 | Carbon Disulfide | Subsurface Soil | 3 4 | ug/kg | NA | 1 3 | 988000 | 9880 |
| CF38-019 | Bis(2-Ethylhexyl)Phthalate | Subsurface Soil | 120 | ug/kg | NA | 99 | 311000000 | 3110000 |
| CF38-019 | Acetone | Subsurface Soil | 820 | ug/kg | NA | 6 4 | 27200000 | 272000 |
| CF38-020 | Phenol | Subsurface Soil | 160 | ug/kg | NA | 90 | 3750000 | 37500 |
| CF38-020 | Total Xylenes | Subsurface Soil | 82 | ug/kg | NA | 36 | 9740000 | 97400 |
| CF38-020 | Naphthalene | Subsurface Soil | 530 | ug/kg | NA | 59 | 10100000 | 101000 |
| CF38-021 | 1,2,4-Trichlorobenzene | Subsurface Soil | 6 6 | ug/kg | NA | 0 8 | 433000 | 4330 |
| CF38-021 | Tetrachloroethene | Subsurface Soil | 1 1 | ug/kg | NA | 1 1 | 3150 | 31 5 |
| CF38-021 | Acetone | Subsurface Soil | 13 | ug/kg | NA | 5 2 | 27200000 | 272000 |
| CF38-021 | Bis(2-ethylhexyl)phthalate | Subsurface Soil | 160 | ug/kg | NA | 77 | 311000000 | 3110000 |
| CF38-021 | Naphthalene | Subsurface Soil | 5 3 | ug/kg | NA | 0 97 | 10100000 | 101000 |
| CF38-024 | Benzo(a)anthracene | Subsurface Soil | 50 | ug/kg | NA | 46 | 160000 | 1600 |
| CF38-024 | Bis(2-ethylhexyl)phthalate | Subsurface Soil | 1900 | ug/kg | NA | 77 | 311000000 | 3110000 |
| CF38-024 | Carbon Disulfide | Subsurface Soil | 780 | ug/kg | NA | 1 3 | 988000 | 9880 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| CF38-024 | Ethylbenzene | Subsurface Soil | 1200 | ug/kg | NA | 930 | 932000 | 9320 |
| CF38-024 | Naphthalene | Subsurface Soil | 6300 | ug/kg | NA | 59 | 10100000 | 101000 |
| CF38-024 | Naphthalene | Subsurface Soil | 12000 | ug/kg | NA | 59 | 10100000 | 101000 |
| CF38-024 | Pyrene | Subsurface Soil | 57 | ug/kg | NA | 45 | 397000000 | 3970000 |
| CF38-024 | Total Xylenes | Subsurface Soil | 7900 | ug/kg | NA | 36 | 9740000 | 97400 |
| CF38-025 | Methylene Chloride | Subsurface Soil | 5 7 | ug/kg | NA | 0 88 | 578 | 5 78 |
| CF38-027 | Methylene Chloride | Subsurface Soil | 1 4 | ug/kg | NA | 0 92 | 578 | 5 78 |
| CF39-001 | Strontium | Surface Soil | 94 6 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF39-001 | Barium | Surface Soil | 166 | mg/kg | 141 26 | 0 043 | 133000 | 133000 |
| CF39-001 | Barium | Subsurface Soil | 800 | mg/kg | 289 38 | 0 042 | 133000 | 133000 |
| CF39-003 | Barium | Surface Soil | 147 | mg/kg | 141 26 | 0 043 | 133000 | 133000 |
| CF39-003 | Strontium | Surface Soil | 78 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF39-003 | Chromium | Subsurface Soil | 91 8 | mg/kg | 68 27 | 0 059 | 44300 | 4410 |
| CF39-004 | Methylene Chloride | Subsurface Soil | 0 91 | ug/kg | NA | 0 8 | 578 | 5 78 |
| CF39-004 | Acetone | Subsurface Soil | 9 3 | ug/kg | NA | 4 6 | 27200000 | 272000 |
| CF39-006 | Vanadium | Surface Soil | 53 8 | mg/kg | 45 59 | 0 27 | 13400 | 13400 |
| CF39-006 | Strontium | Surface Soil | 64 8 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF39-006 | Pyrene | Subsurface Soil | 64 | ug/kg | NA | 43 | 397000000 | 3970000 |
| CF39-006 | Methylene Chloride | Subsurface Soil | 1 3 | ug/kg | NA | 0 9 | 578 | 5 78 |
| CF39-007 | Methylene Chloride | Subsurface Soil | 1 1 | ug/kg | NA | 0 8 | 578 | 5 78 |
| CF39-007 | Acetone | Subsurface Soil | 5 5 | ug/kg | NA | 4 6 | 27200000 | 272000 |
| CF39-007 | Strontium | Surface Soil | 66 9 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF39-008 | Zinc | Surface Soil | 91 4 | mg/kg | 73 76 | 0 22 | 576000 | 576000 |
| CF39-008 | Methylene Chloride | Subsurface Soil | 1 5 | ug/kg | NA | 0 94 | 578 | 5 78 |
| CF39-009 | Methylene Chloride | Subsurface Soil | 0 82 | ug/kg | NA | 0 8 | 578 | 5 78 |
| CF39-009 | Strontium | Surface Soil | 86 6 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF39-002 | Aluminum | | 23000 | mg/kg | 16902 | 11 | 1000000 | 1000000 |
| CF39-002 | Lithium | | 18 | mg/kg | 11 55 | 5 7 | 38400 | 38400 |
| CF39-002 | Magnesium | | 4000 | mg/kg | 2849 3 | 23 | | |
| CF39-002 | Nickel | | 19 | mg/kg | 14 91 | 4 6 | 38400 | 38400 |
| CF39-002 | Potassium | | 4100 | mg/kg | 2967 2 | 340 | | |
| CF39-002 | Chromium | | 19 | mg/kg | 16 99 | 0 57 | 44300 | 4410 |
| CF39-002 | Cobalt | | 15 | mg/kg | 10 91 | 1 1 | 115000 | 115000 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| CF39-002 | Copper | | 35 | mg/kg | 18 06 | 2 3 | 71100 | 71100 |
| CF39-002 | Calcium | | 14000 | mg/kg | 4467 | 23 | | |
| CF39-002 | 2,4,6-Tribromophenol | | 3500 | ug/kg | | 0 | | |
| CF39-002 | Xylenes, Total | | 25 6847 | ug/kg | | 12 | 9740000 | 97400000 |
| CF39-002 | U-235 | | 0 22 | pCi/g | 0 12 | 1 | 113 | 24 |
| CF39-002 | 1,2-Dichloroethane-D4 | | 55 6767 | ug/kg | | 0 | | |
| CF39-002 | Terphenyl-D14 | | 2800 | ug/kg | | 0 | | |
| CF39-002 | Toluene-D8 | | 56 90037 | ug/kg | | 0 | | |
| CF39-002 | Chlorobenzene-D5 | | 61 18319 | ug/kg | | 0 | | |
| CF39-002 | 2-Fluorobiphenyl | | 2400 | ug/kg | | 0 | | |
| CF39-002 | 2-Fluorophenol | | 4100 | ug/kg | | 0 | | |
| CF39-002 | 1,4-Dichlorobenzene-D4 | | 61 18319 | ug/kg | | 0 | | |
| CF39-002 | Nitrobenzene-D5 | | 2800 | ug/kg | | 0 | | |
| CF39-002 | Phenol-D5 | | 4100 | ug/kg | | 0 | | |
| CF39-002 | 4-Bromofluorobenzene | | 55 9092 | ug/kg | | 0 | | |
| CF39-002 | Fluorobenzene | | 61 18319 | ug/kg | | 0 | | |
| CF39-002 | Calcium | | 64000 | mg/kg | 39382 27 | 25 | | |
| CE39-004 | Lithium | | 14 | mg/kg | 11 55 | 6 4 | 38400 | 38400 |
| CE39-004 | Magnesium | | 4800 | mg/kg | 2849 3 | 25 | | |
| CE39-004 | Strontium | | 140 | mg/kg | 48 94 | 1 3 | 1000000 | 1000000 |
| CE39-004 | Calcium | | 130000 | mg/kg | 4467 | 25 | | |
| CE39-004 | 2,4,6-Tribromophenol | | 3700 | ug/kg | | 0 | | |
| CE39-004 | U-235 | | 0 35 | pCi/g- | 0 12 | 1 | 113 | 24 |
| CE39-004 | 1,2-Dichloroethane-D4 | | 60 55534 | ug/kg | | 0 | | |
| CE39-004 | Terphenyl-D14 | | 3000 | ug/kg | | 0 | | |
| CE39-004 | Toluene-D8 | | 62 1414 | ug/kg | | 0 | | |
| CE39-004 | Chlorobenzene-D5 | | 61 95554 | ug/kg | | 0 | | |
| CE39-004 | 2-Fluorobiphenyl | | 2800 | ug/kg | | 0 | | |
| CE39-004 | 2-Fluorophenol | | 4400 | ug/kg | | 0 | | |
| CE39-004 | 1,4-Dichlorobenzene-D4 | | 61 95554 | ug/kg | | 0 | | |
| CE39-004 | Nitrobenzene-D5 | | 3100 | ug/kg | | 0 | | |
| CE39-004 | Phenol-D5 | | 4400 | ug/kg | | 0 | | |
| CE39-004 | 4-Bromofluorobenzene | | 63 16986 | ug/kg | | 0 | | |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| CE39-004 | Fluorobenzene | | 61 95554 | ug/kg | | 0 | | |
| CE39-004 | Calcium | | 120000 | mg/kg | 39382 27 | 25 | | |
| CF39-005 | 2,4,6-Tribromophenol | | 2900 | ug/kg | | 0 | | |
| CF39-005 | Xylenes, Total | | 14 55005 | ug/kg | | 13 | 9740000 | 97400000 |
| CF39-005 | 1,2-Dichloroethane-D4 | | 67 53771 | ug/kg | | 0 | | |
| CF39-005 | Terphenyl-D14 | | 2400 | ug/kg | | 0 | | |
| CF39-005 | Toluene-D8 | | 71 86161 | ug/kg | | 0 | | |
| CF39-005 | Chlorobenzene-D5 | | 66 31747 | ug/kg | | 0 | | |
| CF39-005 | 2-Fluorobiphenyl | | 2100 | ug/kg | | 0 | | |
| CF39-005 | 2-Fluorophenol | | 3700 | ug/kg | | 0 | | |
| CF39-005 | 1,4-Dichlorobenzene-D4 | | 66 31747 | ug/kg | | 0 | | |
| CF39-005 | Nitrobenzene-D5 | | 2400 | ug/kg | | 0 | | |
| CF39-005 | Phenol-D5 | | 3600 | ug/kg | | 0 | | |
| CF39-005 | 4-Bromofluorobenzene | | 78 41377 | ug/kg | | 0 | | |
| CF39-005 | Fluorobenzene | | 66 31747 | ug/kg | | 0 | | |
| CF39-005 | Calcium | | 140000 | mg/kg | 39382 27 | 26 | | |
| CF39-010 | Aluminum | | 18000 | mg/kg | 16902 | 12 | 1000000 | 1000000 |
| CF39-010 | Lithium | | 14 | mg/kg | 11 55 | 5 8 | 38400 | 38400 |
| CF39-010 | Potassium | | 3200 | mg/kg | 2967 2 | 350 | | |
| CF39-010 | Chromium | | 20 | mg/kg | 16 99 | 0 58 | 44300 | 4410 |
| CF39-010 | Cobalt | | 12 | mg/kg | 10 91 | 1 2 | 115000 | 115000 |
| CF39-010 | Copper | | 30 | mg/kg | 18 06 | 2 3 | 71100 | 71100 |
| CF39-010 | Calcium | | 6600 | mg/kg | 4467 | 23 | | |
| CF39-011 | Pyrene | Subsurface Soil | 92 | ug/kg | NA | 46 | 397000000 | 3970000 |
| CF39-011 | Methylene Chloride | Subsurface Soil | 1 5 | ug/kg | NA | 0 9 | 578 | 5 78 |
| CF39-012 | Methylene Chloride | Subsurface Soil | 0 96 | ug/kg | NA | 0 8 | 578 | 5 78 |
| CF39-013 | Benzo(a)anthracene | Subsurface Soil | 72 | ug/kg | NA | 46 | 160000 | 1600 |
| CF39-013 | Chrysene | Subsurface Soil | 98 | ug/kg | NA | 62 | 16000000 | 160000 |
| CF39-013 | Strontium | Surface Soil | 79 3 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |
| CF39-013 | Pyrene | Subsurface Soil | 230 | ug/kg | NA | 47 | 397000000 | 3970000 |
| CF39-013 | Fluoranthene | Subsurface Soil | 200 | ug/kg | NA | 99 | 537000000 | 5370000 |
| CF39-013 | Methylene Chloride | Subsurface Soil | 2 1 | ug/kg | NA | 1 | 578 | 5 78 |
| CF39-013 | Strontium | Subsurface Soil | 214 | mg/kg | 48 94 | 400 | 1000000 | 1000000 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| SED01695 | Benzo(a)pyrene | Surface Soil | 34 | ug/kg | NA | 350 | 61400 | 614 |
| SED40196 | Americium-241 | Surface Soil | 1 269 | pci/g | 0 0227 | 0 023 | 215 | 38 |
| SED40196 | Plutonium-239/240 | Surface Soil | 6 602 | pci/g | 0 066 | 0 005 | 1429 | 252 |
| SED40296 | Americium-241 | Surface Soil | 1 833 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SED40296 | Plutonium-239/240 | Surface Soil | 5 717 | pci/g | 0 066 | 0 014 | 1429 | 252 |
| SED40396 | Americium-241 | Surface Soil | 1 453 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SED40396 | Americium-241 | Surface Soil | 1 85 | pci/g | 0 0227 | 0 013 | 215 | 38 |
| SED40396 | Plutonium-239/240 | Surface Soil | 5 523 | pci/g | 0 066 | 0 019 | 1429 | 252 |
| SED40396 | Plutonium-239/240 | Surface Soil | 5 672 | pci/g | 0 066 | 0 005 | 1429 | 252 |
| SS462094 | Plutonium-239/240 | Surface Soil | 0 1 | pci/g | 0 066 | 0 006 | 1429 | 252 |
| SS462294 | Americium-241 | Surface Soil | 0 024 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS462294 | Plutonium-239/240 | Surface Soil | 0 082 | pci/g | 0 066 | 0 003 | 1429 | 252 |
| SS462394 | Americium-241 | Surface Soil | 0 038 | pci/g | 0 0227 | 0 009 | 215 | 38 |
| SS462394 | Plutonium-239/240 | Surface Soil | 0 12 | pci/g | 0 066 | 0 005 | 1429 | 252 |
| SS462494 | Americium-241 | Surface Soil | 0 045 | pci/g | 0 0227 | 0 02 | 215 | 38 |
| SS462494 | Plutonium-239/240 | Surface Soil | 0 11 | pci/g | 0 066 | 0 003 | 1429 | 252 |
| SS462594 | Americium-241 | Surface Soil | 0 048 | pci/g | 0 0227 | 0 02 | 215 | 38 |
| SS462594 | Plutonium-239/240 | Surface Soil | 0 13 | pci/g | 0 066 | 0 003 | 1429 | 252 |
| SS462694 | Americium-241 | Surface Soil | 0 042 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS462694 | Plutonium-239/240 | Surface Soil | 0 069 | pci/g | 0 066 | 0 005 | 1429 | 252 |
| SS462794 | Americium-241 | Surface Soil | 0 024 | pci/g | 0 0227 | 0 007 | 215 | 38 |
| SS462794 | Plutonium-239/240 | Surface Soil | 0 12 | pci/g | 0 066 | 0 003 | 1429 | 252 |
| SS462894 | Americium-241 | Surface Soil | 0 058 | pci/g | 0 0227 | 0 02 | 215 | 38 |
| SS462894 | Plutonium-239/240 | Surface Soil | 0 12 | pci/g | 0 066 | 0 006 | 1429 | 252 |
| SS463094 | Plutonium-239/240 | Surface Soil | 0 098 | pci/g | 0 066 | 0 007 | 1429 | 252 |
| SS463194 | Plutonium-239/240 | Surface Soil | 0 1 | pci/g | 0 066 | 0 01 | 1429 | 252 |
| SS463294 | Americium-241 | Surface Soil | 0 024 | pci/g | 0 0227 | 0 007 | 215 | 38 |
| SS463394 | Uranium-235 | Surface Soil | 0 18 | pci/g | 0 0939 | 0 07 | 135 | 24 |
| SS463394 | Uranium-238 | Surface Soil | 4 7 | pci/g | 2 | 0 07 | 586 | 103 |
| SS463494 | Uranium-235 | Surface Soil | 0 14 | pci/g | 0 0939 | 0 07 | 135 | 24 |
| SS463494 | Uranium-238 | Surface Soil | 5 1 | pci/g | 2 | 0 07 | 586 | 103 |
| SS463694 | Americium-241 | Surface Soil | 0 047 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS463694 | Plutonium-239/240 | Surface Soil | 0 17 | pci/g | 0 066 | 0 005 | 1429 | 252 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| SS463794 | Uranium-235 | Surface Soil | 0 21 | pci/g | 0 0939 | 0 07 | 135 | 24 |
| SS463794 | Americium-241 | Surface Soil | 0 09 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS463794 | Uranium-238 | Surface Soil | 11 | pci/g | 2 | 0 08 | 586 | 103 |
| SS463794 | Plutonium-239/240 | Surface Soil | 0 4 | pci/g | 0 066 | 0 004 | 1429 | 252 |
| SS463894 | Uranium-235 | Surface Soil | 0 4 | pci/g | 0 0939 | 0 03 | 135 | 24 |
| SS463894 | Americium-241 | Surface Soil | 0 11 | pci/g | 0 0227 | 0 002 | 215 | 38 |
| SS463894 | Uranium-238 | Surface Soil | 14 | pci/g | 2 | 0 06 | 586 | 103 |
| SS463894 | Plutonium-239/240 | Surface Soil | 0 32 | pci/g | 0 066 | 0 007 | 1429 | 252 |
| SS464194 | Americium-241 | Surface Soil | 0 082 | pci/g | 0 0227 | 0 007 | 215 | 38 |
| SS464194 | Plutonium-239/240 | Surface Soil | 0 31 | pci/g | 0 066 | 0 005 | 1429 | 252 |
| SS464294 | Uranium-235 | Surface Soil | 0 18 | pci/g | 0 0939 | 0 07 | 135 | 24 |
| SS464294 | Americium-241 | Surface Soil | 0 29 | pci/g | 0 0227 | 0 005 | 215 | 38 |
| SS464294 | Uranium-238 | Surface Soil | 3 6 | pci/g | 2 | 0 07 | 586 | 103 |
| SS464294 | Plutonium-239/240 | Surface Soil | 1 1 | pci/g | 0 066 | 0 005 | 1429 | 252 |
| SS464594 | Uranium-235 | Surface Soil | 0 12 | pci/g | 0 0939 | 0 03 | 135 | 24 |
| SS464594 | Uranium-235 | Surface Soil | 0 16 | pci/g | 0 0939 | 0 03 | 135 | 24 |
| SS464594 | Americium-241 | Surface Soil | 0 052 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS464594 | Americium-241 | Surface Soil | 0 081 | pci/g | 0 0227 | 0 006 | 215 | 38 |
| SS464594 | Uranium-238 | Surface Soil | 3 2 | pci/g | 2 | 0 04 | 586 | 103 |
| SS464594 | Plutonium-239/240 | Surface Soil | 0 22 | pci/g | 0 066 | 0 009 | 1429 | 252 |
| SS464694 | Americium-241 | Surface Soil | 0 027 | pci/g | 0 0227 | 0 008 | 215 | 38 |
| SS464694 | Americium-241 | Surface Soil | 0 046 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS464694 | Plutonium-239/240 | Surface Soil | 0 12 | pci/g | 0 066 | 0 006 | 1429 | 252 |
| SS464894 | Plutonium-239/240 | Surface Soil | 0 067 | pci/g | 0 066 | 0 01 | 1429 | 252 |
| SS465194 | Plutonium-239/240 | Surface Soil | 0 089 | pci/g | 0 066 | 0 004 | 1429 | 252 |
| SS465194 | Plutonium-239/240 | Surface Soil | 0 089 | pci/g | 0 066 | 0 01 | 1429 | 252 |
| SS465294 | Americium-241 | Surface Soil | 0 16 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS465294 | Plutonium-239/240 | Surface Soil | 0 75 | pci/g | 0 066 | 0 006 | 1429 | 252 |
| SS465394 | Americium-241 | Surface Soil | 0 084 | pci/g | 0 0227 | 0 01 | 215 | 38 |
| SS465394 | Plutonium-239/240 | Surface Soil | 0 4 | pci/g | 0 066 | 0 004 | 1429 | 252 |
| SS465794 | Americium-241 | Surface Soil | 0 04 | pci/g | 0 0227 | 0 007 | 215 | 38 |
| SS465794 | Plutonium-239/240 | Surface Soil | 0 17 | pci/g | 0 066 | 0 01 | 1429 | 252 |
| SS465994 | Americium-241 | Surface Soil | 0 24 | pci/g | 0 0227 | 0 01 | 215 | 38 |



