

Historical Release Report *(Interim Update)*

Response to Comments
for
HRR Annual Updates (1997, 1998, 1999)

Kaiser-Hill Company, L.L.C.

August 16, 2000



ADMIN RECCRD

SW-A-004102

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**Response to Comments and Meeting Agreements
for the
Historical Release Report (HRR)
PAC Narratives Submitted for No Further Action in 1997, 1998 and 1999**

August 3, 2000

The attached PAC Narratives are being submitted as an interim deliverable for the Historical Release Report (HRR). The updated narratives submitted are in response to comments received from the Regulatory Agencies on July 9, 1999 and resolution of several items discussed in a meeting with the Agencies on May 18, 2000. All of the PAC narratives pertain to comments from the Agencies on the 1997, 1998 and 1999 Annual Updates to the HRR.

The attached narratives have been updated in accordance with the Agency comments and or discussions held May 18, 2000 and propose No Further Action (NFA). Upon agreement to this interim update, the PAC narratives will be finalized and formally re-submitted in the 2000 HRR Annual Update.

As discussed in the May 18, 2000 meeting, the July 9, 1999 Agency comment responses for PAC 700-1114 should have contained NFA concurrence and PAC 700-1115 should have been changed to further action required instead of being approved as NFA. Also, it should be noted that PAC NE-1409, which was submitted for NFA in the 1999 HRR Annual Update is located in the Buffer Zone Operable Unit and Open Space RFCA Action Levels should apply. The 1999 Narrative (Table 3.7) originally reported this PAC as within the Industrial Area Operable Unit in a footnote. This error has been corrected and revised narrative included in this submittal.

IHSS 900-108 (submitted in the 1999 HRR for NFA) is being re-submitted and now contains text that the Agencies will be kept informed of waste management status. The status will be reported in the 4th quarter RFCA report or as part of an overall Site waste management report.

PAC REFERENCE NUMBER: NE-110

IHSS Reference Number: 110, Buffer Zone Operable Unit

Unit Name: Trench T-3

Approximate Location: N750,000; E2,087,000

Date(s) of Operation or Occurrence

1964 - 1965

Description of Operation or Occurrence

Trench T-3 was used primarily for the disposal of sanitary waste-water and sewage treatment plant sludge. The sludge removed from the waste-water treatment plant was placed on sludge drying beds. Dried material removed from the sludge drying beds was placed in the disposal trenches (also referred to as the East Trenches) until August 1968. The sanitary sludge disposal trenches are reported to be approximately 10 feet deep with two feet of soil cover (DOE, 1992). In addition, miscellaneous waste was also disposed in Trench T-3 including crushed drums, asphalt planking, and construction debris (DOE, 1996a).

Physical/Chemical Description of Constituents Released

Some uranium and plutonium contamination was present in sludge during this time-frame. It is reported that the older sludge had primarily uranium contamination with newer sludge having an increasing amount of plutonium contamination. Total long-lived alpha activity present in the sludge in the East Trenches (not specifically T-3) was reported between a minimum of 382 pCi/g in August 1964, and a maximum of 3,591 pCi/g in June 1960. Uranium contamination was present in flattened drums that were disposed in this trench (DOE, 1992). Flattened drums, estimated to be more than 300 in total number are known to exist in Trench T-3 (DOE, 1996c).

Responses to Operation or Occurrence

A source removal action was performed in the summer of 1996 to excavate and treat contaminated material using low-temperature thermal desorption. This action was authorized by a Proposed Action Memorandum (PAM) for the Source Removal at Trenches T-3 and T-4 (IHSSs 110 and 111.1), Revision 2, dated March 28, 1996 (DOE, 1996b). Approximately 1,706 cubic yards of volatile organic compound contaminated material was removed from Trench T-3 (PAC NE-110) and treated. Excavation was completed July 3, 1996 and treatment of Trench T-3 material was completed by July 11, 1996.

The completion report for the project details the treatment process, contaminants removed, the condition of the trench following the removal action, and analytical results (DOE, 1996c).

Approximately 200 cubic yards of debris, primarily crushed drums, was also removed from the trench, treated if contaminated with volatile organics, and packaged for off-site disposal. During packaging, one to two pounds of a black material was released from a drum and spread over a small work area. The material was radioactive and the area was remediated. The black material may have been depleted uranium although it was never characterized other than being radioactive. Two roll-off containers and two waste-crates were used to contain the soil contaminated with this material (DOE, 1996c). These containers were shipped to an approved offsite facility.

Fate of Constituents Released to Environment

The soils treated as part of the source removal action were returned to the trench. Debris excavated from the trench was treated, size reduced, containerized and characterized. The containerized debris was shipped to the Nevada Test Site (NTS) in September 1997. Analytical data for this project is documented in the Completion Report for the Source Removal at Trenches T-3 and T-4, IHSS 110 and 111.1 (DOE, 1996c). The source removal action for Trench T-3 removed contamination sources above the cleanup values stipulated in the PAM. It is believed that no further groundwater degradation will result from Trench T-3 as a result of this source removal (DOE, 1996a).

Action/No Further Action Recommendation

The post-treatment levels of volatile organic compounds in the treated soils returned to Trench T-3 (PAC NE-110) were below the thermal desorption unit performance standards specified in the PAM (DOE, 1996b) as documented in the completion report (DOE 1996c). Additionally, the excavation verification sample results for the contaminants of concern from Trench T-3 were below the cleanup values stipulated in the PAM (DOE, 1996c). These cleanup values were also consistent with the RFCA Tier I Subsurface Soil Action Levels (DOE, 1996d). The detectable volatile organic compounds observed in the excavation verification samples for Trench T-3 included carbon tetrachloride in one sample at a concentration of 1.8 ppm and tetrachloroethene in three samples with concentrations ranging from 0.74 ppm to 6.3 ppm. The approved cleanup level for carbon tetrachloride was established at 11 ppm and the cleanup level for tetrachloroethene was established at 11.5 ppm (DOE, 1996c).

Trench T-3 (PAC NE-110) is proposed for No Further Action (NFA) because the source removal and treatment goals specified in the PAM (DOE, 1996b) were achieved and were consistent with the action levels agreed upon in the Rocky Flats Cleanup Agreement (RFCA) (DOE, 1996d). In accordance with the PAM (DOE, 1996b), the source removal would be considered complete if analysis from verification samples were below cleanup levels or upon reaching groundwater or bedrock. Any remaining contamination beyond these criteria would be subject to groundwater remediation. In 1999, the East Trenches

groundwater remediation project was completed to collect and treat a plume of contaminated groundwater originating in the East Trenches area. That project is described in the Final East Trenches Plume Project Closeout Report (DOE, 2000).

Comments

Trenches T-3 through T-11 are also referred to as the East Trenches (DOE, 1992).

Trench T-3 (PAC NE-110) had few operational differences from Trenches T-4 through T-11.

No documentation was found regarding the exact dates of operation of individual trenches. Interviewees were unaware of operating dates and could provide no additional information (DOE, 1992).

References

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1996a, *Annual Update for the Historical Release Report, August 1, 1995 through August 1, 1996*. RF/ER-96-0046, September.

DOE, 1996b, *Proposed Action Memorandum for the Source Removal at Trenches T-3 and T-4 IHSSs 110 and 111.1, Revision 2*, RF/ER-95-111.UN, March.

DOE, 1996c, *Completion Report for the Source Removal at Trenches T-3 and T-4 IHSS 110 and 111.1*, RF/ER-96-0051, Revision 2, September.

DOE, 1996d, *Final Rocky Flats Cleanup Agreement*, Department of Energy, Rocky Flats Environmental Technology Site, Golden, CO, July.

DOE, 2000, *Final East Trenches Plume Project Closeout Report*, Fiscal Year 1999, RF/RMRS-99-443.UN, February, Rocky Flats Environmental Technology Site, Golden, CO.

PAC REFERENCE NUMBER: NE-1409

IHSS Number: Not Applicable
Unit Name: Interceptor Trench Pump House
Approximate Location: N751,647; E2,085,277

Date(s) of Operation or Occurrence

A release from primary to secondary containment occurred on July 20, 1993, sometime after a 10:30 a.m. inspection and before 1:00 p.m. when Building 910 operators responded to an alarm system at the Interceptor Trench Pump House (ITPH), (DOE, 1994).

Description of Operation or Occurrence

An occurrence related to the pumping operation of wastewater collected by the Solar Evaporation Ponds Interceptor Trench System (ITS) and subsequent transfer to the Modular Storage Tanks (MSTs) occurred on July 20, 1993. Approximately 4,700 gallons of RCRA F-listed water in the primary containment piping (located between the MSTs and the ITS sump) began leaking into the secondary containment. The water overflowed back into the modular tank pump house as designed and was fully contained in the pump house secondary containment. When the water level in the pump house secondary containment rose, the local alarm was activated and the pumps automatically shut down. This alerted the Building 910 operators to the occurrence. When the building operators found that liquid was still siphoning out through the pump, they closed the manual valves (DOE, 1994).

Some of the water drained into the ITS sump through a failed hose connection on the secondary containment piping located within the ITS sump. This water was pumped back into the MSTs (DOE, 1994).

Physical/Chemical Description of Constituents Released

The released material was considered RCRA F-listed hazardous waste based on 6 CCR 1007-3 because it passed through the ITS sump (which is considered a waste generation point). Applicable EPA waste codes for the released material include F001, F002, F003, F005, F006, F007 and F009. Table 3.5 provides a summary of the RCRA constituents historically present in the ITS water and an estimate of the amount potentially released based on the volume released (DOE, 1994). The samples were taken in 1991-1992 at the Interceptor Trench Pump House sump (SW095). The table was prepared in 1994 when the incident was documented for the HRR. Based on the data presented in Table 3.5, some of the constituents appear to have exceeded current RFCA surface water action levels and standards (RFCA Attachment 5, March 21, 2000) at the point of release. Note that RFCA was not in effect at the time of release and that the point of release at the ITPH sump was not to surface water (i.e. North Walnut Creek) but rather to the secondary containment within the sump.