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**Table 7**
**Residual Contamination at IHSS Group 800-6**

| Location | Analyte | Media | Concentration | Units | Background | Detection | Tier I AL | Tier II AL |
|---|---|---|---|---|---|---|---|---|
| SS465994 | Plutonium-239/240 | Surface Soil | 1 4 | pci/g | 0 066 | 0 004 | 1429 | 252 |
| SS466094 | Americium-241 | Surface Soil | 0 36 | pci/g | 0 0227 | 0 009 | 215 | 38 |
| SS466094 | Plutonium-239/240 | Surface Soil | 2 2 | pci/g | 0 066 | 0 006 | 1429 | 252 |
| SS466294 | Americium-241 | Surface Soil | 0 034 | pci/g | 0 0227 | 0 02 | 215 | 38 |
| SS466294 | Plutonium-239/240 | Surface Soil | 0 13 | pci/g | 0 066 | 0 009 | 1429 | 252 |
| SS466594 | Plutonium-239/240 | Surface Soil | 0 13 | pci/g | 0 066 | 0 005 | 1429 | 252 |



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**Table 8**
**Sum of Ratios for Surface Soils Based on Pre-Accelerated Action and Accelerated Action Analytical Results**

| Location | Tier II SOR Radionuclides | Tier II SOR Non-Radionuclides |
|---|---|---|
| CE38-001 | N/A | 0 000 |
| CE39-001 | N/A | 0 018 |
| CE39-002 | N/A | 0 028 |
| CE39-003 | N/A | 0 000 |
| CE39-004 | N/A | 0 015 |
| CF38-001 | N/A | 0 000 |
| CF38-002 | N/A | 0 000 |
| CF38-003 | N/A | 0 000 |
| CF38-005 | N/A | 0 053 |
| CF38-006 | N/A | 0 069 |
| CF38-007 | N/A | 0 050 |
| CF38-008 | N/A | 0 012 |
| CF39-001 | N/A | 0 001 |
| CF39-002 | N/A | 0 038 |
| CF39-003 | N/A | 0 001 |
| CF39-006 | N/A | 0 004 |
| CF39-007 | N/A | 0 000 |
| CF39-008 | N/A | 0 000 |
| CF39-009 | N/A | 0 000 |
| CF39-010 | N/A | 0 023 |
| CF39-011 | N/A | 0 000 |
| CF39-012 | N/A | 0 000 |
| CF39-013 | N/A | 0 000 |
| 42992 | N/A | 0 000 |
| SED01695 | N/A | 0 065 |
| SED40196 | 0 060 | N/A |
| SED40296 | 0 071 | N/A |
| SED40396 | 0 131 | N/A |
| SS462094 | 0 000 | N/A |
| SS462294 | 0 001 | N/A |
| SS462394 | 0 001 | N/A |
| SS462494 | 0 002 | N/A |
| SS462594 | 0 002 | N/A |
| SS462694 | 0 001 | N/A |
| SS462794 | 0 001 | N/A |
| SS462894 | 0 002 | N/A |
| SS463094 | 0 000 | N/A |
| SS463194 | 0 000 | N/A |
| SS463294 | 0 001 | N/A |
| SS463394 | 0 053 | N/A |
| SS463494 | 0 055 | N/A |



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**Table 8**
**Sum of Ratios for Surface Soils Based on Pre-Accelerated Action and Accelerated Action Analytical Results**

| Location | Tier II SQR Radionuclides | Tier II SQR Non-Radionuclides |
|---|---|---|
| SS463694 | 0 002 | N/A |
| SS463794 | 0 120 | N/A |
| SS463894 | 0 157 | N/A |
| SS464194 | 0 003 | N/A |
| SS464294 | 0 054 | N/A |
| SS464594 | 0 047 | N/A |
| SS464694 | 0 002 | N/A |
| SS464894 | 0 000 | N/A |
| SS465194 | 0 001 | N/A |
| SS465294 | 0 007 | N/A |
| SS465394 | 0 004 | N/A |
| SS465794 | 0 002 | N/A |
| SS465994 | 0 012 | N/A |
| SS466094 | 0 018 | N/A |
| SS466294 | 0 001 | N/A |
| SS466594 | 0 001 | N/A |



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**Table 9**
**Sum of Ratios for Subsurface Soils Based on**
**Pre-Accelerated Action and Accelerated Action Analytical Results**

| Location | Begin Depth | End Depth | Tier II SOR Radionuclides | Tier II SOR Non-Radionuclides |
|---|---|---|---|---|
| CE38-002 | 0 5 | 2 5 | N/A | 0 274 |
| CE39-001 | 0 5 | 2 5 | N/A | 0 156 |
| CE39-002 | 0 5 | 2 5 | N/A | 0 000 |
| CE39-003 | 0 5 | 2 5 | N/A | 0 000 |
| CF38-001 | 0 5 | 2 5 | N/A | 0 208 |
| CF38-003 | 0 5 | 2 5 | N/A | 0 001 |
| CF38-005 | 0 5 | 2 5 | N/A | 0 079 |
| CF38-006 | 0 5 | 2 5 | N/A | 0 191 |
| CF38-007 | 0 5 | 2 5 | N/A | 0 090 |
| CF38-008 | 0 5 | 2 5 | N/A | 0 058 |
| CF38-010 | 5 | 5 | N/A | 0 000 |
| CF38-011 | 7 33 | 7 33 | N/A | 0 086 |
| CF38-014 | 7 17 | 7 17 | N/A | 0 000 |
| CF38-015 | 3 | 5 | N/A | 0 002 |
| CF38-019 | 6 7 | 6 7 | N/A | 0 265 |
| CF38-020 | 6 7 | 6 7 | N/A | 0 010 |
| CF38-021 | 3 | 5 | N/A | 0 037 |
| CF38-024 | 10 5 | 12 5 | N/A | 0 502 |
| CF38-025 | 5 | 5 | N/A | 0 986 |
| CF38-027 | 4 5 | 5 | N/A | 0 242 |
| CF39-001 | 0 5 | 2 5 | N/A | 0 006 |
| CF39-004 | 0 5 | 2 5 | N/A | 0 157 |
| CF39-005 | 0 5 | 2 5 | N/A | 0 000 |
| CF39-006 | 0 5 | 2 5 | N/A | 0 225 |
| CF39-007 | 0 5 | 2 5 | N/A | 0 190 |
| CF39-008 | 0 5 | 2 5 | N/A | 0 260 |
| CF39-009 | 0 5 | 2 5 | N/A | 0 142 |
| CF39-011 | 0 5 | 2 5 | N/A | 0 260 |
| CF39-012 | 0 5 | 2 5 | N/A | 0 166 |
| CF39-013 | 0 5 | 2 5 | N/A | 0 409 |
| 42992 | 0 | 4 8 | 0 000 | N/A |
| 42992 | 0 75 | 1 | N/A | 0 075 |
| 42992 | 4 55 | 4 8 | N/A | 0 012 |
| 42992 | 9 45 | 9 7 | N/A | 0 615 |



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**Table 10**
**Waste Summary**

| Waste Package No. | Container Type | Final Volume (ft3) | Waste Type | Notes | IDC | MediaType |
|---|---|---|---|---|---|---|
| N/A | Bulk | 1080 6 | NON | Also contains rebar | N/A | Concrete |
| N/A | Bulk | 953 5 | NON | Also contains rebar | N/A | Concrete |
| not given | Bulk | 540 3 | NON | Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, wire metal and wood | N/A | Other - see note |
| 0041787 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, wire metal and wood | N/A | Other - see note |
| 00041789 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris including, concrete, wire metal and wood | N/A | Other - see note |
| 00041788 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, asphalt, and metal | N/A | Other - see note |
| 00041790 | Bulk | 406 1 | NON | Waste Package Number is bill of lading number Waste volume is based on one 15 cubic yard truckload Media consists of debris, including concrete, asphalt, and metal | N/A | Other - see note |
| 0004181 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, rebar and metal pipe | N/A | Other - see note |
| 00041805 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, rebar and metal pipe | N/A | Other - see note |
| N/A | Bulk | 1080 6 | NON | Waste volume is based on two 20 cubic yard truckloads Media consists of debris, including concrete, rebar and foam | N/A | Other - see note |
| N/A | Bulk | 946 4 | NON | Waste volume is based on one 15 cubic yard truckload and one 20 cubic yard truckload Media consists of debris, including concrete, rebar and pipe | N/A | Other - see note |



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**Table 10**
**Waste Summary**

| Waste Package No | Container Type | Final Volume (ft3) | Waste Type | Notes | IDC | MediaType |
|---|---|---|---|---|---|---|
| N/A | Bulk | 1620 9 | NON | Waste volume is based on three 20 cubic yard truckloads Media consists of debris, including concrete, rebar and metal pipe | N/A | Other - see note |
| N/A | Bulk | 1539 7 | NON | Waste volume is based on two 20 cubic yard truckloads and one 17 cubic yard truckload Media consists of debris, including concrete and asphalt | N/A | Other - see note |
| N/A | Bulk | 540 3 | NON | Waste volume is based on one 20 cubic yard truckload | N/A | Concrete |
| N/A | Bulk | 406 1 | NON | Waste volume is based on one 15 cubic yard truckload | N/A | Concrete |
| N/A | Bulk | 1080 6 | NON | Waste volume is based on two 20 cubic yard truckloads | N/A | Concrete |
| | Bulk | 1080 6 | NON | Waste volume is based on two 20 cubic yard truckloads Media consists of debris, including concrete, pipe and re-bar | N/A | Other - see note |
| N/A | Bulk | 540 3 | NON | Waste volume is based on one 20 cubic yard truckload | N/A | Concrete |
| 00041811 | Bulk | 0 0 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload | N/A | Concrete |
| 00041831 | Bulk | 399 1 | NON | Waste Package Number is bill of lading number Waste volume is based on one 15 cubic yard truckload | N/A | Concrete |
| 00041871 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, pipe and re-bar | N/A | Other - see note |
| 050178 | Bulk | 540 3 | NON | Waste Package Number is bill of lading number Waste volume is based on one 20 cubic yard truckload Media consists of debris, including concrete, pipe and re-bar | N/A | Other - see note |
| X29666 | CAR | 1189 0 | LLW | This is concrete and process waste pipe | 5001 | Other - see note |
| X29668 | CAR | 1189 0 | LLW | Transite Duct, asbestos contaminated low-level waste | 5001 | Other - see note |
| X29669 | CAR | 1200 7 | LLW | | 5001 | Other - see note |

NON – non-radioactive/non-hazardous
LLW – low level radioactive waste



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**Table 11**
**Waste Characterization Data Summary – Detected Analytes**

| Matrix Type | Analyte | Maximum | Number of Samples | Detection Frequency (%) | Units |
|---|---|---|---|---|---|
| Sediment from Transite Ducts* | Aluminum | 6120 | 1 | 100 | mg/kg |
| | Antimony | 10 8 | 1 | 100 | mg/kg |
| | Arsenic | 4 7 | 1 | 100 | mg/kg |
| | Barium | 451 | 1 | 100 | mg/kg |
| | Beryllium | 393 | 1 | 100 | mg/kg |
| | Cadmium | 32 8 | 1 | 100 | mg/kg |
| | Chromium | 984 | 1 | 100 | mg/kg |
| | Cobalt | 32 3 | 1 | 100 | mg/kg |
| | Copper | 196 | 1 | 100 | mg/kg |
| | Iron | 46700 | 1 | 100 | mg/kg |
| | Lead | 422 | 1 | 100 | mg/kg |
| | Lithium | 9 6 | 1 | 100 | mg/kg |
| | Manganese | 784 | 1 | 100 | mg/kg |
| | Mercury | 0 6 | 1 | 100 | mg/kg |
| | Molybdenum | 53 | 1 | 100 | mg/kg |
| | Nickel | 1820 | 1 | 100 | mg/kg |
| | Selenium | 9 | 1 | 100 | mg/kg |
| | Silver | 416 | 1 | 100 | mg/kg |
| | Strontium | 428 | 1 | 100 | mg/kg |
| | Tin | 21 3 | 1 | 100 | mg/kg |
| | Vanadium | 31 7 | 1 | 100 | mg/kg |
| | Zinc | 1700 | 1 | 100 | mg/kg |
| | Am 241 | 16 | 1 | 100 | mg/kg |
| | Plutonium 239/240 | 19 5 | 1 | 100 | mg/kg |
| | Uranium 233/234 | 1400 | 1 | 100 | mg/kg |
| | Uranium 235 | 244 | 1 | 100 | mg/kg |
| | Uranium 238 | 8520 | 1 | 100 | mg/kg |
| Concrete | Aluminum | 6860 | 2 | 100 | mg/kg |
| | Antimony | 0 42 | 2 | 100 | mg/kg |
| | Arsenic | 4 6 | 2 | 100 | mg/kg |
| | Barium | 114 | 2 | 100 | mg/kg |
| | Beryllium | 0 26 | 2 | 100 | mg/kg |
| | Cadmium | 0 28 | 2 | 100 | mg/kg |
| | Chromium | 12 6 | 2 | 100 | mg/kg |
| | Cobalt | 2 8 | 2 | 100 | mg/kg |
| | Copper | 10 7 | 2 | 100 | mg/kg |
| | Iron | 8190 | 2 | 100 | mg/kg |
| | Lead | 4 4 | 2 | 100 | mg/kg |
| | Lithium | 10 4 | 2 | 100 | mg/kg |
| | Manganese | 145 | 2 | 100 | mg/kg |
| | Molybdenum | 2 7 | 2 | 100 | mg/kg |
| | Nickel | 11 1 | 2 | 100 | mg/kg |



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**Table 11**
**Waste Characterization Data Summary – Detected Analytes**

| Matrix Type | Analyte | Maximum | Number of Samples | Detection Frequency (%) | Units |
|---|---|---|---|---|---|
| | Strontium | 287 | 2 | 100 | mg/kg |
| | Tin | 2 6 | 2 | 100 | mg/kg |
| | Vanadium | 69 7 | 2 | 100 | mg/kg |
| | Zinc | 34 4 | 2 | 100 | mg/kg |
| | Uranium-235 | 0 217 | 2 | 100 | pCi/g |
| | Uranium-238 | 1 8 | 2 | 100 | pCi/g |
| Original Process Waste Line Water | Antimony | 40 | 1 | 100 | ug/l |
| | Barium | 88 | 1 | 100 | ug/l |
| | Beryllium | 4 5 | 1 | 100 | ug/l |
| | Cadmium | 0 46 | 1 | 100 | ug/l |
| | Chromium | 19 5 | 1 | 100 | ug/l |
| | Cobalt | 7 9 | 1 | 100 | ug/l |
| | Copper | 31 | 1 | 100 | ug/l |
| | Iron | 1350 | 1 | 100 | ug/l |
| | Lead | 5 6 | 1 | 100 | ug/l |
| | Lithium | 7600 | 1 | 100 | ug/l |
| | Manganese | 50 5 | 1 | 100 | ug/l |
| | Mercury | 0 13 | 1 | 100 | ug/l |
| | Molybdenum | 17500 | 1 | 100 | ug/l |
| | Nickel | 288 | 1 | 100 | ug/l |
| | Selenium | 47 5 | 1 | 100 | ug/l |
| | Strontium | 48 7 | 1 | 100 | ug/l |
| | Tin | 11 7 | 1 | 100 | ug/l |
| | Vanadium | 16 4 | 1 | 100 | ug/l |
| | Zinc | 117 | 1 | 100 | ug/l |
| Water From Transite Duct | Aluminum | 1080 | 2 | 100 | ug/l |
| | Antimony | 46 8 | 2 | 100 | ug/l |
| | Barium | 111 | 2 | 100 | ug/l |
| | Beryllium | 21 9 | 2 | 100 | ug/l |
| | Cadmium | 1 7 | 1 | 50 | ug/l |
| | Chromium | 40 | 2 | 100 | ug/l |
| | Cobalt | 18 5 | 2 | 100 | ug/l |
| | Cobalt | 2 7 | 2 | 100 | ug/l |
| | Copper | 64 1 | 2 | 100 | ug/l |
| | Iron | 6660 | 2 | 100 | ug/l |
| | Lead | 34 3 | 2 | 100 | ug/l |
| | Lithium | 7880 | 2 | 100 | ug/l |
| | Manganese | 126 | 2 | 100 | ug/l |
| | Mercury | 0 16 | 2 | 100 | ug/l |
| | Molybdenum | 18500 | 2 | 100 | ug/l |
| | Nickel | 279 | 2 | 100 | ug/l |
| | Selenium | 37 8 | 2 | 100 | ug/l |



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**Table 11**
**Waste Characterization Data Summary – Detected Analytes**

| Matrix Type | Analyte | Maximum | Number of Samples | Detection Frequency (%) | Units |
|---|---|---|---|---|---|
| | Silver | 3 2 | 1 | 50 | ug/l |
| | Strontium | 177 | 2 | 100 | ug/l |
| | Tin | 13 7 | 2 | 100 | ug/l |
| | Vanadium | 21 5 | 2 | 100 | ug/l |
| | Zinc | 1690 | 2 | 100 | ug/l |

*Even though results from the total metal analysis suggest that the sediment could be RCRA characteristic metal concentrations in sludge from process tanks were less than the RCRA characteristic limits (based on historical analysis using the toxicity characteristic leaching procedure)



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## 12.0 DATA QUALITY ASSESSMENT

The DQA is based on various criteria derived from EPA Guidance, particularly the DQO process and DOE quality requirements References are listed in Sections 12 9 and 13

### 12.1 DQO Decisions

Consistent with the original DQO decision rules of the project, SOR calculations were performed on sample results, by sample and across the AOC (refer to Tables 8 and 9) All SORs were below 1 relative to RFCA Tier I and Tier II ALs, hence no remediation within IA Group 800-6 is required Several organics (mostly SVOCs) were detected at "significant" levels (>10 times the reportable limit), but SORs were not calculated, because associated ALs are not published in RFCA Quality control evaluations performed on the IHSS Group 800-6 data are documented within the databases "PlanvsActuals2 mdb" and "IHSS-specificSets mdb"

### 12.2 Verification and Validation of Results

Verification ensures that data produced and used by the project are documented and traceable per quality requirements Validation consists of a technical review of data that directly support the project decisions, such that any limitations of the data relative to project goals are stated Verification and validation (V&V) criteria include

- Chain-of-Custody,
- Preservation and hold-times,
- Instrument Calibrations,
- Preparation Blanks,
- Interference Check Samples (metals),
- Matrix Spikes/Matrix Spike Duplicates,
- Laboratory Control Samples,
- Field Duplicate measurements,
- Chemical yield (radiochemistry),
- Required Quantitation Limits/Minimum Detectable Activities (sensitivity of chemical and radiochemical measurements, respectively), and,
- Sample Analysis and Preparation methods

Evaluation of V&V criteria ensures that precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) parameters are satisfactory (i e , within specified tolerances documented in the laboratory-specific contract scope of



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work) Satisfactory V&V of laboratory quality controls are indicated by a 10% (or greater) validation frequency of all results by method and matrix-type, and <10% rejection of those records validated

Validation results are summarized in Table 12 All data are useable except for R and R1 data, which indicate rejection of data All other data are useable with qualification except for V data, which are useable without qualification

Hardcopy records of the V&V results and individual (analytical) data packages are filed by RIN and are maintained by Kaiser-Hill Analytical Services Division (ASD), hardcopies will ultimately reside in the Federal Center (Lakewood, CO) Hardcopy records may also be viewed as Adobe® Acrobat (* pdf) files on the RFETS intranet under the ASD link

### 12.3 Precision

Precision of field sampling was adequate based on the repeatability of all (18) real/duplicate sample results to within concentrations below all respective RFCA Tier II ALs Laboratory precision is addressed in Section 12 2 and Table 12

### 12.4 Accuracy (and Bias)

*Maps*

Distance measurements recorded on maps are within ±1ft, based on the global positioning system technology in use (Trimble 4800 Series)

Methylene chloride results in real samples should be concluded as nondetects and should not be used in SOR calculations, as the real results do not exceed 10 times their associated lab blank concentrations [use of the "10-times" rule per Environmental Protection Agency (EPA) data validation guidance, EPA, 1996a]

Laboratory accuracy is addressed in Section 12 2 and Table 12

### 12.5 Representativeness

Samples acquired for the project are representative based on the types, number and location of samples acquired relative to the site-specific history Other criteria that corroborate representativeness include

- Implementation of industry-standard Chain-of-Custody protocols,
- Compliance with sample preservation and hold times, and
- Compliance with documented and Site-approved sampling plans (IASAP) and procedures, including SW-846 analytical methods (graphical comparisons can be made between the planning maps within the IASAP and SAP-Addenda vs actual maps published within this report)



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**Table 12**
**Group 800-6, Summary of Validated Records in the RFETS Soil-Water Database**

| | | Radionuclides | Radionuclides | Metals | | VOCs | SVOCs | Sulfides | pH | Anions |
|---|---|---|---|---|---|---|---|---|---|---|
| Validation Qualifier Code | Total Of CAS No | Gamma Spec | Alpha Spec | SW6010 | SW-846-Total | SW8260 | SW8270 | SW9030A | SW9040 | SW9056/E300 |
| Null | 835 | 96 | 5 | 182 | 8 | 481 | 63 | | | |
| I | 732 | | | 247 | | 191 | 290 | | 2 | 2 |
| J | 219 | | | 205 | | 14 | | | | |
| J1 | 533 | | | 500 | | 22 | 10 | 1 | | |
| U1 | 5 | | | | | 5 | | | | |
| V | 1947 | 45 | | 330 | | 841 | 731 | | | |
| V1 | 7029 | | | 1179 | | 3207 | 2637 | 2 | 2 | 2 |
| JB | 7 | | | | | 7 | | | | |
| JB1 | 1 | | | | | 1 | | | | |
| UJ | 237 | | | 53 | | 180 | 4 | | | |
| UJ1 | 671 | | | 113 | | 474 | 84 | | | |
| R | 1 | | | 1 | | | | | | |
| R1 | 2 | | | 2 | | | | | | |
| | | | | | | | | | | |
| Total | 12219 | 141 | 5 | 2812 | 8 | 5423 | 3819 | 3 | 4 | 4 |
| | | | | | | | | | | |
| % of data validated | 87% | 32% | 0% | 85% | 0% | 88% | 91% | 100% | 50% | 50% |
| % of data rejected | 0 03% | 0 00% | NA | 0 13% | NA | 0 00% | 0 00% | 0 00% | 0 00% | 0 00% |

Key
V, V1 = valid without qualification
U, U1 = non-detect
J, J1 = estimated (semi-quantitative) value
B = contaminant also found in associated lab blank
A = acceptable w/ qualification
UJ UJ1 = non-detect, detection limit is estimated
Null, I N, Y Z = not validated
R R1 = Rejected do not use



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## 12.6 Completeness

Sampling completeness is evaluated through the number and types of samples acquired relative to the project DQOs Specifically, were enough samples collected, and valid results produced, to make project decisions?

A summary of the V&V for all Electronic Data Deliverable records indicates that the minimum required percentages of validation, >10%, were achieved for all sample types and methods, with the exception of 5 alpha spec results However, site-wide, alpha spectroscopy has been validated at a frequency of 58% since April, 2001 (1475 alpha spectroscopy soil records), and of the percentage validated, less than 1% of the records were rejected Based on inference from site-wide validation results, the 5 alpha spectroscopy records of interest are considered usable

Use of EPA QA/G-4, log-normal, or non-parametric methods, such as the Sign Test in MARSSIM (EPA et al , 1997), would yield better than a 95% confidence that enough samples were acquired to conclude that each analyte is below its respective RFCA Tier I action level Assuming log-normality with use of a 95% confidence level and SOR values, the numbers of samples required per Gilbert (1987, Eq 13 23) are tabulated below

**Table 13**
**Numbers of Samples Taken Compared with Numbers of Samples Required**

| Sample Type | Actual No. of Samples | Number of Samples Required (Gilbert 1987) |
|---|---|---|
| Surface Soil Rad (0-6" depth) | 31 | 30 |
| Surface Soil NonRad (0-6 depth) | 22 | 18 |
| Subsurface Soil Rad (>6" depth) | 26 | 21 |
| Subsurface Soil NonRad (>6 depth) | 27 | 23 |

## 12.7 Comparability

All results presented are comparable with nation-wide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) data and DOE complex-wide environmental data This comparability is based on

- Use of standardized engineering units in the reporting of measurement results,
- Consistent sensitivities of measurements (generally ≤ ½ corresponding action levels),
- Use of site-approved procedures (e g , Contractual Statements of Work for laboratory analyses),
- Systematic quality controls, and
- Thorough documentation of the planning, sampling/analysis process, and data reduction into formats designed for making decisions (traceable to the project's original data quality objectives)



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## 12.8 Sensitivity

Adequate sensitivities, in units of ug/kg for organics, mg/kg for metals, and pCi/g for radionuclides were attained for all analytes, with exceptions noted below Some records (but not necessarily all records) with the analytes listed below have RLs above their associated RFCA Tier II Als (Table 14) "Adequate" sensitivity is defined as an RL less than the analyte's associated action level (typically <1/2 the action level)

**Table 14**
**Analytes with Reporting Limits Greater than RFCA Tier II ALs**

| CAS No. | Analyte Name |
|---|---|
| 51-28-5 | 2,4-DINITROPHENOL |
| 121-14-2 | 2,4-DINITROTOLUENE |
| 606-20-2 | 2,6-DINITROTOLUENE |
| 91-94-1 | 3,3'-DICHLOROBENZIDINE |
| 111-44-4 | BIS(2-CHLOROETHYL) ETHER |
| 10061-01-5 | CIS-1,3-DICHLOROPROPENE |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE |
| 98-95-3 | NITROBENZENE |
| 87-86-5 | PENTACHLOROPHENOL |
| 10061-02-6 | TRANS-1,3-DICHLOROPROPENE |

The following four analytes also had reporting limits greater than RFCA Tier I Als (Table 15)

**Table 15**
**Analytes with Reporting Limits Greater than RFCA Tier I ALs**

| CAS No. | Analyte Name |
|---|---|
| 121-14-2 | 2,4-DINITROTOLUENE |
| 606-20-2 | 2,6-DINITROTOLUENE |
| 111-44-4 | BIS(2-CHLOROETHYL) ETHER |
| 621-64-7 | N-NITROSO-DI-N-PROPYLAMINE |

## 12.9 K-H V&V Guidelines

*General Guidelines for Data Verification and Validation*, DA-GR01-v1, December 3, 1997

*V&V Guidelines for Isotopic Determinations by Alpha Spectrometry*, DA-RC01-v1, 2/13/98

*V&V Guidelines for Volatile Organics*, DA-SS01-v1, 12/3/97

*V&V Guidelines for Semivolatile Organics*, DA-SS02-v1, 12/3/97



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EPA 540/R-94/013 (1996b), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*

EPA 540/R-94/012 (1996a), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*

Lockheed-Martin, 1997, *Evaluation of Radiochemical Data Usability*, ES/ER/MS-5

### 12.10 Summary

DQOs were attained relative to sampling power (number and types of samples), confidence in decisions (>90%), and the various V&V criteria (especially the PARCCS parameters) Validation of laboratory quality control criteria remains in progress for the gamma spectroscopy results

## 13.0 REFERENCES

CDPHE, 2002, Environmental Restoration RFCA Standard Operating Protocol FY02 Notification #02-02 Approval Letter, March

DOE, 1999a, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, CO

DOE 1999b, DOE Order 414 1A Order 414 1A, Quality Assurance

DOE, 2000 *Rocky Flats Cleanup Agreement* (RFCA), Attachment 5, Rocky Flats Environmental Technology Site, Golden, CO, March

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, CO, June

DOE 2001b, Industrial Area Sampling and Analysis Plan Addendum #IA-02-01, Rocky Flats Environmental Technology Site, Golden, CO, November

DOE, 2001c, First Quarter RFCA Groundwater Monitoring Report for Calendar Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, August

DOE, 2001d, Fourth Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, May

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

DOE 2002b, Environmental Restoration RFCA Standard Operating Protocol Notification #02-02, Rocky Flats Environmental Technology Site, Golden, CO, February

EPA, 1994a, QA/G-4, Guidance for the Data Quality Objective Process



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EPA, 1998, QA/G-9, Guidance for the Data Quality Assessment Process, Practical Methods for Data Analysis U S EPA 540/R-94/013, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review

EPA et al, 1997, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), EPA 402-R-97-016, NUREG-1575

Gilbert, 1987, Statistical Methods for Environmental Pollution Monitoring, published by Van Nostrand Reinhold, New York, New York, 1987



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# Appendix A
# Project Photographs



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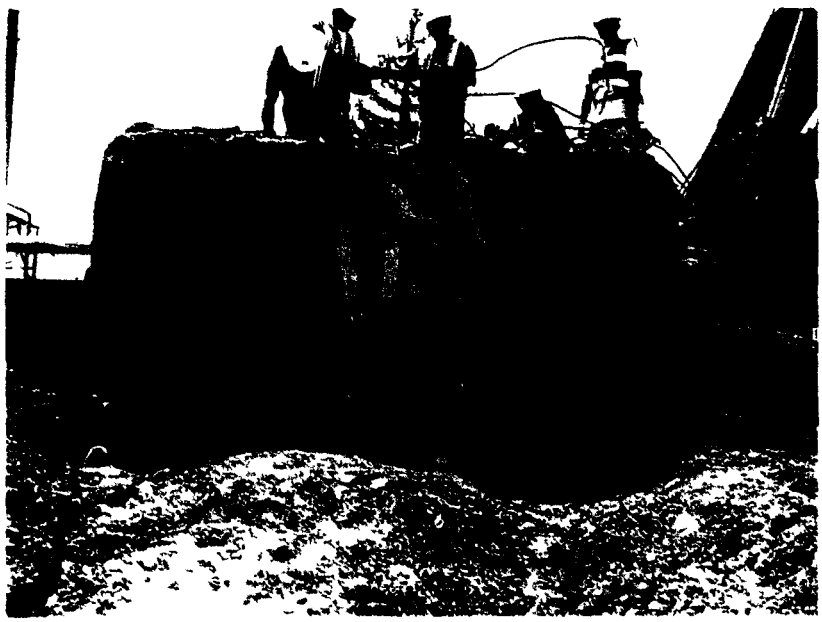
**Building 889 Slab Prior to Removal**

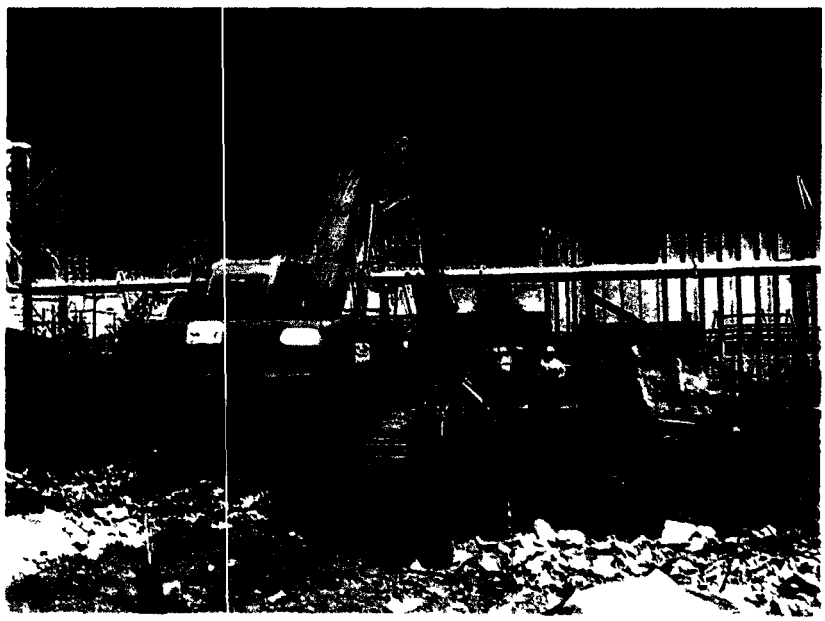
**Tank 40 Prior to Removal**

**Bottom Half Segment of Tank 40 During Removal**



**Tank 40 Removed**

**Transite Duct Foaming**



**Building 889 East Tank Removed and NPWL Exposed**

**Close up of Removed East Tank**

**Close up of NPWL Exposed Segment**

**NPWL Segment Excavated**

**Building 889 Janitor's Sink Removed**

86

**Overview of OPWL and Tank 28 Area**

**North and South Tank 28 Exposed**

87

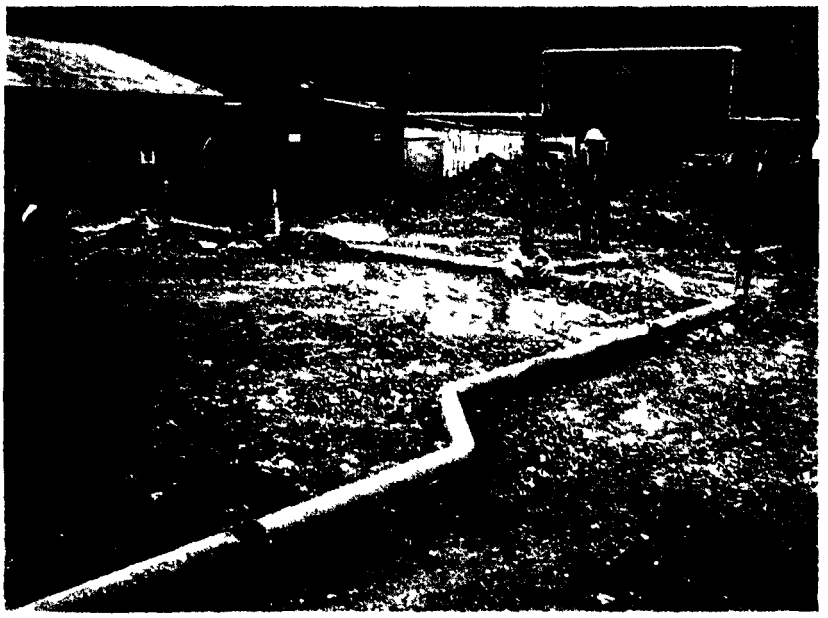
# NOTICE:

**"BEST AVAILABLE COPY"**

## PORTIONS OF THE FOLLOWING DOCUMENT ARE ILLEGIBLE

The Administrative Record Staff

**OPWL Exposed Near Tank 28**

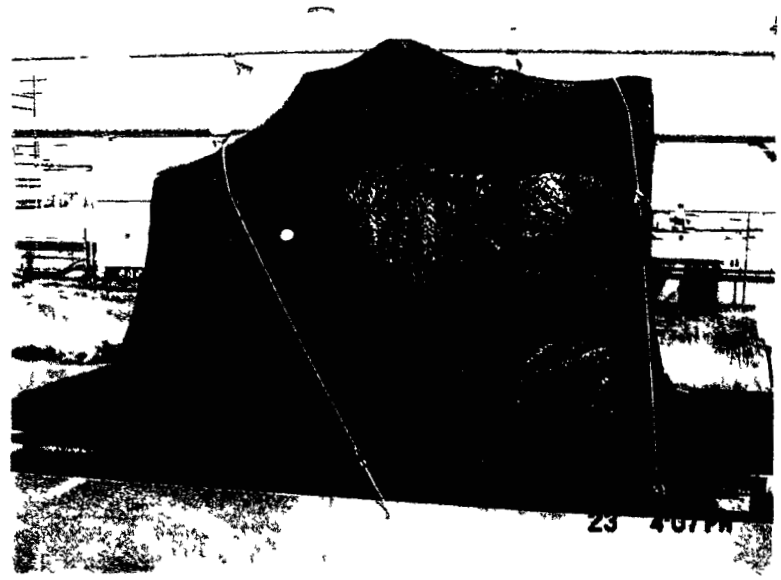


**OPWL Exposed**

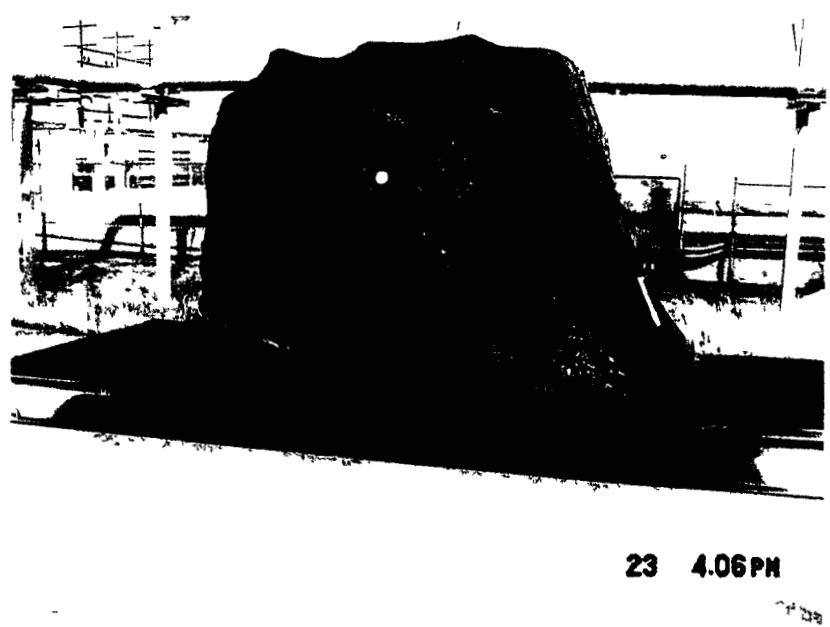
88

South Tank 28 Removed

North Tank 28 Ready for Removal

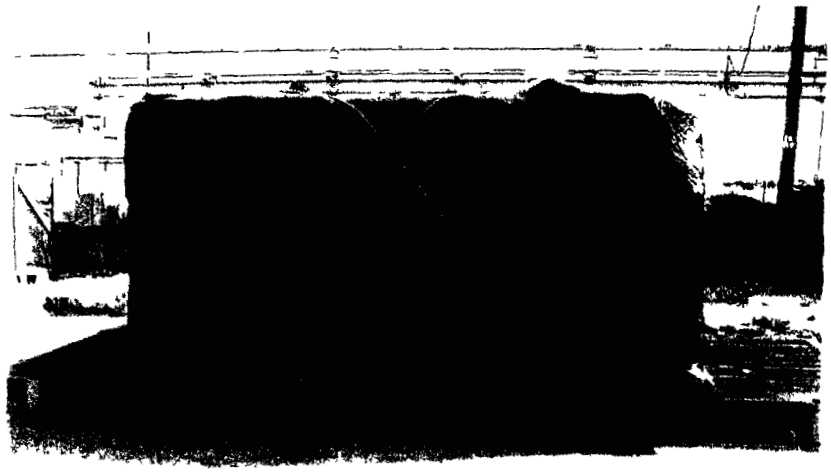


**Southth Tank 28 with Instacote**




**North Tank 28 with Instacote**

90



23 4 07 PM

**Tank 40 with Instacote**

91

# Appendix B
# Correspondence



92

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# REGULATORY CONTACT RECORD

---

**Date/Time:** February 21, 2002

**Site Contact(s).** Mike Bemski, Susan Serreze, Craig Cowdery
**Phone:** 303-966-4090, 303-966-2677, 303-966-2506

**Regulatory Contact:** Elizabeth Pottorff, Carl Spreng, and Dave Kruchek
**Phone** 303-692-3429, 303-692-3358, 303-692-3328