Table 3.5 1991-1992 Historical Summary Statistics for ITPH Water (Station SW095)

Potential Constituent Of Concern	Number of Samples	Number of Detects	Mean (mg/L)	Regulatory Limit (mg/L)	Estimated Amount Released (lb)
Total Metals¹					
Cadmium	24	0	.00184 ³	1.0 ²	0.000074
Chromium	26	8	.00984	5.0 ²	0.000394
Lead	28	2	.00123	5.0 ²	0.000049
Silver	22	2	.00393	5.0 ²	0.000157
Volatile Organic Compounds					
Methylene Chloride	25	0	.00230 ³	0.44 ⁴	0.000092
Carbon Tetrachloride	25	1	.00258	0.057 ⁴	0.000103
Chloroform	25	0	.00192 ³	0.046 ⁴	0.000076
Tetrachloroethene	25	0	.00250 ³	0.056 ⁴	0.000100
Toluene	25	0	.00250 ³	0.080 ⁴	0.000100
Trichloroethene	25	2	.00302	0.054 ⁴	0.000121
Plating Substances					
Cyanide	25	1	.01000	1.2-1.9 ⁴	0.000400
Nickel	25	2	.01042	0.040 ⁴	0.000417

¹Concentration of metals below characteristic regulatory limit therefore, water is not regulated characteristic waste.

²TCLP maximum concentration of contaminants for toxicity characteristic.

³Mean calculated using half the detection limit for concentrations at the detection limit.

⁴Land Disposal Restricted Constituent Concentration treatment standard levels in wastewater (reference §268.43).

Responses to Operation or Occurrence

The water that overflowed into the modular tank pump house was pumped into a portable tank and trucked to Building 374 for treatment. The wipes used in the final cleanup of the pump house were designated hazardous waste and were placed into drums for storage in a RCRA satellite accumulation area (DOE, 1994).

Actions were then performed to operate the system in accordance with RCRA requirements. As summarized in DOE, 1994, these included:

1. Repaired the primary transfer pipeline.
2. Modified the secondary containment portion of the line within the ITS sump to prevent leakage of water back into the sump. Although the portion of the line can be visually inspected, it was preferable to modify the secondary containment in this manner.
3. Retest the line following repair.
4. Completed or repaired leak-detectors in the secondary containment portion of the line that were not operational at the time of the incident.
5. Confirmed that the process control logic supported positive shut-down of the pumps when a leak is detected in the secondary containment system in the ITS sump.

6. Repaired the remote alarm which was not operable when the liquid was released into the pump house.
7. Analyzed pressure conditions in the Building 910 feed system to determine if components experienced an over-pressurization (repair as needed).
8. Incorporated pressure-surge control as needed to ensure "hammer-free" operation when the liquid discharge is intermittently secured by automatically operating feed valves in Building 910.

Fate of Constituents Released to Environment

No release to the environment is known to have occurred from this incident; however, because the concrete sump that received the waste is unlined, the RCRA Contingency Plan was implemented as a precautionary measure (DOE, 1994). PAC NE-1409 had not been subject to investigation until construction activities related to the MST Freeze Protection project were initiated in November 1998. Four soil samples were collected in December 1998 and January 1999 in support of the Site Survey Determination for Environmental and Worker Exposure, the supporting Soil Disturbance Evaluation and hazardous waste determination requirements. The sample locations (Figure 3.3) were placed at each corner of the ITS sump and selected based on professional judgement (i.e., if a release actually had occurred from the sump the soil surrounding the sump would likely be contaminated). Based on the characteristics of the waste that accumulated in the sump, the soil samples were analyzed for metals and VOCs. Analysis for cyanide was not performed because the waste concentrations (Table 3.5) are below background concentrations. Additionally, because groundwater in the surrounding area is contaminated with nitrate and uranium, samples were also analyzed for nitrate and isotopic radionuclides. Sampling for semivolatile organic compounds (SVOCs) was requested by the qualified hazardous waste generator and performed at two of the locations.

All of the analytical results are below RFCA action levels. Results of the analyses are summarized in Table 3.7 along with the appropriate RFCA action level. All of the analytical results are presented in the Draft No Further Action Justification Document for Incorporation into the Historical Release Report (HRR) for PACs NW-1501, NE-1408, NE-1409, 900-1309, 900-1311, 900-1312, 900-1313 (RMRS, 1999).

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Table 3.7 Summary of Results for PAC NE-1409

Potential Contaminants of Concern ¹	Number of Surface Soil Samples	Number of Detects > RFCA Tier II ²	Comparison Values (mg/Kg or pCi/g) Open Space		Range of Values Detected (mg/Kg or pCi/g)	
			RFCA Tier II ^{3,4}	RFCA Tier I ^{5,6}		
Volatile Organic Compounds						
Acetone	4	0	1.92E+05	1.92E+05	0.019	0.028
Methylene Chloride	4	0	5.98E+02	2.39E+05	0.008	0.011
Total Metals						
Molybdenum	4	0	9.61E+03	9.61E+03	0.26	0.46
Thallium	4	1	-	-	0.67'	1.2'
Radionuclides						
Plutonium-239/241	4	0	252	1429	0.092	0.142
Uranium-235	4	0	24	135	Not detected	0.081
Nitrate						
Nitrate	4	0	>1E+06	>1E+06	2.1	31.8

1 Contaminants of concern are those chemicals detected above background concentrations presented in the Geochemical Characterization of Background Surface Soils: Background Soils Characterization Program (DOE, 1995).

2 PAC NE-1409 is within the Buffer Zone OU; Open Space RFCA Action Levels Apply

3 Tier II values for non-radionuclides represent either 1E+06 carcinogenic risk or a hazard index of 1 for non-carcinogenic toxicity.

4 Tier II values for radionuclides are based on an annual dose limit of 15 mrem to a hypothetical resident.

5 Tier I values for non-radionuclides represent either 1E+04 carcinogenic risk or a hazard index of 1 for non-carcinogenic toxicity.

6 Tier I values for radionuclides are based on an annual dose limit of 15 mrem to an office worker.

7 RFCA action levels do not exist for thallium because of a lack of toxicity information. The value is in excess of RFETS background concentrations but within the background range 0.8 to 1.2 mg/Kg.

Action/No Further Action Recommendation

Based on the results of the soil samples collected, no current or potential contaminant source was identified. The incident occurred in 1993 and was not a continuing release. PCOCs for PAC NE-1409 were not detected and therefore this PAC is proposed for NFA consistent with criteria set forth in the Rocky Flats Cleanup Agreement (RFCA), (DOE, 1996).

Comments:

None

References:

DOE, 1994, *Historical Release Report, Seventh Quarterly Update, January 1, 1994 to March 31, 1994*, Rocky Flats Environmental Technology Site, Golden, CO.

DOE, 1996, *Final Rocky Flats Cleanup Agreement*, Department of Energy, Rocky Flats Environmental Technology Site, Golden, CO, July.

RMRS, 1999, *Draft No Further Action Justification Document for Incorporation into the Historical Release Report (HRR) PACs NW-1501, NE-1408, NE-1409, 900-1309, 900-1311, 900-1312, 900-1313*, Rocky Flats Environmental Technology Site, Golden, CO, July

DRAFT

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Colorado Department of Health
Hazardous Materials and Waste Management Division
Mail Code: HMWMD-HWC-B2/Attn: Frederick R. Dowsett, PhD.
4300 Cherry Creek Drive South
Denver, Colorado 80601-1530

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CONTINGENCY PLAN
IMPLEMENTATION REPORT (CPIR) No. 93-007

Enclosed is the RCRA CPIR No. 93-007 which outlines the events and responses associated with a spill of approximately 4,700 gallons of hazardous waste from the ancillary equipment associated with the Temporary Modular Tanks and Building 910 Treatment System. These tanks store liquid that is collected by the Solar Evaporation Pond Interceptor Trench System (ITS). The tanks, treatment system, and ancillary equipment are a part of RCRA Unit No. 38. The RCRA Contingency Plan was implemented as a precautionary measure due to the possibility of a release of RCRA regulated hazardous waste to the environment.

This report was developed to meet the RCRA Contingency Plan reporting requirements of CCR 1007-3 Section 265.56(j) as well as the notification requirements of 6 CCR 1007-3 Section 265.56(i) and the tank system release reporting requirements of CCR 1007-3 Section 265.196(d).

Your office was notified of the incident on July 21, 1993 at 10:15 a.m. that the RCRA Contingency Plan has been implemented as a precautionary measure due to the possibility of a release of RCRA regulated hazardous waste to the environment. The EPA, Region VIII was notified by facsimile on July 21, 1993. If you have any questions regarding this subject, please contact R. W. Boyle of EG&G Rocky Flats Inc. at 966-6926.

Enclosure:
As Stated

cc:

D. M. Maxwell - EPA, Region VIII
B. Brainard - DOE, RFO
D. Grosek - DOE, RFO
T. E. Lukow - DOE, RFO
W. E. Seyfert - DOE, RFO
R. W. Boyle - EG&G Rocky Flats, Inc.
T. G. Hedahl - EG&G Rocky Flats, Inc.
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P. J. Larsen - ET&T Rocky Flats, Inc.
A. L. Schubert - EG&G Rocky Flats, Inc.

RCRA CONTINGENCY PLAN
IMPLEMENTATION REPORT No. 93-007
ROCKY FLATS PLANT
EPA ID NUMBER CO7890010526

This report is made in compliance with the requirements of 6 CCR 1007-3, Parts 264.56 (j) and 265.56 (j) for a written report within 15 days of the implementation of the RCRA Contingency Plan. The requirements for this are given below and will be addressed in the order listed, excerpted from 6 CCR 1007-3, Parts 264.56 and 265.56:

"(j)...Within 15 days after the incident, he must submit a written report on the incident to the department. The report must include:

- (1) Name, address, and telephone number of the owner or operator
- (2) Name, address, and telephone number of the facility
- (3) Date, time, and type of incident (fire, explosion)
- (4) Name and quantity of material(s) involved
- (5) The extent of injuries, if any
- (6) An assessment of actual or potential hazards to human health and the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material resulted from the incident."

In addition, information is also being included in this report to address the reporting and notification requirements of 6 CCR 1007-3 Section 265.56(i) and CCR 1007-3 Section 265.196(d):

- (8) Notification requirements of 6 CCR 1007-3 Section 265.56(i)
- (9) Tank system release reporting requirements of CCR 1007-3 Section 265.196(d)

-
- (1) NAME, ADDRESS AND TELEPHONE NUMBER OF THE OWNER OF THE FACILITY:

United States Department of Energy
Rocky Flats Plant
Post Office Box 928
Golden, Colorado 80402
(303) 966-2025

Facility Contact:
A. H. Pauole, Manager

July 30, 1993

(2) NAME, ADDRESS AND TELEPHONE NUMBER OF THE FACILITY: -

U.S. Department of Energy
Rock Flats Plant
Post Office Box 928
Golden, Colorado 80402
(303) 966-2025

(3) DATE, TIME, AND TYPE OF INCIDENT:

A. Summary:

A hazardous waste incident occurred on July 20, 1993. The incident involved the Interceptor Trench (ITS) and ancillary equipment associated with the Modular Tanks and Building 910 Treatment System (RCRA Unit No. 38). The incident involved a failure of a primary pipe and secondary containment system and resulted in a spill/leak of hazardous waste. The incident was discovered at approximately 1:30 p.m. Hazardous waste was being pumped from the Modular Tanks to the Building 910 treatment facility when a primary transfer pipe failed, causing waste to leak/ spill into the secondary containment pipe. The released material filled the secondary containment pipe causing hazardous waste to spill from the secondary containment pipe into the modular tank pumphouse secondary containment. In addition, the excessive amount of waste in the transfer piping secondary containment caused a hose connection on the secondary containment pipe to fail and resulted in a leak of hazardous waste into the ITS sump.