**Agency·** CDPHE

---

**Purpose of Contact:** Walk down of Building 889 and Notification #02-02 Discussion

---

**Discussion**
A meeting was held with Elizabeth Pottorff, Carl Spreng, and Dave Kruchek (CDPHE) to discuss the potential remediation at B889 Several issues were discussed including the following

- Characterization sampling intervals would include 0 0 to 2 5 feet and if contamination was found additional intervals would be sampled
- The potential location of a tank/sump at the eastern portion of the building
- The location of exhaust sumps

CDPHE agreed to the sampling strategy K-H agreed to further evaluate the potential sump location at the eastern portion of the building and add a biased sampling location in this area The IASAP Addendum #IA-02-01, which had already been approved, was not modified, however, these changes were made in the RADMS sampling plan

Required Distribution
C Spreng, CDPHE
D Kruchek, CDPHE
E Pottorff, CDPHE
G Kleeman, EPA
N Castaneda, RFFO
L Brooks, K-H
M Broussard, K-H
L Butler, K-H
A Primrose, K-H

L Norland, K-H
S Nesta, K-H
D Foss, CH2MH
S Serreze, Arcadia
C Cowdery, Washington Group
M Bemski, SSOC
D Reeder, Summit
ER Meeting Minutes Book
Administrative Record

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# REGULATORY CONTACT RECORD

**Date/Time:** April 5, 2002/ 1 00 pm
**Site Contact(s):** Lane Butler/Annette Primrose
**Phone:** 5245/4385

**Regulatory Contact:** Mark Sattelberg
**Phone:** 5413
**Agency:** US Fish and Wildlife

**Purpose of Contact:** Discussion of Topsoil requirements for ER and D&D Projects

**Discussion**

Mark Sattelberg and Lane Butler walked the B111 and B123 site Mark Sattelberg then discussed the topsoil requirements in effect at the Site with his restoration person at the Rocky Mountain Arsenal Based on that discussion, he recommends that the topsoil requirements for building demolition and environmental remediation projects consist of five to six inches of topsoil and mixing it into the underlying backfill with the ripper on a dozer or similar equipment For larger projects, such as the final site regrade and revegetation, the carbon/nitrogen content of the soils needs to be evaluated

Based on this and following discussions, the Site will use a nominal 5 inches of topsoil mixed with the underlying fill dirt to an approximate depth of 4 inches for the interim actions For the final Site revegetation, DOE/KH should develop a revegetation plan that spells out how soils will be amended and what seed mixtures will be planted The plan should take into account local topography, soil types, vegetation types, and moisture levels It should be planned out well in advance so that everyone knows what will happen once the response action is done

**Contact Record Prepared By:** Annette Primrose

| Required Distribution | | Additional Distribution |
|---|---|---|
| R DiSalvo, RFFO | G Scott, K-H | L Brooks |
| S MacLeod, RFFO | D Shelton, K-H | M Broussard |
| J Legare, RFFO | K North, K-H ESS | L Butler |
| N Newell, CDPHE | A Rosenman, K-H ESS | N Castaneda |
| S Gunderson, CDPHE | J Mead, K-H ESS | D Foss |
| T Rehder, USEPA | J Dischinger, RFCSS | F Gibbs |
| P Arnold, K-H 371 | D Johnson, K-H ESS | R Nininger |
| J Berardini, K-H MS | | L Norland |
| C Deck, K-H | | M Sattelberg |
| C Gilbreath, K-H 771 | | S Surovchak |
| T Hopkins, K-H 776 | | Administrative Record |
| S Nesta, K-H RISS | | ER Contact Record Book |

Contact Record 4/10/00
Rev 7/13/00



95

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# REGULATORY CONTACT RECORD

---

**Date/Time.** May 14, 2002

**Site Contact(s):** Mike Bemski
**Phone:** 303-966-4090

**Regulatory Contact:** Elizabeth Pottorff, Carl Spreng
**Phone:** 303-692-3429 303-692-3358

**Agency:** CDPHE

---

**Purpose of Contact:** Approval to backfill of excavations where foundation footers were removed at the 889 Project

---

**Discussion**
Foundation footers at the 889 Project extended into the soil to an approximate depth of four feet These footers are being removed entirely and following surveying by Radiological Operations and approval from Radiological Engineering, the footers are being shipped to the Front Range Landfill as sanitary waste Additionally, a visual inspection is made of both the concrete and the soil for indications of contamination

Approval was sought from CDPHE to backfill the excavations associated with the removal of the foundation Elizabeth Pottorff did a walkdown of the 889 Project and agreed to allow for return of the excavated soil as backfill if the soil passed the evaluation listed above After the 889 site is sufficiently cleared of equipment and concrete rubble, Geoprobe subsurface sampling will take place, and should any contamination be found, equipment will be onsite to remediate those soils

Additionally, this approval to use the excavated soil as backfill applies only to the areas at the 889 Project where contamination is unlikely A separate evaluation will be done on the portion of the subsurface where the sumps, ducts, and pipes are present

---

**Contact Record Prepared by: Michael Bemski**

---



96

Required Distribution
E Pottorff, CDPHE
C Spreng, CDPHE
G Kleeman, EPA
N Castaneda, RFFO
L Brooks, K-H
L Butler, K-H
A Primrose, K-H
S Serreze, Arcadia
C Madore, RMC
L Norland, K-H
ER Regulatory Contacts Book
Administrative Record

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# REGULATORY CONTACT RECORD

---

**Date/Time.** May 21, 2002

**Site Contact(s):** Mike Bemski
**Phone:** 303-966-4090

**Regulatory Contact:** Elizabeth Pottorff, Carl Spreng
**Phone:** 303-692-3429 303-692-3358

**Agency:** CDPHE

---

**Purpose of Contact:** Approval to backfill at the excavation site of Tank 40 at the 889 Project

---

**Discussion**
Tank 40 was a large concrete tank used to store process waste from B-889 The storage compartments at the base of Tank 40 were removed intact and there was no evidence of leakage from the tank When the tank was removed from the ground, a thin black film floating on the groundwater was noted Nearly all of the film was collected for sample and analysis showed the fluid to be diesel-like and diesel degradation products No radiological contamination was found Following the taking of the sample, no new black film was evident

A walkdown was held with Elizabeth Pottorff to discuss the occurrence of the black film and the potential backfill of the excavation site of Tank 40

The issues were discussed including the following

- What environmental impact did the occurrence of the black film present,
- What options merited consideration for further action, if any

From the discussion, the following was noted
Very little of the diesel-like material was present
Diesel would continue to naturally attenuate
There were no chlorinated hydrocarbons such as solvents
No health hazard was present due to whatever diesel remained



98

With the above information, the decision was made to proceed with the backfill of the Tank 40 excavation with the same soil that had been removed and that no further remediation would be attempted on the diesel

**Contact Record Prepared by· Michael Bemski**

Required Distribution
E Pottorff, CDPHE
C Spreng, CDPHE
G Kleeman, EPA
N Castaneda, RFFO
L Brooks, K-H
L Butler, K-H
A Primrose, K-H
S Serreze, Arcadia
C Madore, RMC
L Norland, K-H
ER Regulatory Contacts Book
Administrative Record

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# REGULATORY CONTACT RECORD

---

**Date/Time·** May 22, 2002

**Site Contact(s)** Michael Bemski
**Phone:** 303-966-4090

**Regulatory Contact.** Elizabeth Pottorff
**Phone:** 303-692-3429

**Agency:** CDPHE

---

**Purpose of Contact:** Discussion of uT

---

**Discussion**
Figure 15 of the ER RSOP is a flow diagram that illustrates the work planning process for implementing RSOP field activities As with all flow diagrams in the ER RSOP, Figure 15 is color coded to indicate activities where regulatory agency consultation is expected An error was made in color coding that resulted in an indication that the agencies would be involved in the Management Readiness Assessment The activity that should have been highlighted for agency participation is the Pre-Evolution Briefing

This error was discussed by telephone with Carl Spreng and Gary Kleemen and both agreed that it should be corrected They also agreed that since there were no text changes, the document could be modified simply by letter from DOE with a copy of the corrected flow diagram I agreed that we would prepare the corrected diagram for transmittal by DOE

---

**Contact Record Prepared By:** R Lee Norland

---

Required Distribution
L Butler
N Castaneda
S Nesta
L Norland
S Surovchak
ER Contact Record Book



100

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# ER REGULATORY CONTACT RECORD

| | |
|---|---|
| **Date/Time** | September 11, 2002/ 1345 |
| **Site Contact(s)**<br>**Phone** | Mike Bemski<br>303-966-4090 |
| **Regulatory Contact**<br>**Phone** | Elizabeth Pottorff<br>303-692-3429 |
| **Agency** | CDPHE |

**Purpose of Contact** Permission to backfill excavations at the 889 Project

**Discussion**

On June 27, all excavation of the underground utilities had been completed at the 889 Project In a discussion between Nick Demos and Elizabeth Pottorff, verbal approval was given by Elizabeth to backfill and compact the excavation The approval was given "at risk", that is, should analytical results from samples already collected indicate contamination that exceeds action levels, specific remediation would then be required All analytical results from sampling during the project have now been reviewed and no exceedance was noted

**Contact Record Prepared By** Michael Bemski

Required Distribution

S Bell, RFFO
L Brooks, K-H ESS
L Butler, K-H RISS
C Deck, K-H Legal
R DiSalvo, RFFO
S Gunderson, CDPHE
J Legare, RFFO
D Mayo, K-H RISS
J Mead, K-H ESS
S Nesta, K-H RISS
K North, K-H ESS
T Rehder, USEPA
D Shelton, K-H
C Spreng, CDPHE

Additional Distribution
(choose names as applicable)

M Broussard, K-H RISS
J Hindman, CDPHE
G Kleeman, USEPA
D Kruchek, CDPHE
L Norland, K-H RISS
A Primrose, K-H RISS
E Pottorff, CDPHE
S Tower, DOE

# ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
# ER REGULATORY CONTACT RECORD

| | |
|---|---|
| **Date/Time** | 09/19/02 10 28AM |
| **Site Contact(s)**<br>**Phone** | Michael Bemski<br>303-966-4090 |
| **Regulatory Contact**<br>**Phone** | David Kruchek<br>303-692-3328 |
| **Agency** | Colorado Department of Public Health and Environment |

**Purpose of Contact** Approval for Tank 28 spill soil put back

**Discussion**

Per our telephone discussion of 09/17/02, we will put back the soil that had been picked-up in association with the spill of water from the two Tanks-28 The location for the put-back will be at the same location where the soil was collected, near the tall stack north of Bldg 881 As discussed, the results from samples taken of the wet soil from the spill showed contaminants well below levels that would have required remediation

**Contact Record Prepared By** Michael Bemski

Required Distribution

S Bell, RFFO
L Brooks, K-H ESS
L Butler, K-H RISS
C Deck, K-H Legal
R DiSalvo, RFFO
S Gunderson, CDPHE
J Legare, RFFO
D Mayo, K-H RISS
J Mead, K-H ESS
S Nesta, K-H RISS
K North, K-H ESS
T Rehder, USEPA
D Shelton, K-H
C Spreng, CDPHE

Additional Distribution
(choose names as applicable)

M Broussard, K-H RISS
J Hindman, CDPHE
G Kleeman, USEPA
D Kruchek, CDPHE
L Norland, K-H RISS
A Primrose, K-H RISS
E Pottorff, CDPHE
S Tower, DOE

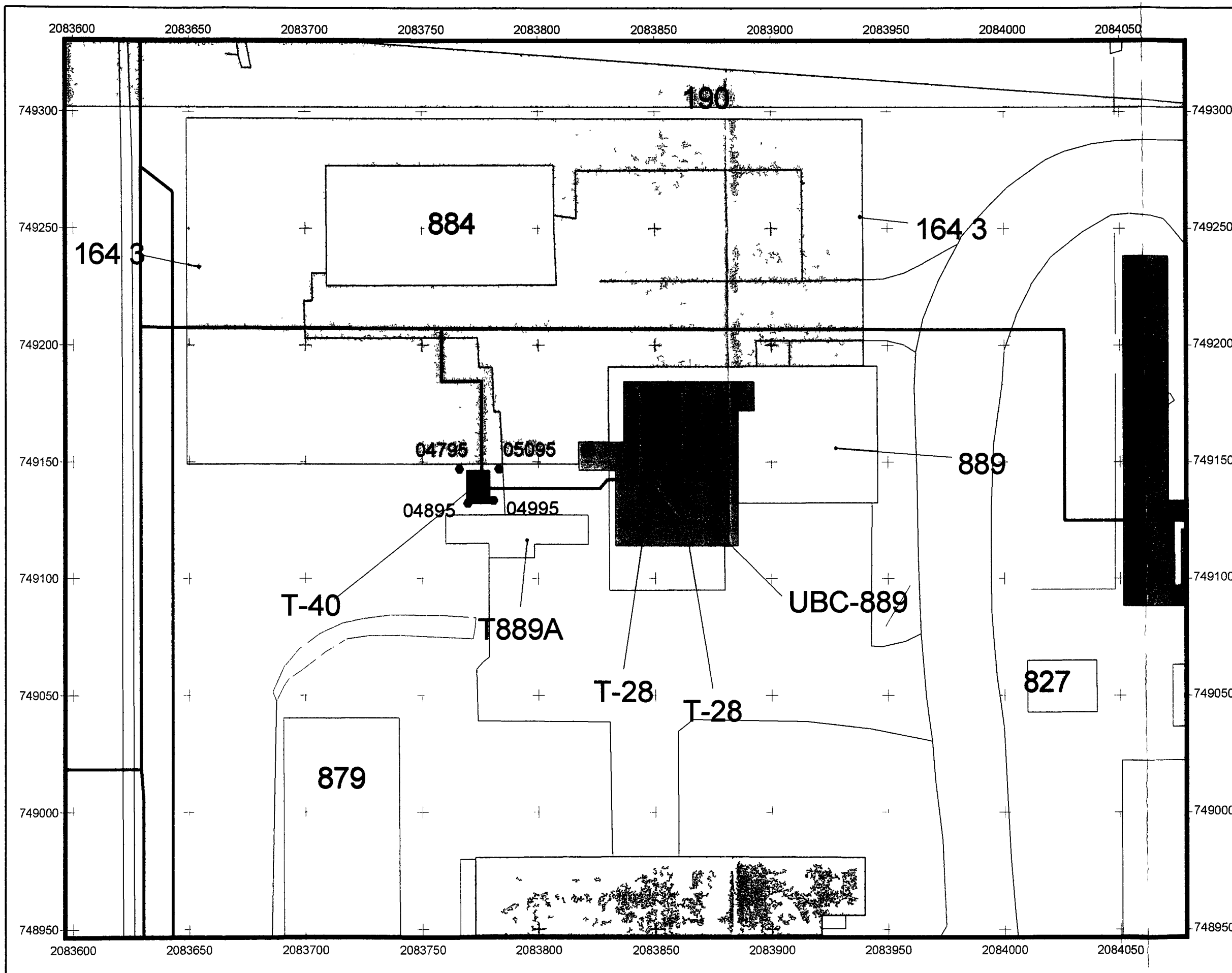


102

# Appendix C
# Compact Disk, Data Set for IHSS Group 800-6



103|103




# Figure 10
# IHSS Group 800 6
# No Longer Representative Samples

## KEY

- No Longer Representative Sample Locations
- IHSS location
- UBC location
- Building/structure
- Paved area
- Dirt road
- Stream ditch or other drainage feature
- OPWL location (estimated)
- OPWL tank location (estimated)

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Scale = 1 400

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by

RADMS

KAISER HILL COMPANY

Fl 800-6 nlr 1 apr

Dat 9/25/02

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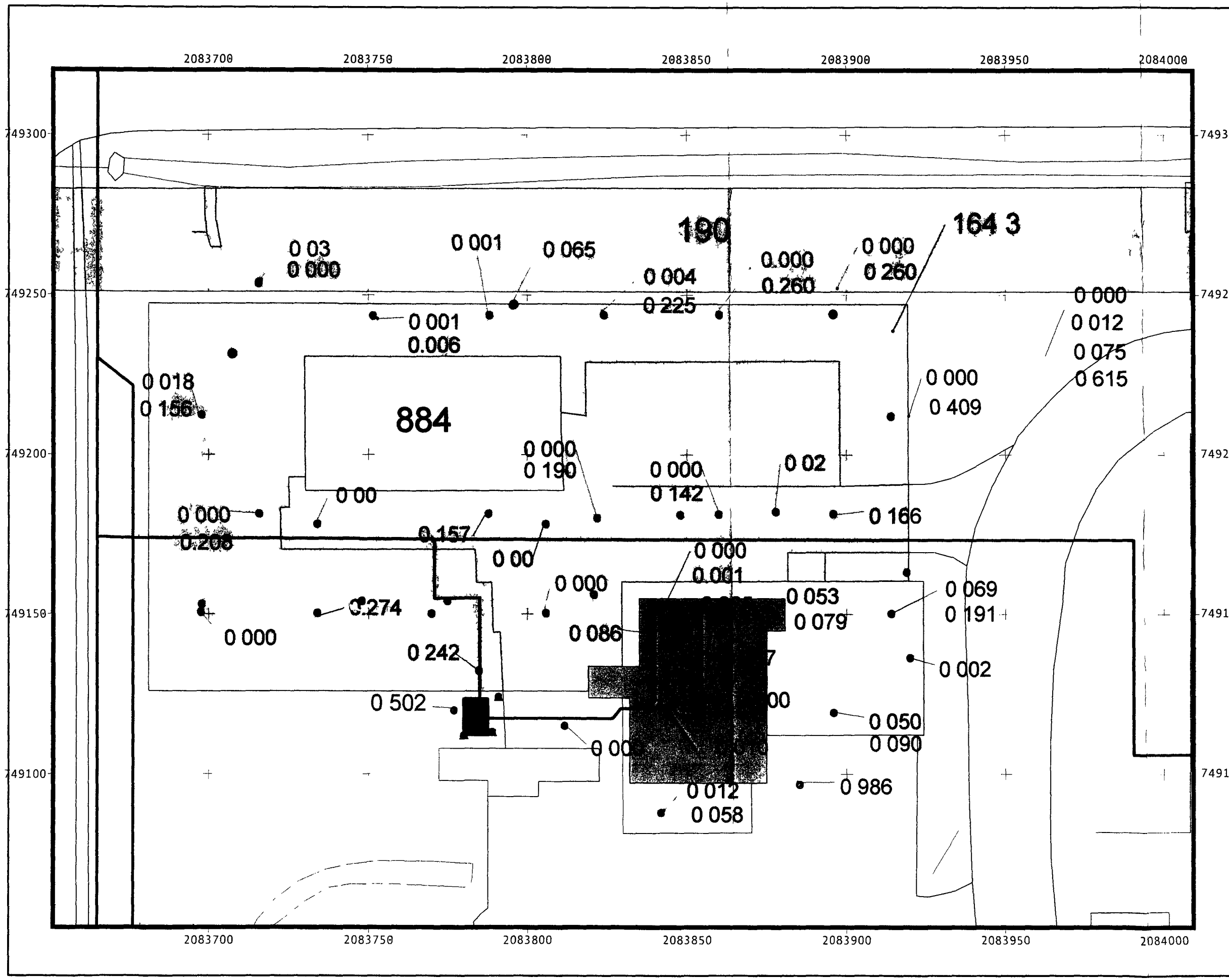


# Figure 9
# IHSS Group 800-6
# Residual Contamination
# Tier II SOR

## KEY

- Sample Locations
- 0 000 Non Radionuclide SOR For Surface Soil
- 0 000 Non Radionuclide SOR For Subsurface Soil
- IHSS location
- UBC location
- Building/structure
- Paved area
- Dirt road
- Stream ditch or other drainage feature
- OPWL location (estimated)
- OPWL tank location (estimated)

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Scale – 1 500

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

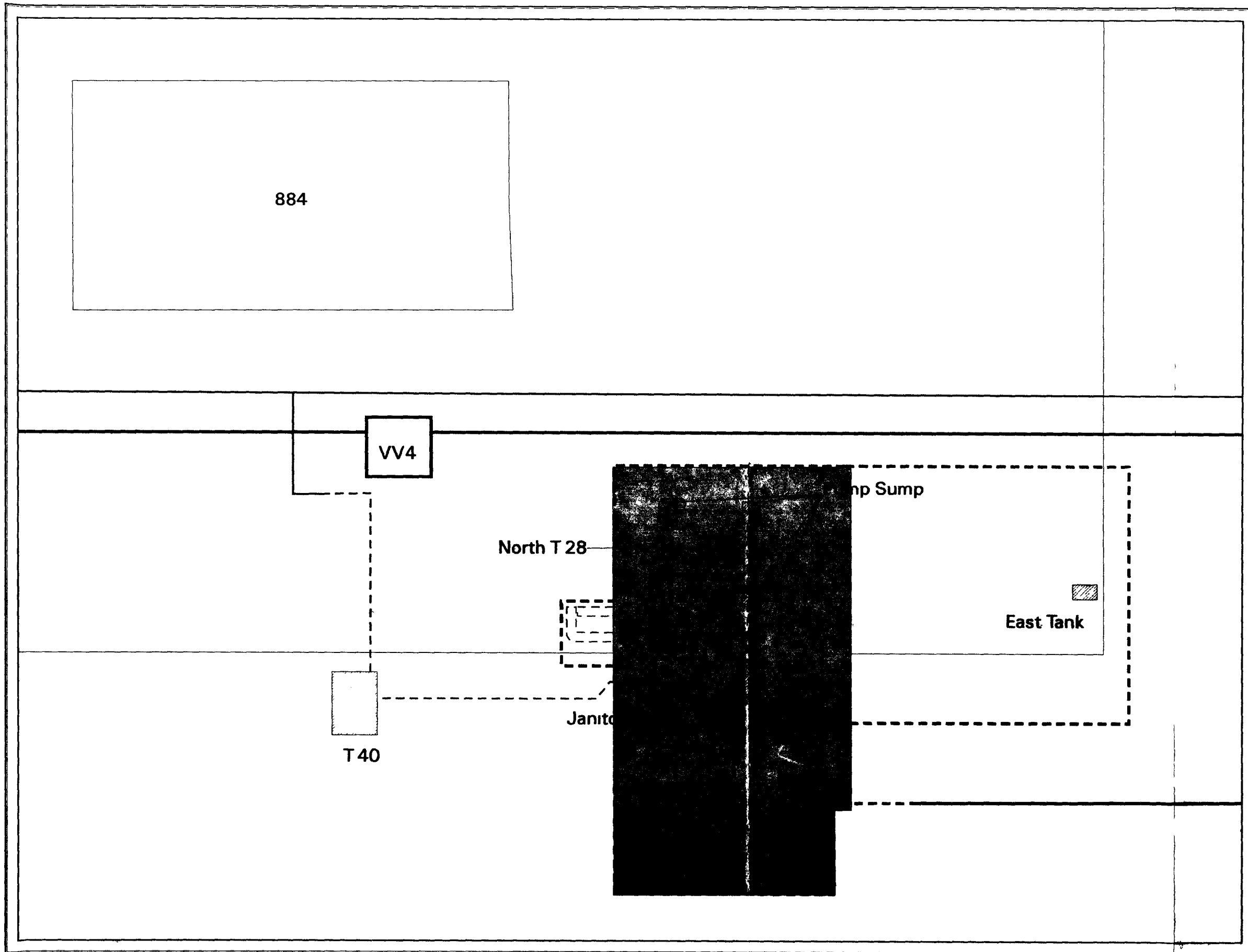
Prepared by

RADMS

KAISER•HILL COMPANY

Fle 800-6 SOR apr Dat 9/20/02

67




# Figure 6
## IHSS Group 800-6
## Sumps, Tanks and Process Lines Removed

**EXPLANATION**

- S
- uild ng 88 U C
- ks / mps ( mov )
- O gina Proc s W te L es (d shed where remove )
- pproximate Lo tio New ro ess Waste ne ( as where removed)
- lve V ult Loc io
- T ns te Duc (removed)
- nc (removed)
- Fo me xte 88 S

**Othe M p Features**

- B ld ngs nd the truc ures

*DATA SOURCE BASE FEATURES.*
*The wt88 alarm line shown corresponds he alarm lines shown on rightwaring Drawing 5501-4 and consist of miscellaneous leak detection alarms, e arms, and hat wt88 alarm systems. They do not represent securit alarms similar systems.*
*Buildings, fences, hydrography, oads and other ructures from 994 aerial fly-over sta captured by G&G RSL, Las Vegas. Digitized from orthophotographs. 1/95*

*DISCLAIMER*
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U S Departm t f Energy
Rocky Flats Environm tal T chnology Site

GIS Dept. 303-966-7707

Prepared by: DynCorp

Prepared for: KAISER-HILL

September 29, 2002

NT S w /p i /fy2002/02 0513/h889 p b l fig8 ml

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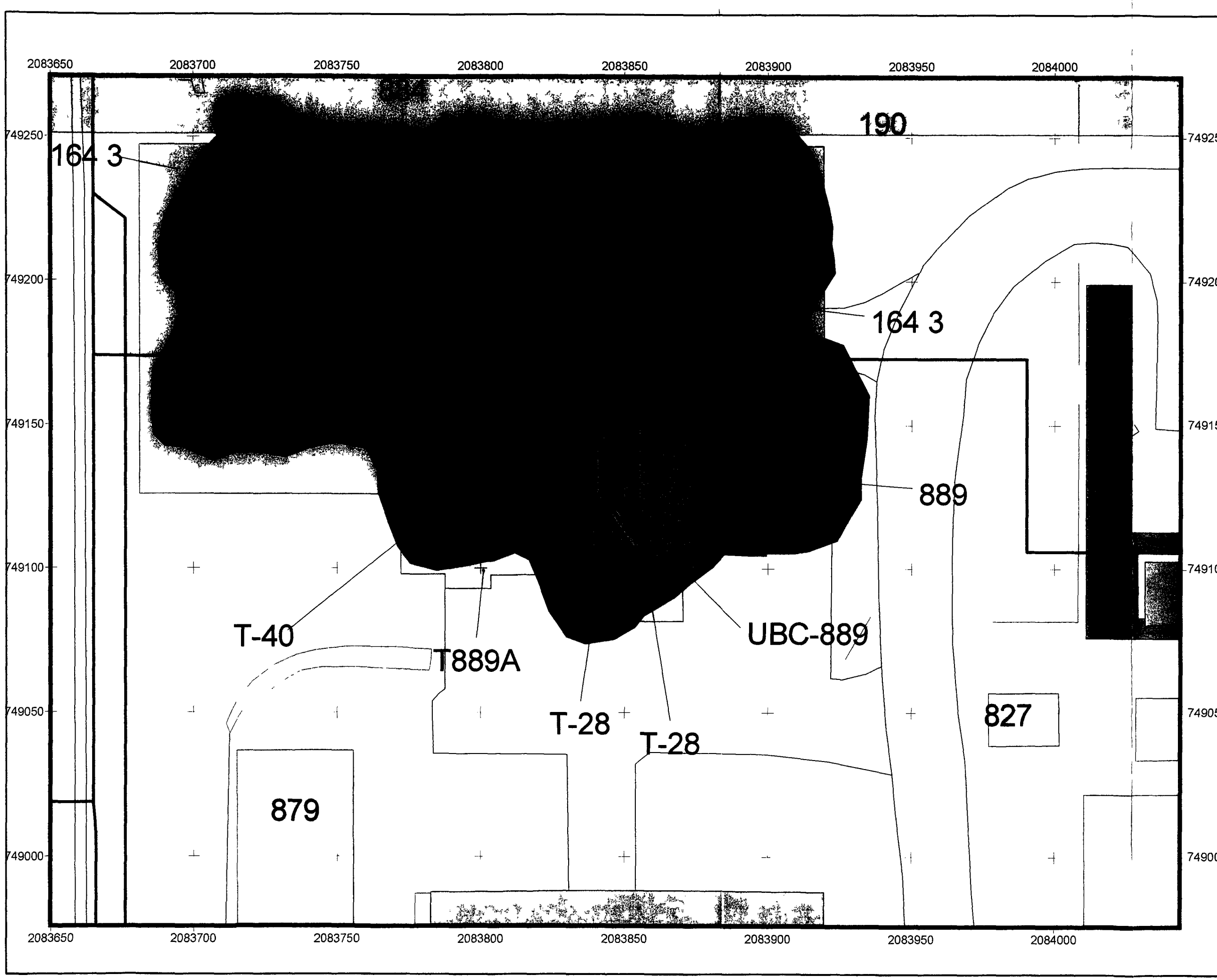


# Figure 5
# IHSS Group 800-6
# Area of Concern

KEY

- Area of Concern
- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream ditch or other drainage feature
- OPWL location (estimated)
- OPWL tank location (estimated)

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W E

20 0 20 40 Feet

Scale 1 400

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

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Rocky Flats Environmental Technology Site

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RADMS

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File 800-6 AOC 1 pr Dat 9/25/02

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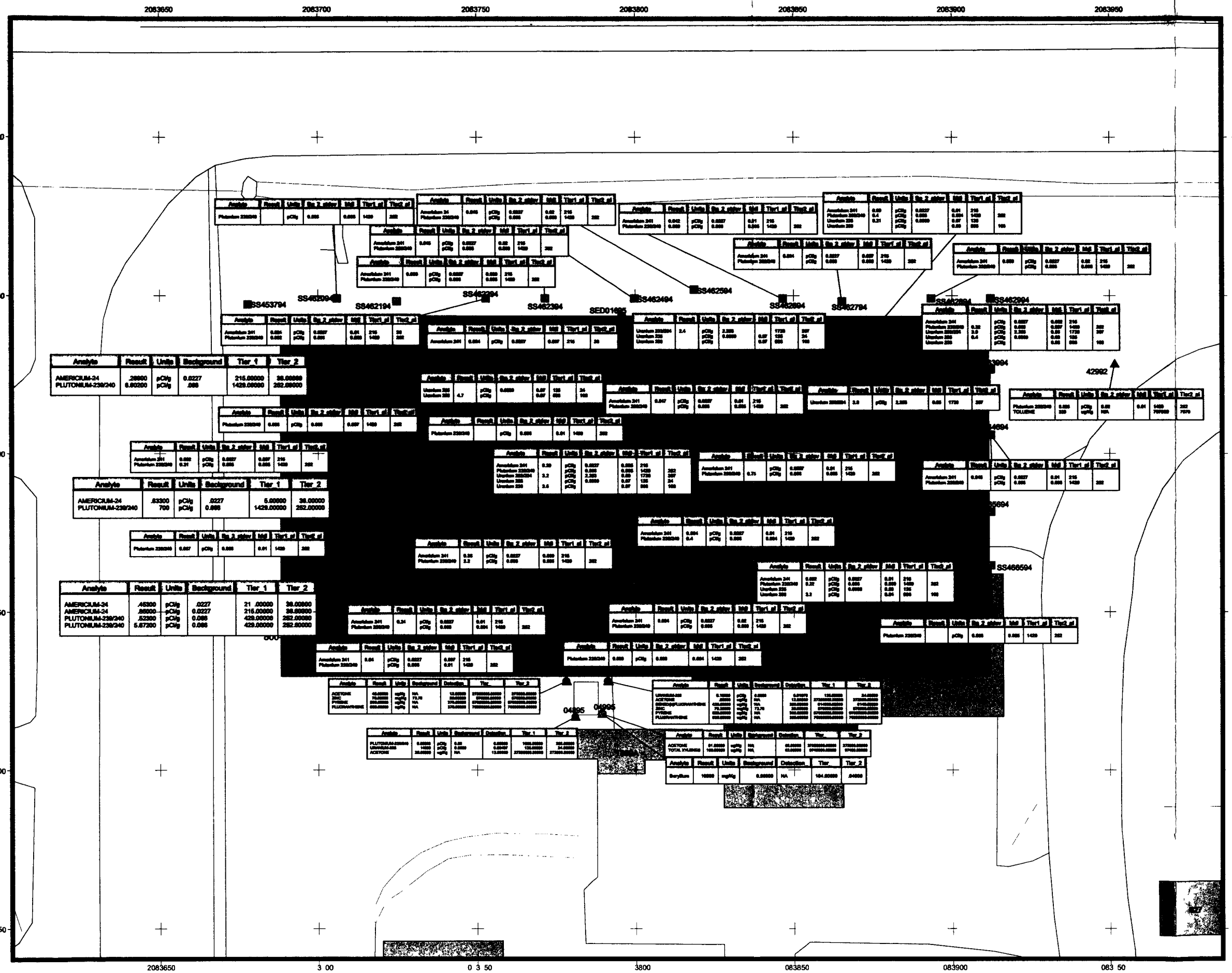


| Analyte | Result | Units | Background | Tier 1 | Tier 2 |
|---|---|---|---|---|---|
| AMERICIUM-24 | .28000 | pCi/g | 0.0227 | 215.00000 | 38.00000 |
| PLUTONIUM-239/240 | 6.80200 | pCi/g | .088 | 1429.00000 | 282.00000 |

| Analyte | Result | Units | Background | Tier 1 | Tier 2 |
|---|---|---|---|---|---|
| AMERICIUM-24 | .63300 | pCi/g | .0227 | 5.00000 | 38.00000 |
| PLUTONIUM-239/240 | 700 | pCi/g | 0.088 | 1429.00000 | 282.00000 |

| Analyte | Result | Units | Background | Tier 1 | Tier 2 |
|---|---|---|---|---|---|
| AMERICIUM-24 | .46300 | pCi/g | .0227 | 21 .00000 | 38.00000 |
| AMERICIUM-24 | .89000 | pCi/g | 0.0227 | 215.00000 | 38.00000 |
| PLUTONIUM-239/240 | .52300 | pCi/g | 0.088 | 429.00000 | 282.00000 |
| PLUTONIUM-239/240 | 5.67200 | pCi/g | 0.088 | 429.00000 | 282.00000 |

# Figure 4
## Location of Existing Sample Results Above Detection Limits or Background Levels for IA Group 800-6 (800-164 3 UBC 889 and OPWL Tanks 28 and 40)

### KEY

- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream ditch or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil
- Sediment