The contingency plan was implemented on July 20, 1993 as a precautionary measure, due to a possibility of a release to the environment of hazardous waste from an unlined concrete sump (the ITS sump). In addition, some of the released material was not removed from the secondary containment of the transfer piping within 24 hours.

B. System Description:

The involved system is a collection, transport, storage, and treatment system used to manage surface/ ground water at the northeast portion of the RFP site. The ITS and its predecessor trench systems were installed to collect and return ground water to the Solar Ponds for treatment to remove nitrates (reference Historical Release Report for the Rocky Flats Plant, June, 1992). The nitrate level continues to exceed applicable stream standards for Walnut Creek.

The system is an Interim Status unit, permitted through the mechanism of the Interim Measure/Interim Remedial Action (IM/IRA). (The IM/IRA Decision Document for the Solar Evaporation Ponds Operable Unit No. 4, April, 1992 states on page 1-1 "this IM/IRA is a mechanism for permitting the use of the proposed treatment (i.e., use of surge tanks and flash evaporators) as directed by EPA and CDH." Subsequently, at CDH request (Baughman to Hartman, September 2,

1992), a revised Part A permit application was submitted which covers the tanks and flash evaporators.)

The system includes a) Interceptor Trench System (ITS), b) three (3) Modular Storage Tanks, c) Building 910 Treatment System, and all related ancillary equipment. Figure 1 is a system layout and Figure 2 is a schematic of the transfer systems. The following is a description of the system components:

a) Interceptor Trench System (ITS):

- 1) The ITS system includes an extensive French Drain system of perforated pipes that collects and transports surface and ground water to the ITS sump (reference Figure 2 - item a1).
- 2) The ITS sump is an underground, unlined, concrete vault that stores the surface and ground water (reference Figure 2 - item a2). The ITS sump is not secondarily contained.
- 3) A small building housing two pumps is located on top of the sump (reference Figure 2 - item a3). The submersible sump pumps transfer the surface and ground water collected in the sump several hundred feet to the modular storage tanks. In accordance with 6 CCR 1007-3, the pumping operation is considered a waste generation point. At this point, the generated waste (pumped surface/ ground water) is characterized as RCRA hazardous waste.

NOTE: The ITS pumphouse is the physical low point of the transfer systems for both the pipeline from the ITS sump to the Modular Tanks (reference Figure 2 - item a4) and the pipeline from the Modular Tanks pumphouse to Building 910 (reference Figure 2 - item b4 and b5).

- 4) The RCRA hazardous waste (pumped surface/ ground water) is pumped from the ITS sump pump, through a 3-inch secondarily contained, buried pipe, several hundred feet to one of 3 modular storage tanks (reference Figure 2 - item a4).

b) Modular Storage Tanks

- 1) The hazardous waste (pumped surface/ ground water) is stored in three modular storage tanks (reference Figure 2 - item b1) until it is pumped to the Building 910 treatment system.
- 2) A secondarily contained, buried pipe (reference Figure 2 - item b2) transports waste from the modular tanks to the modular storage tank pumphouse (reference Figure 2 - item b3).
- 3) A pumphouse (reference Figure 2 - item b3) is located several feet from

the storage tanks and contains two pumps that transfer the waste from the modular storage tanks to the Building 910 treatment system. The pumphouse includes a epoxy-coated steel secondary containment with an automatic feed cutoff that shuts down the pumps when a high level is reached in the pumphouse secondary containment. The leak detection system includes a local and remote alarm. The secondary containment for the transfer pipe from the tanks to the pumps is open ended (daylights) in the modular tank pumphouse.

- 4) The waste is pumped through 2-inch secondarily contained, buried pipe (reference Figure 2 - items b4 and b5) several hundred feet from the modular tank pumphouse through the ITS sump (reference Figure 2 - item a2) and to the Building 910 treatment system (reference Figure 2 - item c). The primary containment pipe is continuous and does not open to or stop at the ITS sump. The secondary containment piping is divided into two sections to allow segregation and identification if a leak should occur. The partition between the two section of secondary containment is located within the ITS sump. The automatic leak detection system for these two sections of secondary containment was not operational; therefore, daily inspections were being conducted until the automatic system could be made operational. The pipeline from the modular tank pumphouse to Building 910 (reference Figure 2 - item b4) shares a common trench with the pipeline from the ITS sump to the modular-storage tank (reference Figure 2 - item a4).
- 5) From the ITS sump, the continuous pipe (and secondary containment around the pipe) goes to the building 910 Treatment System (reference Figure 2 - item c). From ITS sump (reference Figure 2 - item a2), the transfer pipe continues by itself to the Building 910 treatment facility (reference Figure 2 - item c).

c) Building 910 Treatment Facility

- 1) The Building 910 treatment facility (reference Figure 2 - item c) includes storage tanks and three evaporative units that treats the waste (pumped surface/ ground water).

C. Description of Incident and Immediate Response:

Hazardous waste from the Temporary Modular Tanks, which stores liquid collected by the Solar Evaporation Ponds Interceptor Trench System (ITS), was being pumped to Building 910 for treatment in the Acceptance Phase of the building's operation. At approximately 10:30 a.m. on July 20, 1993, operators conducted the daily inspection of the tank system which includes the ITS sump and Modular Tank pumphouse. No problems or unusual conditions were identified.

Prior to 1:00 p.m. on July 20, 1993, a leak occurred in the primary containment piping (reference Figure 2 - item (b4)) located between the modular tanks and the ITS sump (reference Figure 2 - item a2) which allowed waste to leak into the secondary containment. Due to the location of the leak in the pipeline, the hazardous waste that leaked into the secondary containment overflowed back into the Modular Tank pumphouse (reference Figure 2 - item b3) and also gravity-drained through a failed hose connection on the secondary containment piping (reference Figure 2 - item a2). The failed hose connection is located within the ITS sump. The ITS sump is equipped with an automatic level controls and the material that spilled into the ITS sump was pumped back into the Modular Tanks. The hazardous waste that overflowed into the Modular Tank pumphouse was fully contained in the pumphouse secondary containment. When the liquid level in the pumphouse secondary containment rose, the leak detection system was activated, the local alarm was activated, and the pumps were automatically shut down. The remote alarm via telemetry to Building 374 did not, however, function. Problems had occurred previously and this alarm was not reliable; therefore, it had not been considered operational and compensatory measures were in place to perform daily checks of the local alarm panel. This deficiency had been identified as an open item to be corrected.

At approximately 1:00 p.m., Operators in Building 910 were alerted to a problem when feed from the Modular Tanks ceased flowing to Building 910. The operators investigated (at approximately 1:30 p.m.) and discovered that the pump had automatically shut-down due to liquid on the floor of the pumphouse. Liquid was apparently still siphoning out through the pump, therefore, the operators immediately stopped the flow of hazardous waste by closing manual valves.

D. Corrective Action:

Applicable requirements of 6 CCR 1007-3 Part 264.196 will be met prior to system restart.

- 1) In accordance with 6 CCR 1007-3 Part 264.196 (a) - Cessation of Use: The pump automatically shut-down when the liquid level in the pumphouse reached the level sensor. Operators observed some siphoning of liquid through the pump, and immediately closed the manual valves to isolate the line and stop the flow of hazardous waste. While verifying the cause of the problem, the pump was operated for a short duration (less than one minute) to confirm the location of the leak. The pumps and valves were locked out/tagged out at 9:30 p.m. on July 20 to prevent any addition of hazardous waste to the transfer pipe.

NOTE: The ITS is continuing to collect ground water into the sump, and that ground water was pumped to the Modular Tanks as needed. These sump operations are routine, automatic, and continuous.

- 2.) In accordance with 6 CCR 1007-3 Part 264.196 (b)(2) - Removal of hazardous waste from the secondary containment:
- a) On July 20, the hazardous waste that had collected in the secondary containment system of the pumphouse was pumped into a liquid waste dumpster and trucked to Building 374 for treatment.
 - b) Hazardous waste continued to drain from the hose connection on the secondary containment into the ITS sump for several hours: the sump was checked several times after the problem was initially discovered at about 1:30 p.m. on July 20, and drainage from the secondary containment had ceased by 4:30 p.m. on July 20 when the transfer piping secondary containment drained to the low point of the line in the ITS sump. The material that drained into the sump was automatically pumped back into the Modular Tank system and was removed from the sump by 5:00 p.m. on July 20.
 - c) Some hazardous waste, however, remained in the annulus of the secondarily contained piping below the elevation of the disconnected hose connection. Upon completion of a work package (including a confined space permit), approximately 30 gallons of hazardous waste was drained from the annulus on July 30, 1993.
- 3.) In accordance with 6 CCR 1007-3 Part 264.196 (c) - Containment of visible release to the environment: There were no visible releases to the environment. Since the ITS sump is below ground, the sump cannot be visually inspected to assure that no hazardous waste has escaped to subsurface soil or water. It is possible that hazardous waste did escape from the sump, since the sump is unlined concrete.
- 4.) In accordance with 6 CCR 1007-3 Part 264.196 (d)- Notification and reports: The CDH and EPA were notified of this occurrence on July 21, 1993 as a precautionary measure due to the possibility of a release to the environment of greater than one pound of hazardous waste from the unlined concrete sump. Submission of this RCRA Contingency Implementation Report satisfies 6 CCR 1007-3 Part 264.196 (d) report requirements.
- 5.) In accordance with 6 CCR 1007-3 Part 264.196 (e)(3) - Repair of the affected system: The system will be returned to service as soon as the necessary repairs are completed. The following actions will be completed prior to returning the system to operation:
- Repair the primary transfer line,
 - Repair or modify the portion of the secondary containment of the transfer line (the hose connection) within the ITS sump that

failed and resulted in the leak of hazardous waste from the secondary containment system, and

- Retest the primary line following the repair.