N

Scale = 1 400

20 0 20 40 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by

Prepared for

KAISER HILL COMP NY

889closeoutexisting apr

September 2002

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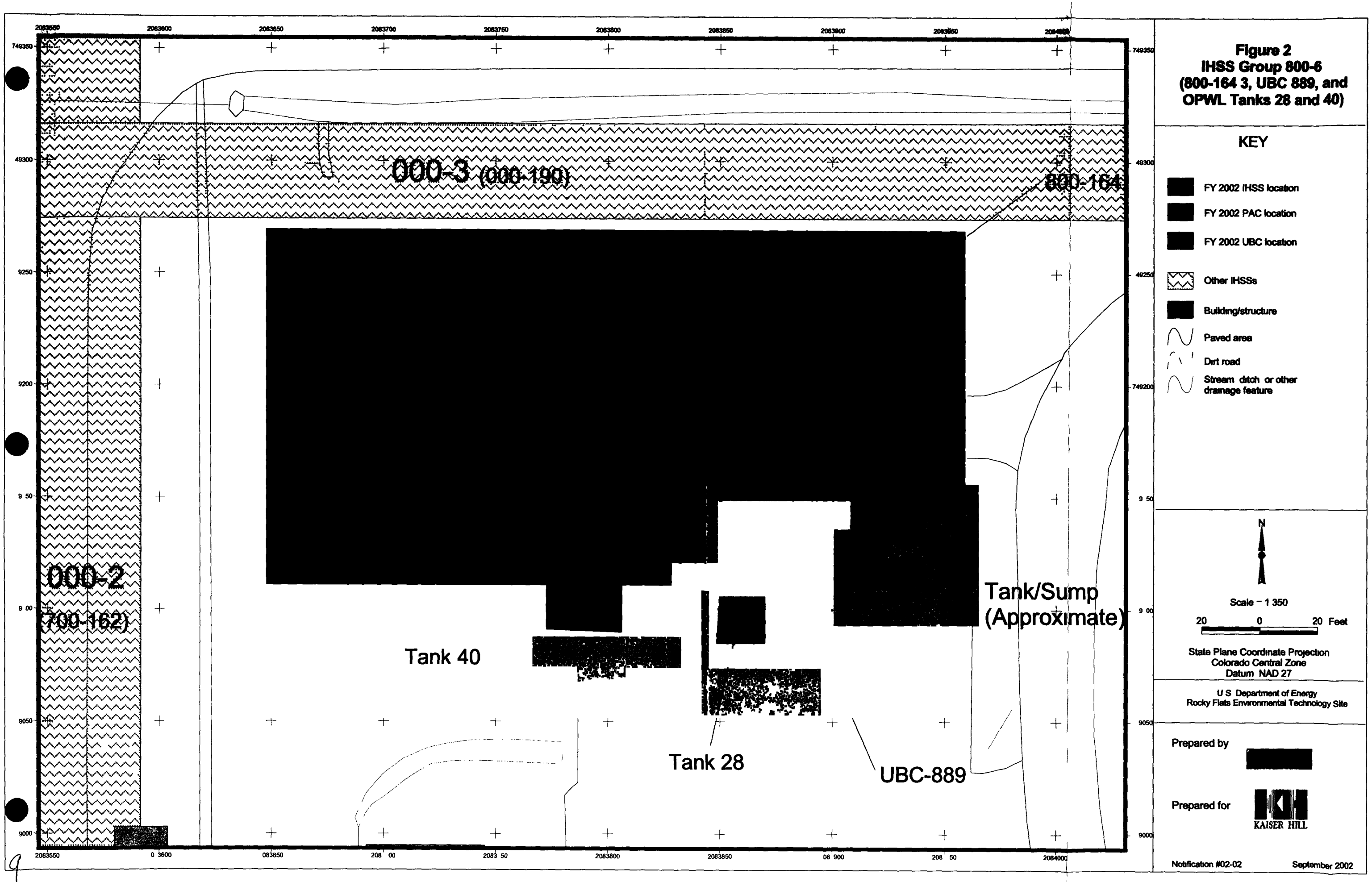
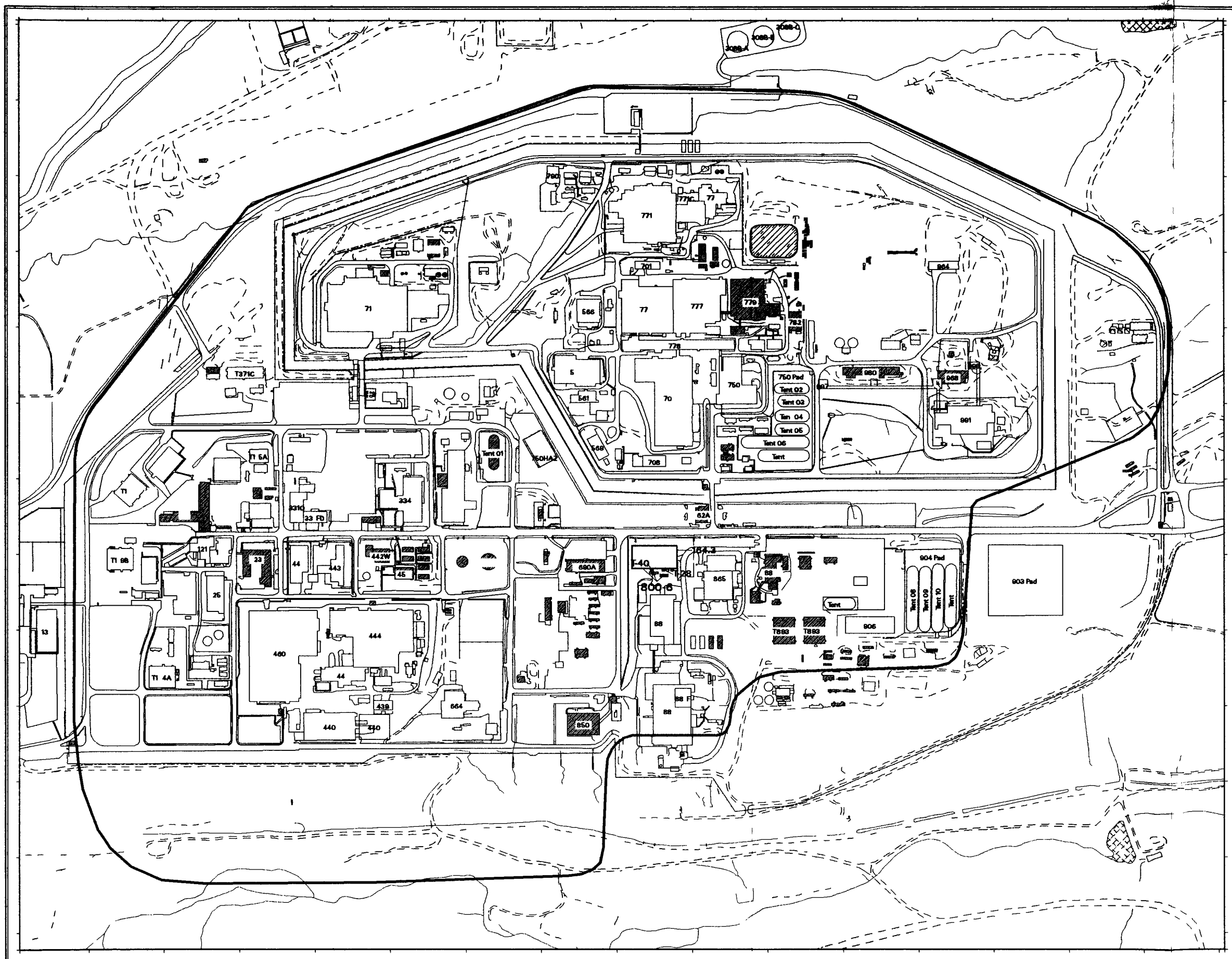



**Figure 2**
**IHSS Group 800-6**
**(800-164 3, UBC 889, and OPWL Tanks 28 and 40)**




# Figure 1
## IA Group 800-6 Location Map

**EXPLANATION**

**IHSS Groupings**

- 800-6

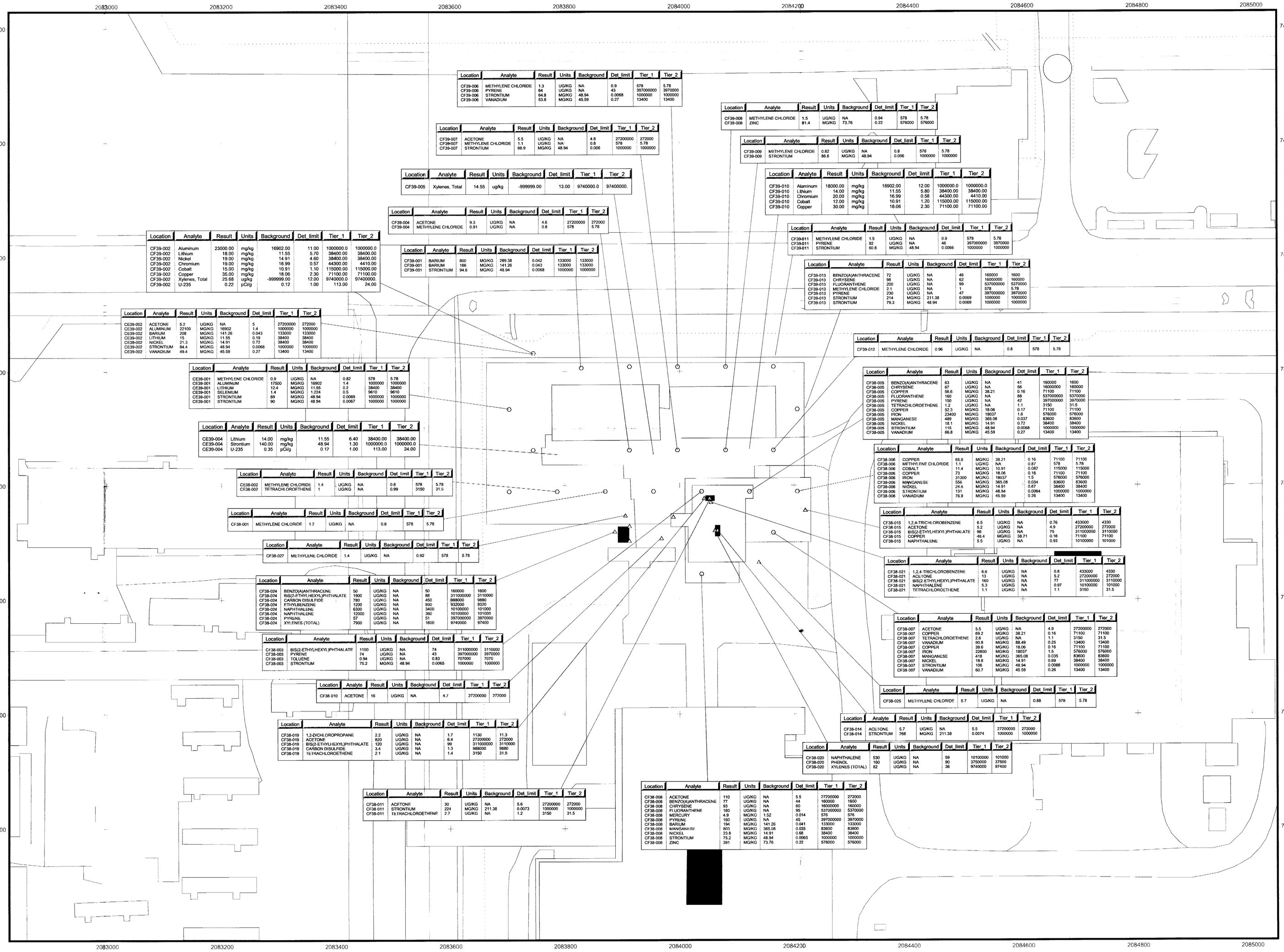
**Standard Map Features**

- Buildings and other structures
- Demolished buildings
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams ditches or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads
- Industrial Area Operable Unit Boundary

*DATA SOURCE BASE FEATURES:*
*HAZs*
*Historical Release Report (HRR)*
*2nd Annual Update*
*Sept 30, 1989*
*Individual Hazardous Substance Sites (IHSS)*
*DOE 1992, HRR Report and Subsequent Updates.*
*Buildings, fences, topography, roads and other structures from 1994 aerial fly-over data captured by GMS INC., Las Vegas.*
*Digitized from the orthophotographs. 1/95*

8

Page 24 IA A-CC1235




| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-006 | METHYLENE CHLORIDE | 1.3 | UG/KG | NA | 0.9 | 578 | 5.78 |
| CF39-006 | PYRENE | 64 | UG/KG | NA | 43 | 397000000 | 3970000 |
| CF39-006 | STRONTIUM | 64.8 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |
| CF39-006 | VANADIUM | 53.8 | MG/KG | 45.59 | 0.27 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-007 | ACETONE | 5.5 | UG/KG | NA | 4.6 | 27200000 | 272000 |
| CF39-007 | METHYLENE CHLORIDE | 1.1 | UG/KG | NA | 0.8 | 578 | 5.78 |
| CF39-007 | STRONTIUM | 66.9 | MG/KG | 48.94 | 0.006 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-005 | Xylenes, Total | 14.55 | ug/kg | -999999.00 | 13.00 | 9740000.0 | 97400000. |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-004 | ACETONE | 9.3 | UG/KG | NA | 4.6 | 27200000 | 272000 |
| CF39-004 | METHYLENE CHLORIDE | 0.91 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-002 | Aluminum | 23000.00 | mg/kg | 16902.00 | 11.00 | 1000000.0 | 1000000.0 |
| CF39-002 | Lithium | 18.00 | mg/kg | 11.55 | 5.70 | 38400.00 | 38400.00 |
| CF39-002 | Nickel | 19.00 | mg/kg | 14.91 | 4.60 | 38400.00 | 38400.00 |
| CF39-002 | Chromium | 19.00 | mg/kg | 16.99 | 0.57 | 44300.00 | 4410.00 |
| CF39-002 | Cobalt | 15.00 | mg/kg | 10.91 | 1.10 | 115000.00 | 115000.00 |
| CF39-002 | Copper | 35.00 | mg/kg | 18.06 | 2.30 | 71100.00 | 71100.00 |
| CF39-002 | Xylenes, Total | 25.68 | ug/kg | -999999.00 | 12.00 | 9740000.0 | 97400000. |
| CF39-002 | U-235 | 0.22 | pCi/g | 0.12 | 1.00 | 113.00 | 24.00 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-001 | BARIUM | 800 | MG/KG | 289.38 | 0.042 | 133000 | 133000 |
| CF39-001 | BARIUM | 166 | MG/KG | 141.26 | 0.043 | 133000 | 133000 |
| CF39-001 | STRONTIUM | 94.6 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-008 | METHYLENE CHLORIDE | 1.5 | UG/KG | NA | 0.94 | 578 | 5.78 |
| CF39-008 | ZINC | 91.4 | MG/KG | 73.76 | 0.22 | 576000 | 576000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-009 | METHYLENE CHLORIDE | 0.82 | UG/KG | NA | 0.8 | 578 | 5.78 |
| CF39-009 | STRONTIUM | 86.6 | MG/KG | 48.94 | 0.006 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-010 | Aluminum | 18000.00 | mg/kg | 16902.00 | 12.00 | 1000000.0 | 1000000.0 |
| CF39-010 | Lithium | 14.00 | mg/kg | 11.55 | 5.80 | 38400.00 | 38400.00 |
| CF39-010 | Chromium | 20.00 | mg/kg | 16.99 | 0.58 | 44300.00 | 4410.00 |
| CF39-010 | Cobalt | 12.00 | mg/kg | 10.91 | 1.20 | 115000.00 | 115000.00 |
| CF39-010 | Copper | 30.00 | mg/kg | 18.06 | 2.30 | 71100.00 | 71100.00 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-011 | METHYLENE CHLORIDE | 1.5 | UG/KG | NA | 0.9 | 578 | 5.78 |
| CF39-011 | PYRENE | 92 | UG/KG | NA | 46 | 397000000 | 3970000 |
| CF39-011 | STRONTIUM | 60.8 | MG/KG | 48.94 | 0.0066 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-013 | BENZO(A)ANTHRACENE | 72 | UG/KG | NA | 46 | 160000 | 1600 |
| CF39-013 | CHRYSENE | 98 | UG/KG | NA | 62 | 16000000 | 160000 |
| CF39-013 | FLUORANTHENE | 200 | UG/KG | NA | 99 | 537000000 | 5370000 |
| CF39-013 | METHYLENE CHLORIDE | 2.1 | UG/KG | NA | 1 | 578 | 5.78 |
| CF39-013 | PYRENE | 230 | UG/KG | NA | 47 | 397000000 | 3970000 |
| CF39-013 | STRONTIUM | 214 | MG/KG | 211.38 | 0.0069 | 1000000 | 1000000 |
| CF39-013 | STRONTIUM | 79.3 | MG/KG | 48.94 | 0.0069 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-012 | METHYLENE CHLORIDE | 0.96 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE39-002 | ACETONE | 5.2 | UG/KG | NA | 5 | 27200000 | 272000 |
| CE39-002 | ALUMINUM | 22100 | MG/KG | 16902 | 1.4 | 1000000 | 1000000 |
| CE39-002 | BARIUM | 208 | MG/KG | 141.26 | 0.043 | 133000 | 133000 |
| CE39-002 | LITHIUM | 15 | MG/KG | 11.55 | 0.19 | 38400 | 38400 |
| CE39-002 | NICKEL | 21.3 | MG/KG | 14.91 | 0.72 | 38400 | 38400 |
| CE39-002 | STRONTIUM | 84.4 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |
| CE39-002 | VANADIUM | 49.4 | MG/KG | 45.59 | 0.27 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE39-001 | METHYLENE CHLORIDE | 0.9 | UG/KG | NA | 0.82 | 578 | 5.78 |
| CE39-001 | ALUMINUM | 17500 | MG/KG | 16902 | 1.4 | 1000000 | 1000000 |
| CE39-001 | LITHIUM | 12.4 | MG/KG | 11.55 | 0.2 | 38400 | 38400 |
| CE39-001 | SELENIUM | 1.4 | MG/KG | 1.224 | 0.5 | 9610 | 9610 |
| CE39-001 | STRONTIUM | 89 | MG/KG | 48.94 | 0.0069 | 1000000 | 1000000 |
| CE39-001 | STRONTIUM | 90 | MG/KG | 48.94 | 0.0067 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE39-004 | Lithium | 14.00 | mg/kg | 11.55 | 6.40 | 38400.00 | 38400.00 |
| CE39-004 | Strontium | 140.00 | mg/kg | 48.94 | 1.30 | 1000000.0 | 1000000.0 |
| CE39-004 | U-235 | 0.35 | pCi/g | 0.17 | 1.00 | 113.00 | 24.00 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE38-002 | METHYLENE CHLORIDE | 1.4 | UG/KG | NA | 0.8 | 578 | 5.78 |
| CF38-002 | TETRACHLOROETHENE | 1 | UG/KG | NA | 0.99 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-001 | METHYLENE CHLORIDE | 1.2 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-027 | METHYLENE CHLORIDE | 1.4 | UG/KG | NA | 0.92 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-024 | BENZO(A)ANTHRACENE | 50 | UG/KG | NA | 50 | 160000 | 1600 |
| CF38-024 | BIS(2-ETHYLHEXYL)PHTHALATE | 1900 | UG/KG | NA | 88 | 311000000 | 3110000 |
| CF38-024 | CARBON DISULFIDE | 780 | UG/KG | NA | 450 | 998000 | 9980 |
| CF38-024 | ETHYLBENZENE | 1200 | UG/KG | NA | 930 | 932000 | 8320 |
| CF38-024 | NAPHTHALENE | 6300 | UG/KG | NA | 3400 | 10100000 | 101000 |
| CF38-024 | NAPHTHALENE | 12000 | UG/KG | NA | 360 | 10100000 | 101000 |
| CF38-024 | PYRENE | 57 | UG/KG | NA | 51 | 397000000 | 3970000 |
| CF38-024 | XYLENES (TOTAL) | 7900 | UG/KG | NA | 1600 | 9740000 | 97400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-003 | BIS(2-ETHYLHEXYL)PHTHALATE | 1100 | UG/KG | NA | 74 | 311000000 | 3110000 |
| CF38-003 | PYRENE | 74 | UG/KG | NA | 43 | 397000000 | 3970000 |
| CF38-003 | TOLUENE | 0.94 | UG/KG | NA | 0.83 | 707000 | 7070 |
| CF38-003 | STRONTIUM | 75.2 | MG/KG | 48.94 | 0.0065 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-010 | ACETONE | 16 | UG/KG | NA | 4.7 | 27200000 | 272000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-019 | 1,2-DICHLOROPROPANE | 2.2 | UG/KG | NA | 1.7 | 1130 | 11.3 |
| CF38-019 | ACETONE | 820 | UG/KG | NA | 6.4 | 27200000 | 272000 |
| CF38-019 | BIS(2-ETHYLHEXYL)PHTHALATE | 120 | UG/KG | NA | 99 | 311000000 | 3110000 |
| CF38-019 | CARBON DISULFIDE | 3.4 | UG/KG | NA | 1.3 | 998000 | 9980 |
| CF38-019 | TETRACHLOROETHENE | 2.1 | UG/KG | NA | 1.4 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-011 | ACETONE | 30 | UG/KG | NA | 5.6 | 27200000 | 272000 |
| CF38-011 | STRONTIUM | 224 | MG/KG | 211.38 | 0.0073 | 1000000 | 1000000 |
| CF38-011 | TETRACHLOROETHENE | 2.7 | UG/KG | NA | 1.2 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-008 | ACETONE | 110 | UG/KG | NA | 5.5 | 27200000 | 272000 |
| CF38-008 | BENZO(A)ANTHRACENE | 77 | UG/KG | NA | 44 | 160000 | 1600 |
| CF38-008 | CHRYSENE | 93 | UG/KG | NA | 60 | 16000000 | 160000 |
| CF38-008 | FLUORANTHENE | 160 | UG/KG | NA | 95 | 537000000 | 5370000 |
| CF38-008 | MERCURY | 4.9 | MG/KG | 1.52 | 0.014 | 576 | 576 |
| CF38-008 | PYRENE | 150 | UG/KG | NA | 45 | 397000000 | 3970000 |
| CF38-008 | BARIUM | 194 | MG/KG | 141.26 | 0.041 | 133000 | 133000 |
| CF38-008 | MANGANESE | 803 | MG/KG | 365.08 | 0.035 | 83600 | 83600 |
| CF38-008 | NICKEL | 23.8 | MG/KG | 14.91 | 0.68 | 38400 | 38400 |
| CF38-008 | STRONTIUM | 75.2 | MG/KG | 48.94 | 0.0065 | 1000000 | 1000000 |
| CF38-008 | ZINC | 391 | MG/KG | 73.76 | 0.22 | 576000 | 576000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-005 | BENZO(A)ANTHRACENE | 63 | UG/KG | NA | 41 | 160000 | 1600 |
| CF38-005 | CHRYSENE | 87 | UG/KG | NA | 56 | 16000000 | 160000 |
| CF38-005 | COPPER | 58.6 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-005 | FLUORANTHENE | 160 | UG/KG | NA | 88 | 537000000 | 5370000 |
| CF38-005 | PYRENE | 150 | UG/KG | NA | 42 | 397000000 | 3970000 |
| CF38-005 | TETRACHLOROETHENE | 1.2 | UG/KG | NA | 1.1 | 3150 | 31.5 |
| CF38-005 | COPPER | 52.3 | MG/KG | 18.06 | 0.17 | 71100 | 71100 |
| CF38-005 | IRON | 23400 | MG/KG | 18037 | 1.6 | 576000 | 576000 |
| CF38-005 | MANGANESE | 489 | MG/KG | 365.08 | 0.037 | 83600 | 83600 |
| CF38-005 | NICKEL | 18.1 | MG/KG | 14.91 | 0.72 | 38400 | 38400 |
| CF38-005 | STRONTIUM | 115 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |
| CF38-005 | VANADIUM | 66.8 | MG/KG | 45.59 | 0.27 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-006 | COPPER | 65.8 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-006 | METHYLENE CHLORIDE | 1.1 | UG/KG | NA | 0.87 | 578 | 5.78 |
| CF38-006 | COBALT | 11.4 | MG/KG | 10.91 | 0.082 | 115000 | 115000 |
| CF38-006 | COPPER | 73 | MG/KG | 18.06 | 0.16 | 71100 | 71100 |
| CF38-006 | IRON | 31300 | MG/KG | 18037 | 1.5 | 576000 | 576000 |
| CF38-006 | MANGANESE | 556 | MG/KG | 365.08 | 0.034 | 83600 | 83600 |
| CF38-006 | NICKEL | 24.6 | MG/KG | 14.91 | 0.67 | 38400 | 38400 |
| CF38-006 | STRONTIUM | 131 | MG/KG | 48.94 | 0.0064 | 1000000 | 1000000 |
| CF38-006 | VANADIUM | 76.9 | MG/KG | 45.59 | 0.26 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-015 | 1,2,4-TRICHLOROBENZENE | 6.5 | UG/KG | NA | 0.76 | 433000 | 4330 |
| CF38-015 | ACETONE | 5.2 | UG/KG | NA | 4.9 | 27200000 | 272000 |
| CF38-015 | BIS(2-ETHYLHEXYL)PHTHALATE | 96 | UG/KG | NA | 75 | 311000000 | 3110000 |
| CF38-015 | COPPER | 48.4 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-015 | NAPHTHALENE | 5.5 | UG/KG | NA | 0.93 | 10100000 | 101000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-021 | 1,2,4-TRICHLOROBENZENE | 6.6 | UG/KG | NA | 0.8 | 433000 | 4330 |
| CF38-021 | ACETONE | 13 | UG/KG | NA | 5.2 | 27200000 | 272000 |
| CF38-021 | BIS(2-ETHYLHEXYL)PHTHALATE | 160 | UG/KG | NA | 77 | 311000000 | 3110000 |
| CF38-021 | NAPHTHALENE | 5.3 | UG/KG | NA | 0.97 | 10100000 | 101000 |
| CF38-021 | TETRACHLOROETHENE | 1.1 | UG/KG | NA | 1.1 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-007 | ACETONE | 5.5 | UG/KG | NA | 4.9 | 27200000 | 272000 |
| CF38-007 | COPPER | 69.2 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-007 | TETRACHLOROETHENE | 2.6 | UG/KG | NA | 1.1 | 3150 | 31.5 |
| CF38-007 | VANADIUM | 90.8 | MG/KG | 88.49 | 0.25 | 13400 | 13400 |
| CF38-007 | COPPER | 39.6 | MG/KG | 18.06 | 0.16 | 71100 | 71100 |
| CF38-007 | IRON | 22800 | MG/KG | 18037 | 1.5 | 576000 | 576000 |
| CF38-007 | MANGANESE | 418 | MG/KG | 365.08 | 0.035 | 83600 | 83600 |
| CF38-007 | NICKEL | 18.6 | MG/KG | 14.91 | 0.69 | 38400 | 38400 |
| CF38-007 | STRONTIUM | 106 | MG/KG | 48.94 | 0.0066 | 1000000 | 1000000 |
| CF38 007 | VANADIUM | 60.7 | MG/KG | 45.59 | 0.26 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-025 | METHYLENE CHLORIDE | 5.7 | UG/KG | NA | 0.88 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-014 | ACETONE | 5.7 | UG/KG | NA | 5.5 | 27200000 | 272000 |
| CF38-014 | STRONTIUM | 268 | MG/KG | 211.38 | 0.0074 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-020 | NAPHTHALENE | 530 | UG/KG | NA | 59 | 10100000 | 101000 |
| CF38-020 | PHENOL | 160 | UG/KG | NA | 90 | 3750000 | 37500 |
| CF38-020 | XYLENES (TOTAL) | 82 | UG/KG | NA | 36 | 9740000 | 97400 |

# Figure 3
## Sample Results Above Detection Limits or Background for IA Group 800-6 (IHSS 164.3, UBC 889, Tank Groups T-28 and T-40)

KEY

- IHSS location
- PAC location
- UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature
- Original process waste line

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil

N

Scale = 1: 1300

40 0 40 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

RADMS

Prepared for:

KAISER•HILL COMPANY

File: 800-6 Sample Map Above background4.apr Date: 9/25/02

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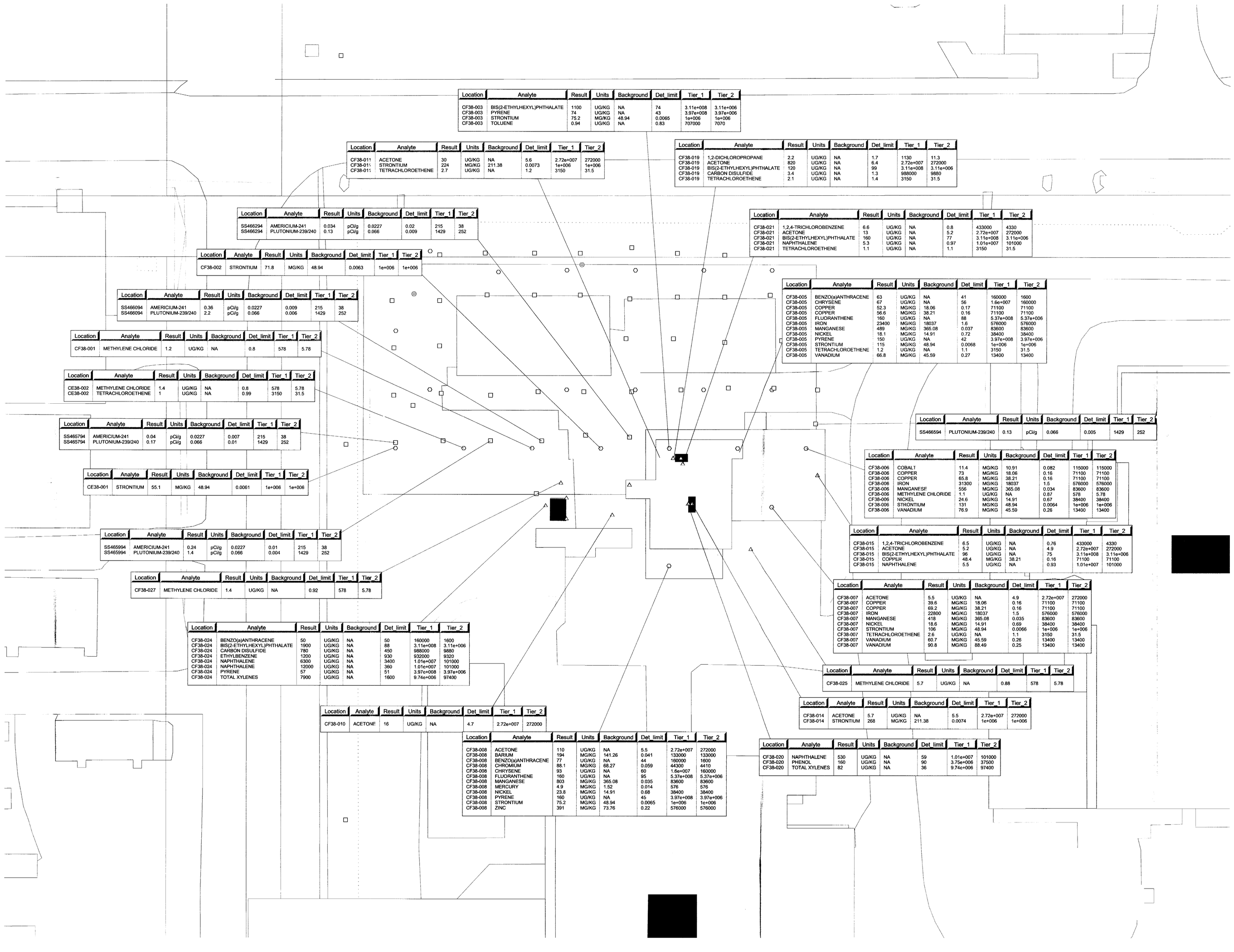


| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-003 | BIS(2-ETHYLHEXYL)PHTHALATE | 1100 | UG/KG | NA | 74 | 3.11e+008 | 3.11e+006 |
| CF38-003 | PYRENE | 74 | UG/KG | NA | 43 | 3.97e+008 | 3.97e+006 |
| CF38-003 | STRONTIUM | 75.2 | MG/KG | 48.94 | 0.0065 | 1e+006 | 1e+006 |
| CF38-003 | TOLUENE | 0.94 | UG/KG | NA | 0.83 | 707000 | 7070 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-011 | ACETONE | 30 | UG/KG | NA | 5.6 | 2.72e+007 | 272000 |
| CF38-011 | STRONTIUM | 224 | MG/KG | 211.38 | 0.0073 | 1e+006 | 1e+006 |
| CF38-011 | TETRACHLOROETHENE | 2.7 | UG/KG | NA | 1.2 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-019 | 1,2-DICHLOROPROPANE | 2.2 | UG/KG | NA | 1.7 | 1130 | 11.3 |
| CF38-019 | ACETONE | 820 | UG/KG | NA | 6.4 | 2.72e+007 | 272000 |
| CF38-019 | BIS(2-ETHYLHEXYL)PHTHALATE | 120 | UG/KG | NA | 99 | 3.11e+008 | 3.11e+006 |
| CF38-019 | CARBON DISULFIDE | 3.4 | UG/KG | NA | 1.3 | 988000 | 9880 |
| CF38-019 | TETRACHLOROETHENE | 2.1 | UG/KG | NA | 1.4 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS466294 | AMERICIUM-241 | 0.034 | pCi/g | 0.0227 | 0.02 | 215 | 38 |
| SS466294 | PLUTONIUM-239/240 | 0.13 | pCi/g | 0.066 | 0.009 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-002 | STRONTIUM | 71.8 | MG/KG | 48.94 | 0.0063 | 1e+006 | 1e+006 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-021 | 1,2,4-TRICHLOROBENZENE | 6.6 | UG/KG | NA | 0.8 | 433000 | 4330 |
| CF38-021 | ACETONE | 13 | UG/KG | NA | 5.2 | 2.72e+007 | 272000 |
| CF38-021 | BIS(2-ETHYLHEXYL)PHTHALATE | 160 | UG/KG | NA | 77 | 3.11e+008 | 3.11e+006 |
| CF38-021 | NAPHTHALENE | 5.3 | UG/KG | NA | 0.97 | 1.01e+007 | 101000 |
| CF38-021 | TETRACHLOROETHENE | 1.1 | UG/KG | NA | 1.1 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS466094 | AMERICIUM-241 | 0.36 | pCi/g | 0.0227 | 0.009 | 215 | 38 |
| SS466094 | PLUTONIUM-239/240 | 2.2 | pCi/g | 0.066 | 0.006 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-005 | BENZO(a)ANTHRACENE | 63 | UG/KG | NA | 41 | 160000 | 1600 |
| CF38-005 | CHRYSENE | 67 | UG/KG | NA | 56 | 1.6e+007 | 160000 |
| CF38-005 | COPPER | 52.3 | MG/KG | 18.06 | 0.17 | 71100 | 71100 |
| CF38-005 | COPPER | 56.6 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-005 | FLUORANTHENE | 160 | UG/KG | NA | 88 | 5.37e+008 | 5.37e+006 |
| CF38-005 | IRON | 23400 | MG/KG | 18037 | 1.6 | 576000 | 576000 |
| CF38-005 | MANGANESE | 489 | MG/KG | 365.08 | 0.037 | 83600 | 83600 |
| CF38-005 | NICKEL | 18.1 | MG/KG | 14.91 | 0.72 | 38400 | 38400 |
| CF38-005 | PYRENE | 150 | UG/KG | NA | 42 | 3.97e+008 | 3.97e+006 |
| CF38-005 | STRONTIUM | 115 | MG/KG | 48.94 | 0.0068 | 1e+006 | 1e+006 |
| CF38-005 | TETRACHLOROETHENE | 1.2 | UG/KG | NA | 1.1 | 3150 | 31.5 |
| CF38-005 | VANADIUM | 66.8 | MG/KG | 45.59 | 0.27 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-001 | METHYLENE CHLORIDE | 1.2 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE38-002 | METHYLENE CHLORIDE | 1.4 | UG/KG | NA | 0.8 | 578 | 5.78 |
| CE38-002 | TETRACHLOROETHENE | 1 | UG/KG | NA | 0.99 | 3150 | 31.5 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS466594 | PLUTONIUM-239/240 | 0.13 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS465794 | AMERICIUM-241 | 0.04 | pCi/g | 0.0227 | 0.007 | 215 | 38 |
| SS465794 | PLUTONIUM-239/240 | 0.17 | pCi/g | 0.066 | 0.01 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-006 | COBALT | 11.4 | MG/KG | 10.91 | 0.082 | 115000 | 115000 |
| CF38-006 | COPPER | 73 | MG/KG | 18.06 | 0.16 | 71100 | 71100 |
| CF38-006 | COPPER | 65.8 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-006 | IRON | 31300 | MG/KG | 18037 | 1.5 | 576000 | 576000 |
| CF38-006 | MANGANESE | 556 | MG/KG | 365.08 | 0.034 | 83600 | 83600 |
| CF38-006 | METHYLENE CHLORIDE | 1.1 | UG/KG | NA | 0.87 | 578 | 5.78 |
| CF38-006 | NICKEL | 24.6 | MG/KG | 14.91 | 0.67 | 38400 | 38400 |
| CF38-006 | STRONTIUM | 131 | MG/KG | 48.94 | 0.0064 | 1e+006 | 1e+006 |
| CF38-006 | VANADIUM | 76.9 | MG/KG | 45.59 | 0.26 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE38-001 | STRONTIUM | 55.1 | MG/KG | 48.94 | 0.0061 | 1e+006 | 1e+006 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-015 | 1,2,4-TRICHLOROBENZENE | 6.5 | UG/KG | NA | 0.76 | 433000 | 4330 |
| CF38-015 | ACETONE | 5.2 | UG/KG | NA | 4.9 | 2.72e+007 | 272000 |
| CF38-015 | BIS(2-ETHYLHEXYL)PHTHALATE | 96 | UG/KG | NA | 75 | 3.11e+008 | 3.11e+006 |
| CF38-015 | COPPER | 48.4 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-015 | NAPHTHALENE | 5.5 | UG/KG | NA | 0.93 | 1.01e+007 | 101000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS465994 | AMERICIUM-241 | 0.24 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS465994 | PLUTONIUM-239/240 | 1.4 | pCi/g | 0.066 | 0.004 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-027 | METHYLENE CHLORIDE | 1.4 | UG/KG | NA | 0.92 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-007 | ACETONE | 5.5 | UG/KG | NA | 4.9 | 2.72e+007 | 272000 |
| CF38-007 | COPPER | 39.6 | MG/KG | 18.06 | 0.16 | 71100 | 71100 |
| CF38-007 | COPPER | 69.2 | MG/KG | 38.21 | 0.16 | 71100 | 71100 |
| CF38-007 | IRON | 22800 | MG/KG | 18037 | 1.5 | 576000 | 576000 |
| CF38-007 | MANGANESE | 418 | MG/KG | 365.08 | 0.035 | 83600 | 83600 |
| CF38-007 | NICKEL | 18.6 | MG/KG | 14.91 | 0.69 | 38400 | 38400 |
| CF38-007 | STRONTIUM | 106 | MG/KG | 48.94 | 0.0066 | 1e+006 | 1e+006 |
| CF38-007 | TETRACHLOROETHENE | 2.6 | UG/KG | NA | 1.1 | 3150 | 31.5 |
| CF38-007 | VANADIUM | 60.7 | MG/KG | 45.59 | 0.26 | 13400 | 13400 |
| CF38-007 | VANADIUM | 90.8 | MG/KG | 88.49 | 0.25 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-025 | METHYLENE CHLORIDE | 5.7 | UG/KG | NA | 0.88 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-024 | BENZO(a)ANTHRACENE | 50 | UG/KG | NA | 50 | 160000 | 1600 |
| CF38-024 | BIS(2-ETHYLHEXYL)PHTHALATE | 1900 | UG/KG | NA | 88 | 3.11e+008 | 3.11e+006 |
| CF38-024 | CARBON DISULFIDE | 780 | UG/KG | NA | 450 | 988000 | 9880 |
| CF38-024 | ETHYLBENZENE | 1200 | UG/KG | NA | 930 | 932000 | 9320 |
| CF38-024 | NAPHTHALENE | 6300 | UG/KG | NA | 3400 | 1.01e+007 | 101000 |
| CF38-024 | NAPHTHALENE | 12000 | UG/KG | NA | 360 | 1.01e+007 | 101000 |
| CF38-024 | PYRENE | 57 | UG/KG | NA | 51 | 3.97e+008 | 3.97e+006 |
| CF38-024 | TOTAL XYLENES | 7900 | UG/KG | NA | 1600 | 9.74e+006 | 97400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-014 | ACETONE | 5.7 | UG/KG | NA | 5.5 | 2.72e+007 | 272000 |
| CF38-014 | STRONTIUM | 268 | MG/KG | 211.38 | 0.0074 | 1e+006 | 1e+006 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-010 | ACETONE | 16 | UG/KG | NA | 4.7 | 2.72e+007 | 272000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-008 | ACETONE | 110 | UG/KG | NA | 5.5 | 2.72e+007 | 272000 |
| CF38-008 | BARIUM | 194 | MG/KG | 141.26 | 0.041 | 133000 | 133000 |
| CF38-008 | BENZO(a)ANTHRACENE | 77 | UG/KG | NA | 44 | 160000 | 1600 |
| CF38-008 | CHROMIUM | 88.1 | MG/KG | 68.27 | 0.059 | 44300 | 4410 |
| CF38-008 | CHRYSENE | 93 | UG/KG | NA | 60 | 1.6e+007 | 160000 |
| CF38-008 | FLUORANTHENE | 160 | UG/KG | NA | 95 | 5.37e+008 | 5.37e+006 |
| CF38-008 | MANGANESE | 803 | MG/KG | 365.08 | 0.035 | 83600 | 83600 |
| CF38-008 | MERCURY | 4.9 | MG/KG | 1.52 | 0.014 | 576 | 576 |
| CF38-008 | NICKEL | 23.8 | MG/KG | 14.91 | 0.68 | 38400 | 38400 |
| CF38-008 | PYRENE | 160 | UG/KG | NA | 45 | 3.97e+008 | 3.97e+006 |
| CF38-008 | STRONTIUM | 75.2 | MG/KG | 48.94 | 0.0065 | 1e+006 | 1e+006 |
| CF38-008 | ZINC | 391 | MG/KG | 73.76 | 0.22 | 576000 | 576000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF38-020 | NAPHTHALENE | 530 | UG/KG | NA | 59 | 1.01e+007 | 101000 |
| CF38-020 | PHENOL | 160 | UG/KG | NA | 90 | 3.75e+006 | 37500 |
| CF38-020 | TOTAL XYLENES | 82 | UG/KG | NA | 36 | 9.74e+006 | 97400 |