6) In accordance with 6 CCR 1007-3 Part 264.196 (f)- Certification of major repairs: The repair of the system is not expected to be extensive (per §265.196(f), examples of extensive repairs are installation of an internal liner or repair of a ruptured vessel); therefore the certification by an independent, qualified, registered, professional engineer may not be required prior to resuming operations.

E. Operational Status:

The ancillary equipment associated with the spill is currently shut down and locked out of service until the repairs to the leak in the primary and secondary systems are repaired. When the system is returned to operation, operation will be in compliance with RCRA.

(4) MATERIAL INVOLVED:

As specified in 6 CCR 1007-3, ground water is not a solid waste and the "mixing" and "derived from" rules are not operable in this system. The ITS system, including the French Drain system, are not hazardous waste systems and the surface/ ground water in these systems is not characterized as hazardous waste (reference Figure 2 - item a1). The surface/ ground water stored in the ITS is not characterized as hazardous waste (reference Figure 2 - item a2).

The released material is, however, RCRA F-listed hazardous waste. In accordance with 6 CCR 1007-3, the pumping operation at the ITS sump is considered a waste generation point (reference Figure 2 - item a3). At this point (reference Figure 2 - item a3), the surface/ ground water is recharacterized as RCRA F Listed hazardous waste because the "contained in" rule is operable. The applicable EPA waste codes are F001, F002, F003, F005, F006 F007, and F009.

In accordance with 6 CCR 1007-3, the waste remains a listed hazardous waste (F001, F002, F003, F005, F006 F007, and F009) as it moves through all other parts of the system.

(5) EXTENT OF INJURIES:

No injuries occurred.

(6) THREAT TO HUMAN HEALTH OR THE ENVIRONMENT:

The spill/leak did not result in an additional threat to human health or the

environment.

The Modular Tank pumphouse fully contained the hazardous waste spilled into the pumphouse secondary containment.

The unlined concrete ITS sump may have allowed a release of hazardous waste to the environment. It is possible that during normal operations, the surface/ground water could move in or out of the ITS sump; therefore, some of the hazardous waste spilled into the sump may have also permeated the concrete or otherwise escaped to the surrounding soil. The spilled hazardous waste does, however, originate in the ITS sump. There is no physical or chemical difference between the spilled hazardous waste and the surface/ground water collected in the ITS sump. The only difference in the material is that one is classified as hazardous waste and the other is classified as surface/ground water.

Approximately 3 to 4 million gallons of ITS water is collected in the sump each year, and the amount of the spill represents a very small increase (less than 1%) in the volume handled in the sump. The ITS system was not designed to collect all of the ground water flowing under the ponds at the depth of the trench system and any spilled hazardous waste that leaked from the ITS sump would rejoin that ground water that currently flows from the sump.

(7) QUANTITY AND DISPOSITION:

A. Quantity:

Approximately 4,700 gallons of hazardous waste were leaked from the pipeline secondary containment. The volume was estimated as follows:

- 1) Approximately 300 gallons of hazardous waste were spilled to the Modular Tank pumphouse secondary containment, based on the known area of the floor and the observed depth of four inches.
- 2) Approximately 4,400 gallons of hazardous waste were spilled to the ITS sump. hazardous waste from the sump was pumped to the east Modular Tank, and operators observed that the level in the tank rose less than one inch. The tank holds about 6000 gallons per inch of height. The installed flow totalizer in the ITS pumphouse indicated approximately 5,000 gallons had been pumped from the sump to the Modular Tank between 10:30 a.m. and 4:30 p.m. on July 20. Inflow from the trench system to the sump would have contributed approximately 600 gallons during this period. Thus, the estimate of 4,400 gallons was derived from this data. The hazardous waste was recovered from the sump by about 5:00 p.m. on July 20.

The original notification to CDH and EPA had estimated that 6300 gallons had leaked from the secondary containment system. The quantity has been revised

based on the above facts.

It is estimated that less than 0.01 pound of hazardous waste constituents were leaked into the secondary containment system. This estimation is based on the a spill of 4,700 gallons (about 40,000 pounds) of hazardous waste and a hazardous waste constituent concentration of 50 ppb. The contaminant concentration level is based on historical data for the ITS waste stream.

B. Disposition:

The hazardous waste that overflowed into the Modular Tank pumphouse was pumped into a portable tank and trucked to Building 374 for treatment. The wipes used in the final cleanup of the pumphouse were designated as hazardous waste (mixture rule), and placed into drums and are properly stored in a RCRA satellite accumulation area in Building 910.

The hazardous waste that spilled into the ITS sump was recovered into the Modular Tanks. This recovery represents the normal, automatic functioning of the system. No change to the characteristics of the hazardous waste occurred, and the hazardous waste will be treated in existing facilities.

(8) RESUMPTION OF OPERATIONS NOTIFICATION

Based on the requirements of 6 CCR 1007-3 Part 264.56 (i), the owner or operator must notify CDH that the facility is in compliance with 6 CCR 1007-3 Part 264.56 (h) prior to resuming operations. The system is in compliance with the requirements outlined in 6 CCR 1007-3 Part 265.56(h)(1) in that all of the released material has been treated or stored. The system is also in compliance with the requirements outlined in 6 CCR 1007-3 Part 265.56(h)(2) in that only incidental release supplies used to respond to this incident were from routine operations supplies and no incidental release response supplies were used. In addition, no equipment specifically listed in the contingency plan were used to respond to this incident.

(9) TANK RELEASE REPORTING REQUIREMENTS

Based on the requirements of 6 CCR 1007-3 Part 264.196 (d), a report containing the following information must be submitted to CDH.

The route of migration of such a release would be into the ground water that flows to the Walnut Creek basin.

Characteristics of the surrounding soil are available in the IM/IRA.

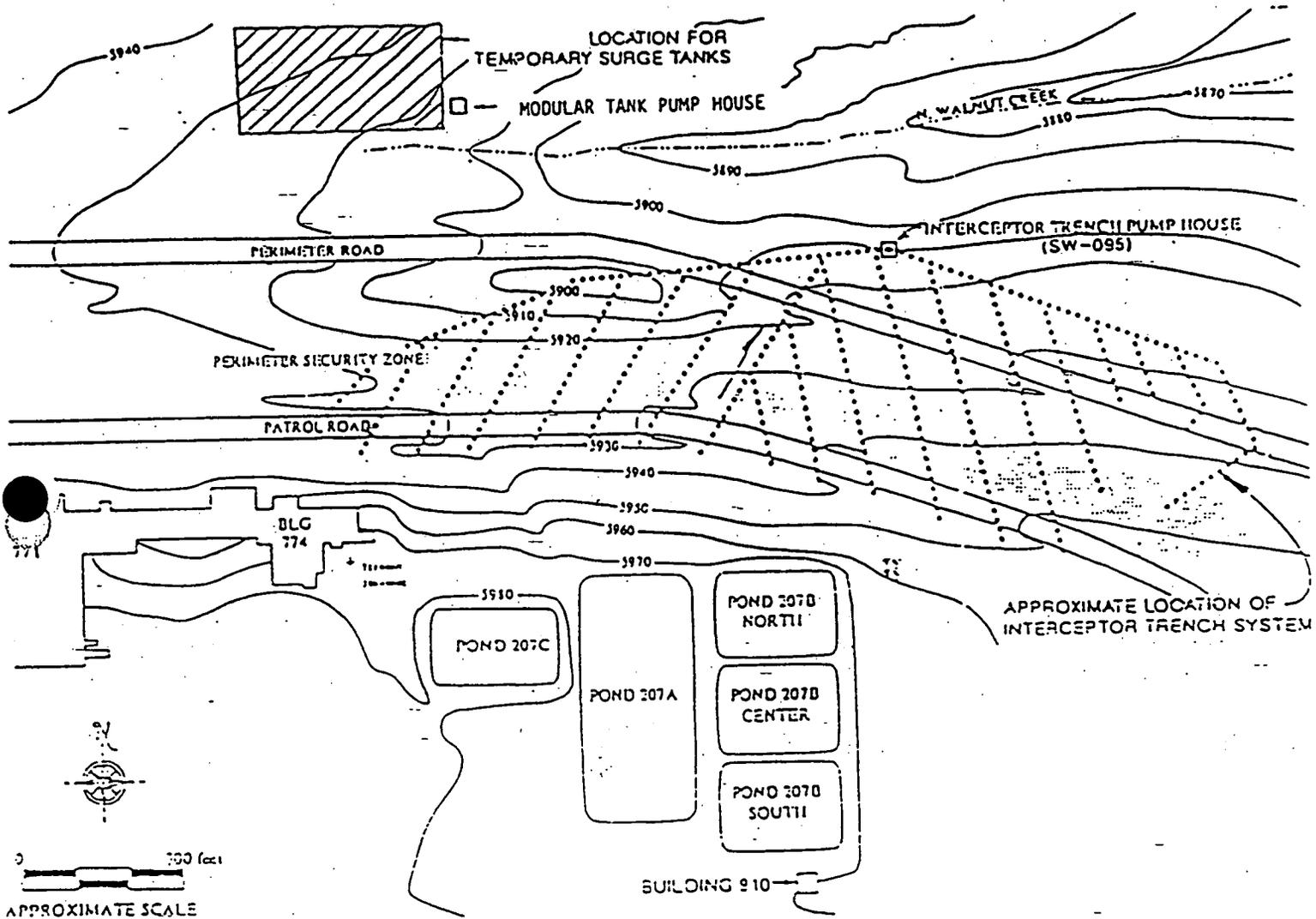
No additional monitoring will be initiated in response to this specific incident because: The area of the ITS already experiences ground water flow from under the ponds, the Operable Unit will be remediated as part of the

Interagency Agreement (IAG), and retention basins are operated in the Walnut Creek drainage that lead to a NPDES discharge point in Walnut Creek.

Characteristics of downgradient waters and populations are available in the IM/IRA.

A description of the response action taken or planned are included in section 3 of this report.

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Solar Evaporation Pond Area

FIGURE 1

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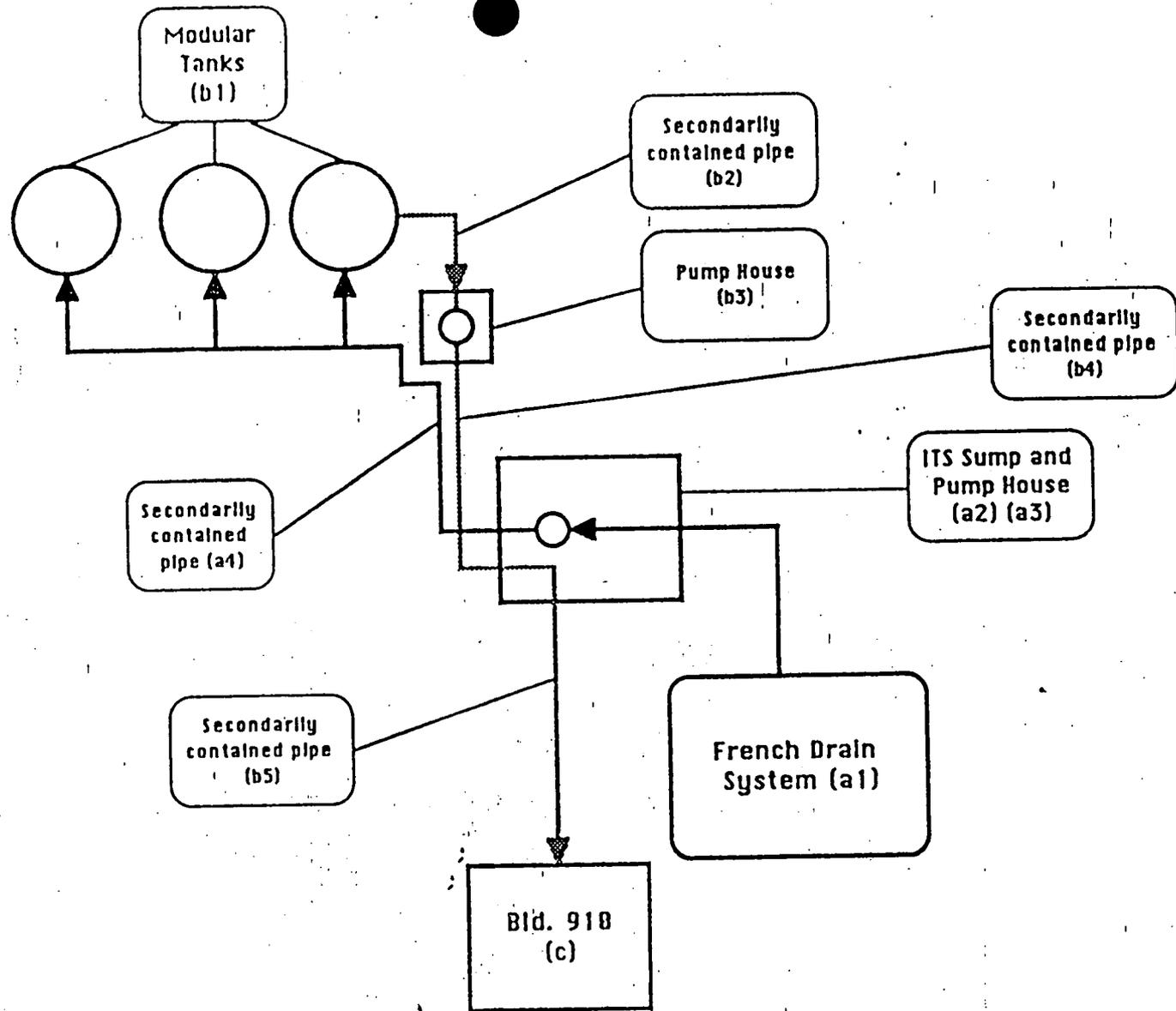


FIGURE 2

DRAFT

DRAFT

DRAFT

Colorado Department of Health
Hazardous Materials and Waste Management Division
HMWMD-HWC-B2/Frederick R. Dowsett, PhD.
4300 Cherry Creek Drive South
Denver, Colorado 80601

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CONTINGENCY PLAN IMPLEMENTATION
REPORT (CPIR) NO. 93-007

Enclosed is the RCRA CPIR No. 93-007 which outlines the events and responses associated with a spill of approximately 4,700 gallons of hazardous waste from the ancillary equipment associated with the Temporary Modular Tanks and Building 910 Treatment System. These tanks store liquid that is collected by the Solar Evaporation Pond Interceptor Trench System (ITS). The tanks, treatment system, and ancillary equipment are a part of RCRA Unit No. 38. The RCRA Contingency Plan was implemented as a precautionary measure due to the possibility of a release of RCRA regulated hazardous waste to the environment.

This report was developed to meet the RCRA Contingency Plan reporting requirements of CCR 1007-3 Section 265.56(j) as well as the notification requirements of 6 CCR 1007-3 Section 265.56(i) and the tank system release reporting requirements of CCR 1007-3 Section 265.196(d).

Your office was notified of the incident on July 21, 1993 at 10:15 a.m. that the RCRA Contingency Plan has been implemented as a precautionary measure due to the possibility of a release of RCRA regulated hazardous waste to the environment. The EPA, Region VIII was notified by facsimile on July 21, 1993. If you have any questions regarding this subject, please contact R. W. Boyle of EG&G Rocky Flats Inc. at 966-6926.

Enclosure:
As Stated

cc:

D. M. Maxwell - EPA, Region VIII
B. Brainard - DOE, RFO
D. Grosek - DOE, RFO
T. E. Lukow - DOE, RFO
W. E. Seyfert - DOE, RFO
R. W. Boyle - EG&G Rocky Flats, Inc.
R. P. Dunn - EG&G Rocky Flats, Inc.
T. G. Hedahl - EG&G Rocky Flats, Inc.
M. L. Johnson - EG&G Rocky Flats, Inc.
P. J. Larsen - ET&T Rocky Flats, Inc.
A. L. Schubert - EG&G Rocky Flats, Inc.

RCRA CONTINGENCY PLAN
IMPLEMENTATION REPORT No. 93-007
ROCKY FLATS PLANT
EPA ID NUMBER CO7890010526

This report is made in compliance with the requirements of 6 CCR 1007-3, Parts 264.56 (j) and 265.56 (j) for a written report within 15 days of the implementation of the RCRA Contingency Plan. The requirements for this are given below and will be addressed in the order listed, excerpted from 6 CCR 1007-3, Parts 264.56 and 265.56:

"(j)...Within 15 days after the incident, he must submit a written report on the incident to the department. The report must include:

- (1) Name, address, and telephone number of the owner or operator
- (2) Name, address, and telephone number of the facility
- (3) Date, time, and type of incident (fire, explosion)
- (4) Name and quantity of material(s) involved
- (5) The extent of injuries, if any
- (6) An assessment of actual or potential hazards to human health and the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material resulted from the incident."

In addition, information is also being included in this report to address the reporting and notification requirements of 6 CCR 1007-3 Section 265.56(i) and CCR 1007-3 Section 265.196(d):

- (8) Notification requirements of 6 CCR 1007-3 Section 265.56(i)
- (9) Tank system release reporting requirements of CCR 1007-3 Section 265.196(d)

(1) NAME, ADDRESS AND TELEPHONE NUMBER OF THE OWNER OF THE FACILITY:

United States Department of Energy
Rocky Flats Plant
Post Office Box 928
Golden, Colorado 80402
(303) 966-2025

Facility Contact:
A. H. Paoule, Manager

(2) NAME, ADDRESS AND TELEPHONE NUMBER OF THE FACILITY:

U.S. Department of Energy
Rock Flats Plant
Post Office Box 928
Golden, Colorado 80402
(303) 966-2025

August 4, 1993

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(3) **DATE, TIME, AND TYPE OF INCIDENT:**

A. Summary:

A hazardous waste incident occurred on July 20, 1993. The incident involved the Interceptor Trench (ITS) and ancillary equipment associated with the Modular Tanks and Building 910 Treatment System (RCRA Unit No. 38). The incident involved a failure of a primary pipe and secondary containment system and resulted in a spill/leak of hazardous waste. The incident was discovered at approximately 1:30 p.m. Hazardous waste was being pumped from the Modular Tanks to the Building 910 treatment facility when a primary transfer pipe failed, causing waste to leak/spill into the secondary containment pipe. The released material filled the secondary containment pipe causing hazardous waste to spill from the secondary containment pipe into the modular tank pumphouse secondary containment. In addition, the excessive amount of waste in the transfer piping secondary containment caused a hose connection on the secondary containment pipe to fail and resulted in a leak of hazardous waste into the ITS sump.

The contingency plan was implemented on July 20, 1993 as a precautionary measure, due to the fact the concrete sump (ITS sump) that received the hazardous waste was unlined. There is no evidence to suggest that the waste leaked from the sump; but, as stated above the contingency plan was implemented as a precautionary measure. In addition, the contingency plan was implemented because some of the released material was not removed from the secondary containment of the transfer piping within 24 hours.

B. System Description:

The involved system is a collection, transport, storage, and treatment system used to manage surface/ground water at the northeast portion of the RFP site. The ITS and its predecessor trench systems were installed to collect and return ground water to the Solar Ponds for treatment to remove nitrates (reference Historical Release Report for the Rocky Flats Plant, June, 1992). The nitrate level continues to exceed applicable stream standards for Walnut Creek.

The system is an Interim Status unit, permitted through the mechanism of the Interim Measure/Interim Remedial Action (IM/IRA). (The IM/IRA Decision Document for the Solar Evaporation Ponds Operable Unit No. 4, April, 1992 states on page 1-1 "this IM/IRA is a mechanism for permitting the use of the proposed treatment (i.e., use of surge tanks and flash evaporators) as directed by EPA and CDH." Subsequently, at CDH request (Baughman to Hartman, September 2, 1992), a revised Part A permit application was submitted which covers the tanks and flash evaporators.)

The system includes a) Interceptor Trench System (ITS), b) three (3) Modular Storage Tanks, c) Building 910 Treatment System, and all related ancillary equipment. Figure 1 is a system layout and Figure 2 is a schematic of the transfer systems. The following is a description of the system components:

a) Interceptor Trench System (ITS):

- 1) The ITS system includes an extensive French Drain system of perforated pipes that collects and transports surface and ground water to the ITS sump (reference Figure 2 - item a1).

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- 2) The ITS sump is an underground, unlined, concrete vault that stores the surface and ground water (reference Figure 2 - item a2). The ITS sump is not secondarily contained.
- 3) A small building housing two pumps is located on top of the sump (reference Figure 2 - item a3). The sump pumps transfer the surface and ground water collected in the sump several hundred feet to the modular storage tanks. In accordance with 6 CCR 1007-3, the pumping operation is considered a waste generation point. At this point, the generated waste (pumped surface/ ground water) is characterized as RCRA hazardous waste.