# Figure 8
# Residual Concentrations In Southern Part of IHSS Group 800-6

KEY

- IHSS location
- PAC location
- UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature
- Original process waste line

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil
- Sediment Location

N

Scale = 1:900

50 0 50 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

RADMS

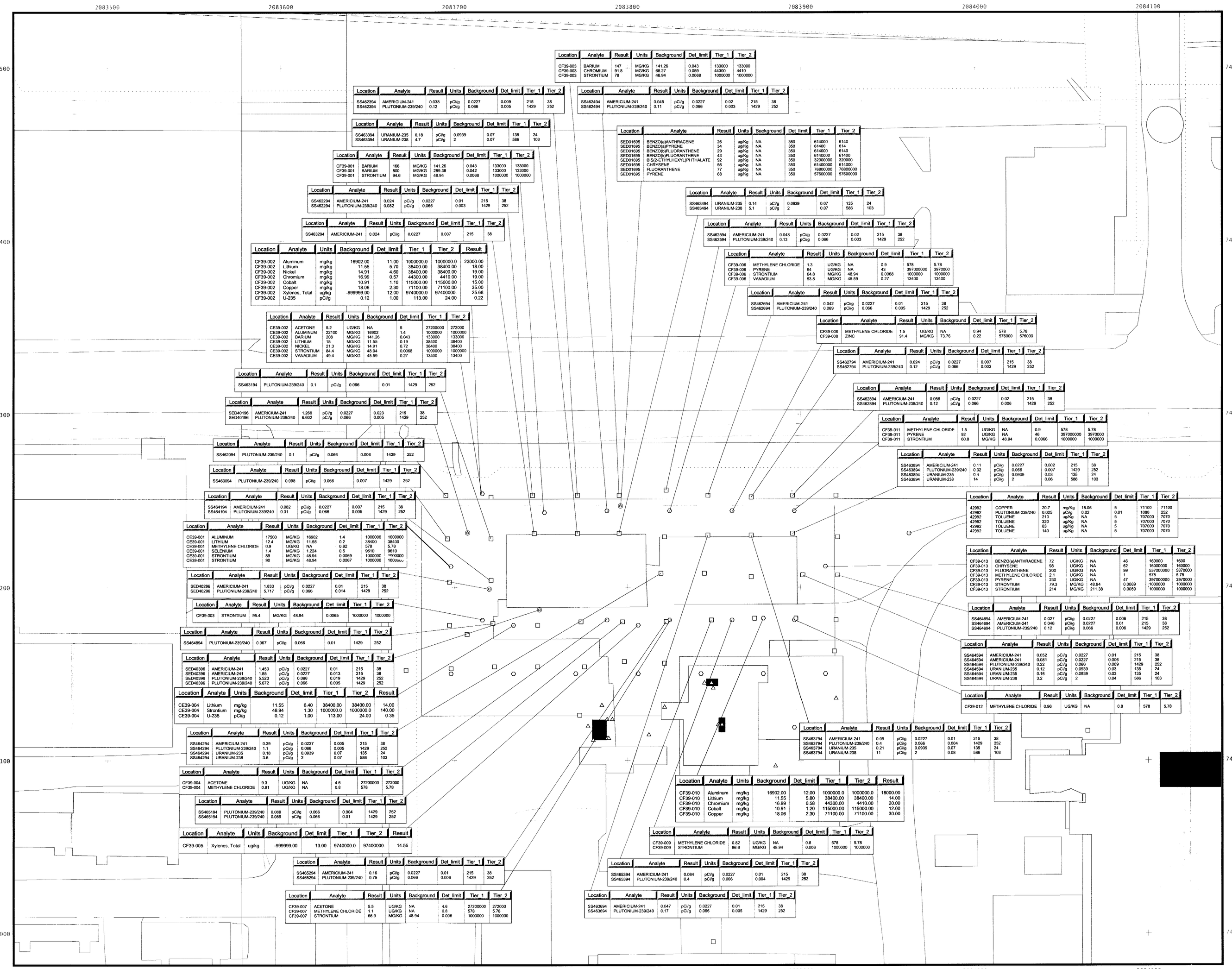
KAISER•HILL COMPANY

File: 800-6 residual conc south3.apr

Date: 9/25/02

pg 62 IHA 000035

# Figure 7
# Residual Contamination in Northern Part of IHSS Group 800-6




| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-003 | BARIUM | 147 | MG/KG | 141.26 | 0.043 | 133000 | 133000 |
| CF39-003 | CHROMIUM | 91.8 | MG/KG | 68.27 | 0.059 | 44300 | 4410 |
| CF39-003 | STRONTIUM | 78 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462394 | AMERICIUM-241 | 0.038 | pCi/g | 0.0227 | 0.009 | 215 | 38 |
| SS462394 | PLUTONIUM-239/240 | 0.12 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462494 | AMERICIUM-241 | 0.045 | pCi/g | 0.0227 | 0.02 | 215 | 38 |
| SS462494 | PLUTONIUM-239/240 | 0.11 | pCi/g | 0.066 | 0.003 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463394 | URANIUM-235 | 0.18 | pCi/g | 0.0939 | 0.07 | 135 | 24 |
| SS463394 | URANIUM-238 | 4.7 | pCi/g | 2 | 0.07 | 586 | 103 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-001 | BARIUM | 166 | MG/KG | 141.26 | 0.043 | 133000 | 133000 |
| CF39-001 | BARIUM | 800 | MG/KG | 289.38 | 0.042 | 133000 | 133000 |
| CF39-001 | STRONTIUM | 94.6 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SED01695 | BENZO(a)ANTHRACENE | 26 | ug/Kg | NA | 350 | 614000 | 6140 |
| SED01695 | BENZO(a)PYRENE | 34 | ug/Kg | NA | 350 | 61400 | 614 |
| SED01695 | BENZO(b)FLUORANTHENE | 29 | ug/Kg | NA | 350 | 614000 | 6140 |
| SED01695 | BENZO(k)FLUORANTHENE | 43 | ug/Kg | NA | 350 | 6140000 | 61400 |
| SED01695 | BIS(2-ETHYLHEXYL)PHTHALATE | 92 | ug/Kg | NA | 350 | 32000000 | 320000 |
| SED01695 | CHRYSENE | 56 | ug/Kg | NA | 350 | 61400000 | 614000 |
| SED01695 | FLUORANTHENE | 77 | ug/Kg | NA | 350 | 76800000 | 768000000 |
| SED01695 | PYRENE | 68 | ug/Kg | NA | 350 | 57600000 | 576000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462294 | AMERICIUM-241 | 0.024 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS462294 | PLUTONIUM-239/240 | 0.082 | pCi/g | 0.066 | 0.003 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463494 | URANIUM-235 | 0.14 | pCi/g | 0.0939 | 0.07 | 135 | 24 |
| SS463494 | URANIUM-238 | 5.1 | pCi/g | 2 | 0.07 | 586 | 103 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463294 | AMERICIUM-241 | 0.024 | pCi/g | 0.0227 | 0.007 | 215 | 38 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462594 | AMERICIUM-241 | 0.048 | pCi/g | 0.0227 | 0.02 | 215 | 38 |
| SS462594 | PLUTONIUM-239/240 | 0.13 | pCi/g | 0.066 | 0.003 | 1429 | 252 |

| Location | Analyte | Units | Background | Det_limit | Tier_1 | Tier_2 | Result |
|---|---|---|---|---|---|---|---|
| CF39-002 | Aluminum | mg/kg | 16902.00 | 11.00 | 1000000.0 | 1000000.0 | 23000.00 |
| CF39-002 | Lithium | mg/kg | 11.55 | 5.70 | 38400.00 | 38400.00 | 18.00 |
| CF39-002 | Nickel | mg/kg | 14.91 | 4.60 | 38400.00 | 38400.00 | 19.00 |
| CF39-002 | Chromium | mg/kg | 16.99 | 0.57 | 44300.00 | 4410.00 | 19.00 |
| CF39-002 | Cobalt | mg/kg | 10.91 | 1.10 | 115000.00 | 115000.00 | 15.00 |
| CF39-002 | Copper | mg/kg | 18.06 | 2.30 | 71100.00 | 71100.00 | 35.00 |
| CF39-002 | Xylenes, Total | ug/kg | -999999.00 | 12.00 | 9740000.0 | 97400000. | 25.68 |
| CF39-002 | U-235 | pCi/g | 0.12 | 1.00 | 113.00 | 24.00 | 0.22 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-006 | METHYLENE CHLORIDE | 1.3 | UG/KG | NA | 0.9 | 578 | 5.78 |
| CF39-006 | PYRENE | 64 | UG/KG | NA | 43 | 3970000000 | 3970000 |
| CF39-006 | STRONTIUM | 64.8 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |
| CF39-006 | VANADIUM | 53.8 | MG/KG | 45.59 | 0.27 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462694 | AMERICIUM-241 | 0.042 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS462694 | PLUTONIUM-239/240 | 0.069 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-008 | METHYLENE CHLORIDE | 1.5 | UG/KG | NA | 0.94 | 578 | 5.78 |
| CF39-008 | ZINC | 91.4 | MG/KG | 73.76 | 0.22 | 576000 | 576000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CE39-002 | ACETONE | 5.2 | UG/KG | NA | 5 | 27200000 | 272000 |
| CE39-002 | ALUMINUM | 22100 | MG/KG | 16902 | 1.4 | 1000000 | 1000000 |
| CE39-002 | BARIUM | 208 | MG/KG | 141.26 | 0.043 | 133000 | 133000 |
| CE39-002 | LITHIUM | 15 | MG/KG | 11.55 | 0.19 | 38400 | 38400 |
| CE39-002 | NICKEL | 21.3 | MG/KG | 14.91 | 0.72 | 38400 | 38400 |
| CE39-002 | STRONTIUM | 84.4 | MG/KG | 48.94 | 0.0068 | 1000000 | 1000000 |
| CE39-002 | VANADIUM | 49.4 | MG/KG | 45.59 | 0.27 | 13400 | 13400 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462794 | AMERICIUM-241 | 0.024 | pCi/g | 0.0227 | 0.007 | 215 | 38 |
| SS462794 | PLUTONIUM-239/240 | 0.12 | pCi/g | 0.066 | 0.003 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463194 | PLUTONIUM-239/240 | 0.1 | pCi/g | 0.066 | 0.01 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462894 | AMERICIUM-241 | 0.058 | pCi/g | 0.0227 | 0.02 | 215 | 38 |
| SS462894 | PLUTONIUM-239/240 | 0.12 | pCi/g | 0.066 | 0.006 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SED40196 | AMERICIUM-241 | 1.269 | pCi/g | 0.0227 | 0.023 | 215 | 38 |
| SED40196 | PLUTONIUM-239/240 | 6.602 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-011 | METHYLENE CHLORIDE | 1.5 | UG/KG | NA | 0.9 | 578 | 5.78 |
| CF39-011 | PYRENE | 92 | UG/KG | NA | 46 | 397000000 | 3970000 |
| CF39-011 | STRONTIUM | 60.8 | MG/KG | 48.94 | 0.0066 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS462094 | PLUTONIUM-239/240 | 0.1 | pCi/g | 0.066 | 0.006 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463894 | AMERICIUM-241 | 0.11 | pCi/g | 0.0227 | 0.002 | 215 | 38 |
| SS463894 | PLUTONIUM-239/240 | 0.32 | pCi/g | 0.066 | 0.007 | 1429 | 252 |
| SS463894 | URANIUM-235 | 0.4 | pCi/g | 0.0939 | 0.03 | 135 | 24 |
| SS463894 | URANIUM-238 | 14 | pCi/g | 2 | 0.06 | 586 | 103 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463094 | PLUTONIUM-239/240 | 0.098 | pCi/g | 0.066 | 0.007 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS464194 | AMERICIUM-241 | 0.082 | pCi/g | 0.0227 | 0.007 | 215 | 38 |
| SS464194 | PLUTONIUM-239/240 | 0.31 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| 42992 | COPPER | 20.7 | mg/Kg | 18.06 | 5 | 71100 | 71100 |
| 42992 | PLUTONIUM-239/240 | 0.025 | pCi/g | 0.02 | 0.01 | 1088 | 252 |
| 42992 | TOLUENE | 210 | ug/Kg | NA | 5 | 707000 | 7070 |
| 42992 | TOLUENE | 320 | ug/Kg | NA | 5 | 707000 | 7070 |
| 42992 | TOLUENE | 83 | ug/Kg | NA | 5 | 707000 | 7070 |
| 42992 | TOLUENE | 140 | ug/Kg | NA | 5 | 707000 | 7070 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-013 | BENZO(a)ANTHRACENE | 72 | UG/KG | NA | 46 | 160000 | 1600 |
| CF39-013 | CHRYSENE | 98 | UG/KG | NA | 62 | 16000000 | 160000 |
| CF39-013 | FLUORANTHENE | 200 | UG/KG | NA | 99 | 53700000 | 537000 |
| CF39-013 | METHYLENE CHLORIDE | 2.1 | UG/KG | NA | 1 | 578 | 5.78 |
| CF39-013 | PYRENE | 230 | UG/KG | NA | 47 | 397000000 | 3970000 |
| CF39-013 | STRONTIUM | 79.3 | MG/KG | 48.94 | 0.0069 | 1000000 | 1000000 |
| CF39-013 | STRONTIUM | 214 | MG/KG | 211.38 | 0.0069 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-015 | ACETONE | 9.3 | UG/KG | NA | 4.6 | 27200000 | 272000 |
| CF39-015 | METHYLENE CHLORIDE | 0.91 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS464694 | AMERICIUM-241 | 0.027 | pCi/g | 0.0227 | 0.008 | 215 | 38 |
| SS464694 | AMERICIUM-241 | 0.046 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS464694 | PLUTONIUM-239/240 | 0.12 | pCi/g | 0.066 | 0.006 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SED40296 | AMERICIUM-241 | 1.833 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SED40296 | PLUTONIUM-239/240 | 5.717 | pCi/g | 0.066 | 0.014 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-003 | STRONTIUM | 95.4 | MG/KG | 48.94 | 0.0065 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS464894 | PLUTONIUM-239/240 | 0.067 | pCi/g | 0.066 | 0.01 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SED40396 | AMERICIUM-241 | 1.453 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SED40396 | AMERICIUM-241 | 1.85 | pCi/g | 0.0227 | 0.013 | 215 | 38 |
| SED40396 | PLUTONIUM-239/240 | 5.523 | pCi/g | 0.066 | 0.019 | 1429 | 252 |
| SED40396 | PLUTONIUM-239/240 | 5.672 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS464594 | AMERICIUM-241 | 0.052 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS464594 | AMERICIUM-241 | 0.081 | pCi/g | 0.0227 | 0.006 | 215 | 38 |
| SS464594 | PLUTONIUM-239/240 | 0.22 | pCi/g | 0.066 | 0.009 | 1429 | 252 |
| SS464594 | URANIUM-235 | 0.12 | pCi/g | 0.0939 | 0.03 | 135 | 24 |
| SS464594 | URANIUM-235 | 0.16 | pCi/g | 0.0939 | 0.03 | 135 | 24 |
| SS464594 | URANIUM 238 | 3.2 | pCi/g | 2 | 0.04 | 586 | 103 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-012 | METHYLENE CHLORIDE | 0.96 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Units | Background | Det_limit | Tier_1 | Tier_2 | Result |
|---|---|---|---|---|---|---|---|
| CE39-004 | Lithum | mg/kg | 11.55 | 6.40 | 38400.00 | 38400.00 | 14.00 |
| CE39-004 | Strontium | mg/kg | 48.94 | 1.30 | 1000000.0 | 1000000.0 | 140.00 |
| CE39-004 | U-235 | pCi/g | 0.12 | 1.00 | 113.00 | 24.00 | 0.35 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS464294 | AMERICIUM-241 | 0.29 | pCi/g | 0.0227 | 0.005 | 215 | 38 |
| SS464294 | PLUTONIUM-239/240 | 1.1 | pCi/g | 0.066 | 0.005 | 1429 | 252 |
| SS464294 | URANIUM-235 | 0.18 | pCi/g | 0.0939 | 0.07 | 135 | 24 |
| SS464294 | URANIUM-238 | 3.6 | pCi/g | 2 | 0.07 | 586 | 103 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463794 | AMERICIUM-241 | 0.09 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS463794 | PLUTONIUM-239/240 | 0.4 | pCi/g | 0.066 | 0.004 | 1429 | 252 |
| SS463794 | URANIUM-235 | 0.21 | pCi/g | 0.0939 | 0.07 | 135 | 24 |
| SS463794 | URANIUM-238 | 11 | pCi/g | 2 | 0.08 | 586 | 103 |

| Location | Analyte | Units | Background | Det_limit | Tier_1 | Tier_2 | Result |
|---|---|---|---|---|---|---|---|
| CF39-010 | Aluminum | mg/kg | 16902.00 | 12.00 | 1000000.0 | 1000000.0 | 18000.00 |
| CF39-010 | Lithium | mg/kg | 11.55 | 5.80 | 38400.00 | 38400.00 | 14.00 |
| CF39-010 | Chromium | mg/kg | 16.99 | 0.58 | 44300.00 | 4410.00 | 20.00 |
| CF39-010 | Cobalt | mg/kg | 10.91 | 1.20 | 115000.00 | 115000.00 | 17.00 |
| CF39-010 | Copper | mg/kg | 18.06 | 2.30 | 71100.00 | 71100.00 | 30.00 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-009 | METHYLENE CHLORIDE | 0.82 | UG/KG | NA | 0.8 | 578 | 5.78 |
| CF39-009 | STRONTIUM | 86.6 | MG/KG | 48.94 | 0.006 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-004 | ACETONE | 9.3 | UG/KG | NA | 4.6 | 27200000 | 272000 |
| CF39-004 | METHYLENE CHLORIDE | 0.91 | UG/KG | NA | 0.8 | 578 | 5.78 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS465194 | PLUTONIUM-239/240 | 0.089 | pCi/g | 0.066 | 0.004 | 1429 | 252 |
| SS465194 | PLUTONIUM-239/240 | 0.089 | pCi/g | 0.066 | 0.01 | 1429 | 252 |

| Location | Analyte | Units | Background | Det_limit | Tier_1 | Tier_2 | Result |
|---|---|---|---|---|---|---|---|
| CF39-005 | Xylenes, Total | ug/kg | -999999.00 | 13.00 | 9740000.0 | 97400000. | 14.55 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS465294 | AMERICIUM-241 | 0.16 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS465294 | PLUTONIUM-239/240 | 0.75 | pCi/g | 0.066 | 0.006 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS465394 | AMERICIUM-241 | 0.084 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS465394 | PLUTONIUM-239/240 | 0.4 | pCi/g | 0.066 | 0.004 | 1429 | 252 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| CF39-007 | ACETONE | 5.5 | UG/KG | NA | 4.6 | 27200000 | 272000 |
| CF39-007 | METHYLENE CHLORIDE | 1.1 | UG/KG | NA | 0.8 | 578 | 5.78 |
| CF39-007 | STRONTIUM | 66.9 | MG/KG | 48.94 | 0.006 | 1000000 | 1000000 |

| Location | Analyte | Result | Units | Background | Det_limit | Tier_1 | Tier_2 |
|---|---|---|---|---|---|---|---|
| SS463694 | AMERICIUM-241 | 0.047 | pCi/g | 0.0227 | 0.01 | 215 | 38 |
| SS463694 | PLUTONIUM-239/240 | 0.17 | pCi/g | 0.066 | 0.005 | 1429 | 252 |

## KEY

- IHSS location
- PAC location
- UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature
- Original process waste line

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil
- Sediment Location

N

Scale = 1:1000

50 0 50 Feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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

Prepared by:

RADMS
REMEDIAL ACTION DECISION MANAGEMENT SYSTEM

KAISER•HILL COMPANY

File: 800-6 residual conc north2.apr

Date: 9/28/02