NOTE: The ITS pumphouse is the physical low point of the transfer systems for both the pipeline from the ITS sump to the Modular Tanks (reference Figure 2 - item a4) and the pipeline from the Modular Tanks pumphouse to Building 910 (reference Figure 2 - item b4 and b5).

- 4) The RCRA hazardous waste (pumped surface/ ground water) is pumped from the ITS sump pump, through a 3-inch secondarily contained, buried pipe, several hundred feet to one of 3 modular storage tanks (reference Figure 2 - item a4).

b) Modular Storage Tanks

- 1) The hazardous waste (pumped surface/ ground water) is stored in three modular storage tanks (reference Figure 2 - item b1) until it is pumped to the Building 910 treatment system.
- 2) A secondarily contained, buried pipe (reference Figure 2 - item b2) transports waste from the modular tanks to the modular storage tank pumphouse (reference Figure 2 - item b3).
- 3) A pumphouse (reference Figure 2 - item b3) is located several feet from the storage tanks and contains two pumps that transfer the waste from the modular storage tanks to the Building 910 treatment system. The pumphouse includes a epoxy-coated steel secondary containment with an automatic feed cutoff that shuts down the pumps when a high level is reached in the pumphouse secondary containment. The leak detection system includes a local and remote alarm. The secondary containment for the transfer pipe from the tanks to the pumps is open ended (daylights) in the modular tank pumphouse.
- 4) The waste is pumped through 2-inch secondarily contained, buried pipe (reference Figure 2 - items b4 and b5) several hundred feet from the modular tank pumphouse through the ITS sump (reference Figure 2 - item a2) and to the Building 910 treatment system (reference Figure 2 - item c). The primary containment pipe is continuous and does not open to or stop at the ITS sump. The secondary containment piping is divided into two sections to allow segregation and identification if a leak should occur. The partition between the two sections of secondary containment is located within the ITS sump. The automatic leak detection system for these two sections of secondary containment was not operational; therefore, daily inspections were being conducted until the automatic system could be made operational. The pipeline

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from the modular tank pumphouse to Building 910 (reference Figure 2 - item b4) shares a common trench with the pipeline from the ITS sump to the modular storage tank (reference Figure 2 - item a4).

- 5) From the ITS sump, the continuous pipe (and secondary containment around the pipe) goes to the building 910 Treatment System (reference Figure 2 - item c). From ITS sump (reference Figure 2 - item a2), the transfer pipe continues by itself to the Building 910 treatment facility (reference Figure 2 - item c).

c) Building 910 Treatment Facility

- 1) The Building 910 treatment facility (reference Figure 2 - item c) includes storage tanks and three evaporative units that treats the waste (pumped surface/ ground water).

C. Description of Incident and Immediate Response:

Hazardous waste from the Temporary Modular Tanks, which stores liquid collected by the Solar Evaporation Ponds Interceptor Trench System (ITS), was being pumped to Building 910 for treatment in the Acceptance Phase of the building's operation. At approximately 10:30 a.m. on July 20, 1993, operators conducted the daily inspection of the tank system which includes the ITS sump and Modular Tank pumphouse. No problems or unusual conditions were identified.

Prior to 1:00 p.m. on July 20, 1993, a leak occurred in the primary containment piping (reference Figure 2 - item (b4)) located between the modular tanks and the ITS sump (reference Figure 2 - item a2) which allowed waste to leak into the secondary containment. Due to the location of the leak in the pipeline, the hazardous waste that leaked into the secondary containment overflowed back into the Modular Tank pumphouse (reference Figure 2 - item b3) and also gravity-drained through a failed hose connection on the secondary containment piping (reference Figure 2 - item a2). The failed hose connection is located within the ITS sump. The ITS sump is equipped with an automatic level controls and the material that spilled into the ITS sump was pumped back into the Modular Tanks. The hazardous waste that overflowed into the Modular Tank pumphouse was fully contained in the pumphouse secondary containment. When the liquid level in the pumphouse secondary containment rose, the leak detection system was activated, the local alarm was activated, and the pumps were automatically shut down. The remote alarm via telemetry to Building 374 did not, however, function. Problems had occurred previously and this alarm was not reliable; therefore, it had not been considered operational and compensatory measures were in place to perform daily checks of the local alarm panel. This deficiency had been identified as an open item to be corrected.

At approximately 1:00 p.m., Operators in Building 910 were alerted to a problem when feed from the Modular Tanks ceased flowing to Building 910. The operators investigated (at approximately 1:30 p.m.) and discovered that the pump had automatically shut-down due to liquid on the floor of the pumphouse. Liquid was apparently still siphoning out through the pump, therefore, the operators immediately stopped the flow of hazardous waste by closing manual

operators immediately stopped the flow of hazardous waste by closing manual valves.

D. Corrective Action:

Applicable requirements of 6 CCR 1007-3 Part 264.196 will be met prior to system restart.

- 1) In accordance with 6 CCR 1007-3 Part 264.196 (a) --Cessation of Use: The pump automatically shut-down when the liquid level in the pumphouse reached the level sensor. Operators observed some siphoning of liquid through the pump, and immediately closed the manual valves to isolate the line and stop the flow of hazardous waste. While verifying the cause of the problem, the pump was operated for a short duration (less than one minute) to confirm the location of the leak. The pumps and valves were locked out/tagged out at 9:30 p.m. on July 20 to prevent any addition of hazardous waste to the transfer pipe.

NOTE: The ITS is continuing to collect ground water into the sump, and that ground water was pumped to the Modular Tanks as needed. These sump operations are routine, automatic, and continuous.

- 2) In accordance with 6 CCR 1007-3 Part 264.196 (b)(2) - Removal of hazardous waste from the secondary containment:
 - a) On July 20, the hazardous waste that had collected in the secondary containment system of the pumphouse was pumped into a liquid waste dumpster and trucked to Building 374 for treatment.
 - b) Hazardous waste continued to drain from the hose connection on the secondary containment into the ITS sump for several hours: the sump was checked several times after the problem was initially discovered at about 1:30 p.m. on July 20, and drainage from the secondary containment had ceased by 4:30 p.m. on July 20 when the transfer piping secondary containment drained to the low point of the line in the ITS sump. The material that drained into the sump was automatically pumped back into the Modular Tank system and was removed from the sump by 5:00 p.m. on July 20.
 - c) Some hazardous waste, however, remained in the annulus of the secondarily contained piping below the elevation of the disconnected hose connection. Upon completion of a work package (including a confined space permit), approximately 2 to 3 gallons of hazardous waste was drained from the annulus on August 2, 1993.
- 3) In accordance with 6 CCR 1007-3 Part 264.196 (c) - Containment of visible release to the environment: There were no visible releases to the environment. Since the ITS sump is below ground, the sump cannot be visually inspected to assure that no hazardous waste has escaped to subsurface soil or water. Due to the fact the concrete sump (ITS sump) that received the hazardous waste was unlined, the contingency plan

was implemented as a precautionary measure. There is no evidence to suggest that the waste leaked from the sump.

- 4) In accordance with 6 CCR 1007-3 Part 264.196 (d)- Notification and reports: The CDH and EPA were notified of this occurrence on July 21, 1993 as a precautionary measure due to the possibility of a release to the environment of greater than one pound of hazardous waste from the unlined concrete sump. Submission of this RCRA Contingency Implementation Report satisfies 6 CCR 1007-3 Part 264.196 (d) report requirements.
- 5) In accordance with 6 CCR 1007-3 Part 264.196 (e)(3) - Repair of the affected system: The system will be returned to service as soon as the necessary repairs are completed. The following actions will be completed prior to returning the system to operation:
 - Repair the primary transfer line,
 - Repair or modify the portion of the secondary containment of the transfer line (the hose connection) within the ITS sump that failed and resulted in the leak of hazardous waste from the secondary containment system, and
 - Retest the primary line following the repair.
- 6) In accordance with 6 CCR 1007-3 Part 264.196 (f)- Certification of major repairs: The repair of the system is not expected to be extensive (per §265.196(f), examples of extensive repairs are installation of an internal liner or repair of a ruptured vessel); therefore the certification by an independent, qualified, registered, professional engineer may not be required prior to resuming operations.

E. Operational Status:

The ancillary equipment associated with the spill is currently shut down and locked out of service until the repairs to the leak in the primary and secondary systems are repaired. When the system is returned to operation, operation will be in compliance with RCRA.

(4) MATERIAL INVOLVED:

As specified in 6 CCR 1007-3, ground water is not a solid waste and the "mixing" and "derived from" rules are not operable in this system. The ITS system, including the French Drain system, are not hazardous waste systems and the surface/ ground water in these systems is not characterized as hazardous waste (reference Figure 2 - item a1). The surface/ ground water stored in the ITS is not characterized as hazardous waste (reference Figure 2 - item a2).

The released material is, however, RCRA F-listed hazardous waste. In accordance with 6 CCR 1007-3, the pumping operation at the ITS sump is considered a waste generation point (reference Figure 2 - item a3). At this

point (reference Figure 2 - item a3), the surface/ ground water is recharacterized as RCRA F Listed hazardous waste because the "contained in" rule is operable. The applicable EPA waste codes are F001, F002, F003, F005, F006 F007, and F009.

In accordance with 6 CCR 1007-3, the waste remains a listed hazardous waste (F001, F002, F003, F005, F006 F007, and F009) as it moves through all other parts of the system.

(5) EXTENT OF INJURIES:

No injuries occurred.

(6) THREAT TO HUMAN HEALTH OR THE ENVIRONMENT:

The spill/leak did not result in an additional threat to human health or the environment.

The Modular Tank pumphouse fully contained the hazardous waste spilled into the pumphouse secondary containment.

The spilled hazardous waste originated in the ITS sump. There is no physical or chemical difference between the spilled hazardous waste and the surface/ground water collected in the ITS sump. The only difference in the material is that one is classified as hazardous waste and the other is classified as surface/ground water. Due to the fact the concrete sump (ITS sump) that received the hazardous waste was unlined, the contingency plan was implemented as a precautionary measure. There is no evidence to suggest that the waste leaked from the sump.

Approximately 3 to 4 million gallons of ITS water is collected in the sump each year, and the amount of the spill represents a very small increase (less than 1%) in the volume handled in the sump. The ITS system was not designed to collect all of the ground water flowing under the ponds at the depth of the trench system and any material that leaked from the ITS sump would rejoin that ground water that currently flows from the sump.

(7) QUANTITY AND DISPOSITION:

A. Quantity:

Approximately 4,700 gallons of hazardous waste were leaked from the pipeline secondary containment. The volume was estimated as follows:

- 1) Approximately 300 gallons of hazardous waste were spilled to the Modular Tank pumphouse secondary containment, based on the known area of the floor and the observed depth of four inches.
- 2) Approximately 4,400 gallons of hazardous waste were spilled to the ITS sump. Hazardous waste from the sump was pumped to the east Modular Tank, and operators observed that the level in the tank rose less than

one inch. The tank holds about 6000 gallons per inch of height. The installed flow totalizer in the ITS pumphouse indicated approximately 5,000 gallons had been pumped from the sump to the Modular Tank between 10:30 a.m. and 4:30 p.m. on July 20. Inflow from the trench system to the sump would have contributed approximately 600 gallons during this period. Thus, the estimate of 4,400 gallons was derived from this data. The hazardous waste was recovered from the sump by about 5:00 p.m. on July 20. In addition, the volume released was estimated based on a mathematical equation which indicated that the volume released was about 3,000 gallons.

The original notification to CDH and EPA had estimated that 6300 gallons had leaked from the secondary containment system. The quantity has been revised based on the above facts.

It is estimated that less than 0.01 pound of hazardous waste constituents were leaked into the secondary containment system. This estimation is based on the a spill of 4,700 gallons (about 40,000 pounds) of hazardous waste and a hazardous waste constituent concentration of 50 ppb. The contaminant concentration level is based on historical data for the ITS waste stream.

B. Disposition:

The hazardous waste that overflowed into the Modular Tank pumphouse was pumped into a portable tank and trucked to Building 374 for treatment. The wipes used in the final cleanup of the pumphouse were designated as hazardous waste (mixture rule), and placed into drums and are properly stored in a RCRA satellite accumulation area in Building 910.

The hazardous waste that spilled into the ITS sump was recovered into the Modular Tanks. This recovery represents the normal, automatic functioning of the system. No change to the characteristics of the hazardous waste occurred, and the hazardous waste will be treated in existing facilities.

(8) RESUMPTION OF OPERATIONS NOTIFICATION

Based on the requirements of 6 CCR 1007-3 Part 264.56 (i), the owner or operator must notify CDH that the facility is in compliance with 6 CCR 1007-3 Part 264.56 (h) prior to resuming operations. The system is in compliance with the requirements outlined in 6 CCR 1007-3 Part 265.56(h)(1) in that all of the released material has been treated or stored. The system is also in compliance with the requirements outlined in 6 CCR 1007-3 Part 265.56(h)(2) in that only incidental release supplies used to respond to this incident were from routine operations supplies and no incidental release response supplies were used. In addition, no equipment specifically listed in the contingency plan were used to respond to this incident.

(9) TANK RELEASE REPORTING REQUIREMENTS

Based on the requirements of 6 CCR 1007-3 Part 264.196 (d), a report containing the following information must be submitted to CDH.

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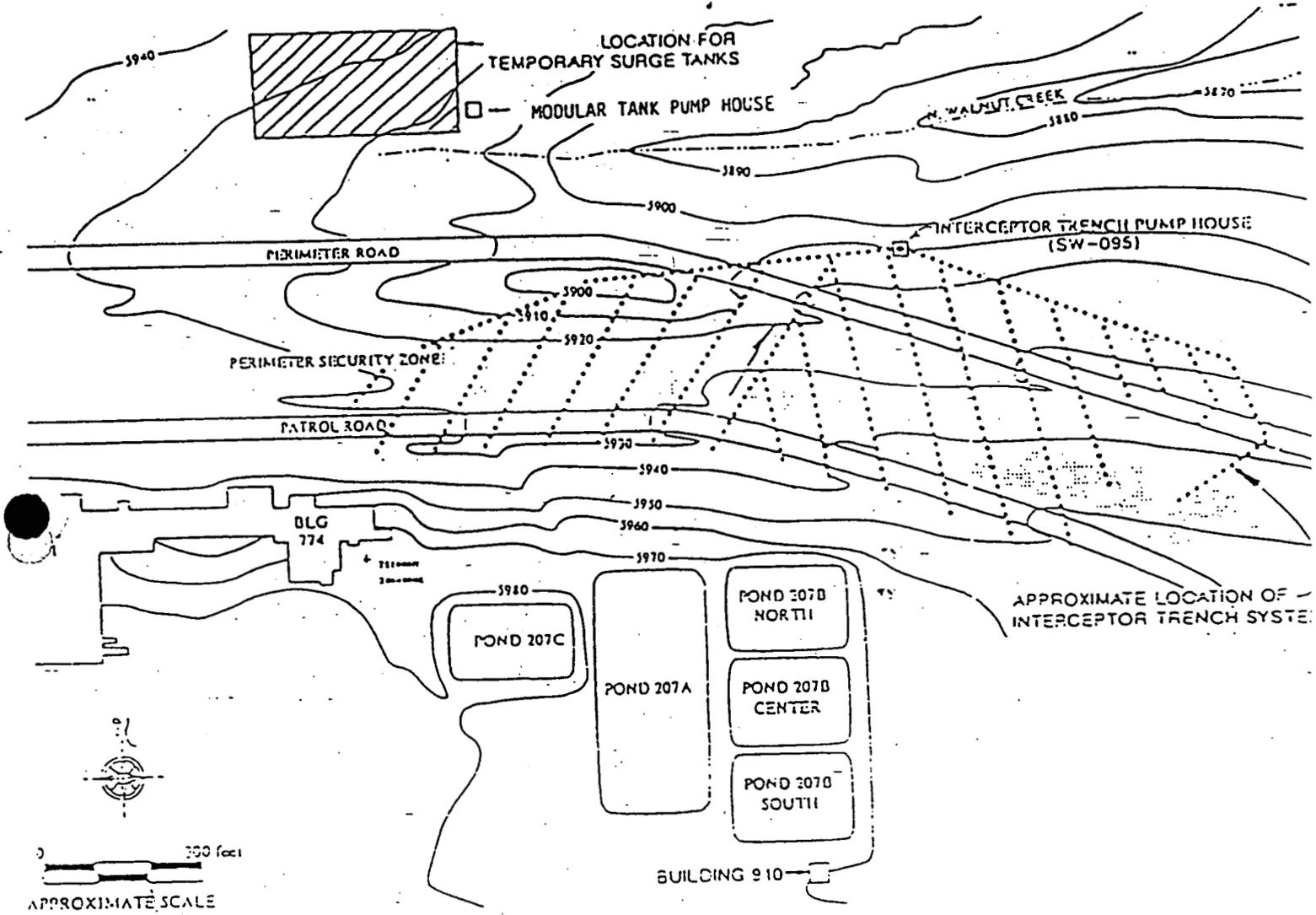
The route of migration of such a release would be into the ground water that flows to the Walnut Creek basin.

Characteristics of the surrounding soil are available in the IM/IRA.

No additional monitoring will be initiated in response to this specific incident because: The area of the ITS already experiences ground water flow from under the ponds, the Operable Unit will be remediated as part of the Interagency Agreement (IAG), and retention basins are operated in the Walnut Creek drainage that lead to a NPDES discharge point in Walnut Creek.

Characteristics of downgradient waters and populations are available in the IM/IRA.

A description of the response action taken or planned are included in section 3 of this report.



Solar Evaporation Pond Area

FIGURE 1

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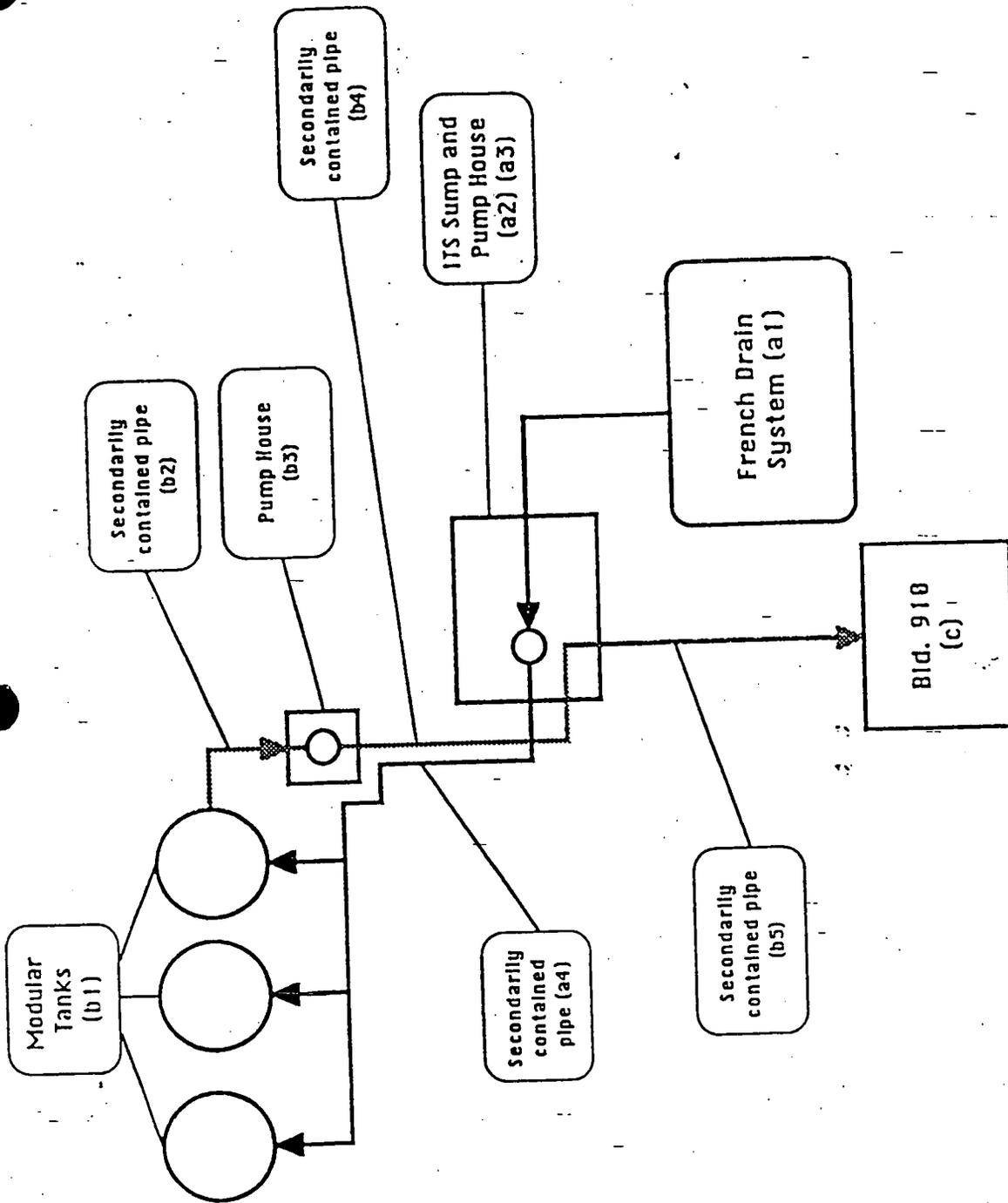


FIGURE 2

RES. CONTROL
30ING/LTR. NO.

9392

EG&G ROCKY FLATS

EG&G ROCKY FLATS, INC.
ROCKY FLATS PLANT, P.O. BOX 464, GOLDEN, COLORADO 80402-0464 • (303) 966-7000

August 9, 1993

93-RF-9392

LIST	LTR	ENC
VAL, G.J.		
HA, A.A.	X	X
RD.		
J.G.		
H.P.W.	X	X
HA, D.W.		
ST, L.A.	X	X
BJ.		
AN, CK		
TJ.		
HT, G.	X	X
S, J.G.		
WA.		
TER, A.W.		
HP.		
INEZ, A.	X	X
G.E.		
NALD, M.M.		
NINA, F.G.		
ROSE, J.K.		
SAN, R.V.	X	X
NO, V.M.		
ER, G.L.	X	X
JH.		
G.T.L.	X	X
LIN, N.H.		
BERT, A.L.	X	X
OCK, G.H.	X	X
TER, R.L.		
ART, D.L.		
IVAN, M.T.		
SOY, F.R.		
B.		
ET, J.	X	X
EM	X	X
ML	X	X
PT	X	X
RC	X	X
RW	X	X
RA	X	X
JA	X	X
PS	X	X
N-S	A	A
RES CTRL	X	X

A. H. Pauole
Acting Manager
DOE, RFO

Attn: D. Grosek

BACKUP DATA REPORT FOR RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
CONTINGENCY PLAN IMPLEMENTATION REPORT (CPIR) NO. 93-007 - TGH-461-93

Enclosed is the final backup data report for RCRA CPIR No. 93-007. The report has been developed to document the outstanding actions that remain as a result of the release of hazardous waste from the Solar Evaporation Pond Interceptor Trench System (ITS). The report includes a schedule for repairing the equipment that caused the release, as well as, a schedule to complete tasks to enhance operations. The report also includes information concerning the basis of characterization.

If you have any questions regarding this subject, please contact either R. W. Boyle at extension 6926 or M. L. Johnson at extension 5033.

Signature of T. G. Hedahl

T. G. Hedahl, Associate General Manager
Environmental and Waste Management

MLJ:kam

Orig. and 1 cc - A. H. Pauole

Enclosure:
As Stated

CLASSIFICATION:

CLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

HORIZONTAL CLASSIFIER

SIGNATURE
W. JONES
130193

REPLY TO RFP CC NO:

7072

DISPOSITION ITEM STATUS

Partial Open
Handwritten notes and initials

OPERATOR & TYPIST INITIALS
inp AAF

**BACKUP DATA REPORT
RCRA CONTINGENCY IMPLEMENTATION 93-007**

This Backup Data Report was prepared because there are outstanding actions needed to close the incident. The system has been and will continue to be operated in compliance with RCRA requirements once these repair actions are complete.

(1) Plan and Schedule for Achieving Compliance

The portion of the system that failed is a pipeline that transfers liquid between the Modular Tank pump house and Building 910. The repairs to the line and secondary containment are driven by the need to return the line to operation prior to filling the Modular Tanks, since once those tanks are full there is no approved storage location for the ground/surface water collected by the ITS.

The following actions remain to be completed prior to returning the system to operation:

- Repair the primary transfer pipeline.
- Modify the secondary containment of the portion of the line within the ITS sump to prevent leakage of water back into the sump. Although the portion of the line can be visually inspected, it is preferable to modify the secondary containment in this manner, and
- Retest the line following repair.

The following tasks will be completed in a timely manner to enhance operability of the system:

- Complete or repair the installation of leak-detectors in the secondary containment portion of the line that were not operational at the time of the incident,
- Confirm that the process control logic supports positive shut-down of the pumps when a leak is detected in the secondary containment system in the ITS sump,
- Repair the remote alarm which was not operable when the liquid (waste) was released into the pump house,
- Analyze pressure conditions in the Building 910 feed system to determine if components experienced an over-pressurization (repair as needed), and
- Incorporate pressure-surge control as needed to ensure "hammer-free" operation when the liquid discharge is intermittently secured by automatically operating feed valves in Building 910.

August 5, 1993

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Detailed information on these actions follows:

Action	OCR Citation*	Start	Completion	Responsible	PATS #
Repair Transfer line	264.196(e)	August 4, 1993	August 10, 1993	Ledford	TBD
Repair leak detectors	264.193(c) (3)	August 4, 1993	August 11, 1993	Ledford	TBD
Process control logic	264.193(b) (2)	August 9, 1993	August 9, 1993	Ledford	TBD
Repair alarm	264.193(c) (3)	August 9, 1993	August 9, 1993	Ledford	TBD
Over-pressurization repair	264.192(e)	August 12, 1993	August 12, 1993	Ledford	TBD
Pressure-surge control	264.192(e)	August 3, 1993	August 9, 1993	Ledford	TBD
Secondary containment within sump	264.193(e) (1)(iii)	August 3, 1993	August 16, 1993	Ledford	TBD
Retest line	pending**	August 17, 1993	August 17, 1993	Ledford	TBD

* References to 264.XXX because this section was listed as the ARAR for the tank system in the IM/IRA.

** Preliminary determination is the repair is not a major repair per 264.196(e); therefore, the line may not be required to be evaluated by an independent Professional Engineer.

No long-term or high risk situations are expected to exist for the pipeline and the related system.

Plant Action Tracking System (PATS) tracking will be used only for those actions extending beyond approximately fifteen days of the event. Detailed scheduling is currently underway.

2) JUSTIFICATION FOR DELAYED COMPLIANCE OR OPERATION IN NON-COMPLIANCE

EG&G is planning and taking all actions necessary to return the line to full compliance. The actions will not be completed "immediately" because diagnosis of the problem and planning of the activities is necessary to support effective repair. Actions will be completed in full accord with applicable requirements, and will be completed (or demonstrated to be unnecessary) prior to returning the line to service.

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On July 20, 1993, approximately 4,700 gallons of hazardous waste leaked into the secondary containment system for the transfer piping. The released material then overflowed into the Modular Tank pumphouse and leaked into the ITS sump. On July 20, 1993, the system was brought into compliance with §264.196 (b)(1) in that the system was shut down and drained below the leak point.

On July 20, 1993 all of the released material had been removed except for approximately 2 to 3 gallons that remained in a small section of double contained piping which terminated inside the ITS sump. This material had not drained from the disconnected hose connection because of the elevation differences (e.g. the material was trapped inside the annulus below the level of the hose connection). On August 2, the remaining 2 to 3 gallons of released material was removed from the annulus of the secondary containment for the piping and the system was brought into compliance with §264.196 (b)(2). A confined entry permit and an integrated work control package was required to remove the last of the released liquid waste.

3) REGULATORY ANALYSIS

The RCRA Contingency Plan was initially implemented because pumped ITS surface/ground water, characterized as a mixed hazardous waste, was spilled into an unlined, concrete sump and there is a possibility that there is a leak path to the environment; e.g. permeation through the concrete (reference 6 CCR 1007.3 §264.51 (b)). In addition, the material released into the secondary containment system (the secondary pipe) was not removed within 24 hours (reference 6 CCR 1007.3 §264.196 (b)(2)). EG&G cannot demonstrate that the sump is leak-tight (the ITS sump is below ground, the sump cannot be visually inspected to assure that no hazardous waste has escaped to the subsurface soil or water so some of the water may have escaped from the sump); therefore, the Contingency Plan was implemented as a precautionary measure.

The status of the material before and after the incident is unchanged, and the hazardous waste that was recovered has been either transported to Building 374 or returned to the Modular tanks to be treated in waste treatment systems that routinely handle the process aqueous hazardous waste.

The pumped ITS surface/ground water has been characterized as RCRA-regulated waste because, at any specific time, the ground water collected in the trench may contain detectable levels of RCRA-regulated listed hazardous waste: RCRA-regulated waste may have leaked from the Solar Ponds and mixed with ground water prior to that ground water flowing into the trench system and central sump. The RCRA-regulated waste in the Solar Ponds may include listed hazardous wastes from non-specific sources: spent halogenated solvents, spent non-halogenated solvents, and electroplating waste (F001, F002, F003, F005, F006, F007, and F009). Previously, the pumped ITS surface/ground water was also suspected of exhibiting the toxicity characteristic for cadmium (D006); during the recent acceptance phase operation of Building 910, however, the database on ITS waste stream was reviewed and seen to document that cadmium levels are below the regulatory level for D006. The waste stream is described in the WSRIC

for Building 910. The ITS waste stream has been characterized in the IM/IRA, and no further characterization is needed in response to the release.

Summary statistics of select RCRA regulated constituents associated with the Solar Pond Evaporation system are shown in Table 1 for samples of ITS water taken in 1991 and 1992. A sample of the released material was taken and was analyzed for nitrates to confirm that the analytical data collected historically for the ITS water is representative of the material released. The nitrate level measured with a test kit was 104 mg/l which is below the range documented in the IM/IRA which indicates that the contamination level of the released material is below the range of the historical data (190-724 for nitrate/nitrites).

There are no additional health and safety impacts due to this release. Routine risks associated with construction and maintenance activities on-site will be encountered during the repairs and will be evaluated by Industrial Engineering.

Environmental impacts will be negligible: Approximately 3 to 4 million gallons of ITS ground/surface water is collected in the ITS sump each year, and the amount of material spilled to the sump represents a very small increase (much less than 1%) in the volume handled in the sump; the area of the ITS already experiences ground water flow from under the ponds; the area will be remediated as part of Operable Unit 4; the ITS system probably does not collect all of the ground water flowing under the ponds at the depth of the trench system, so any escaped material would rejoin that ground water flow; retention basins are operated in the Walnut Creek drainage that lead to a NPDES discharge point in Walnut Creek.

No-delays are expected in implementing the repair schedule.

4) RISKS AND BENEFITS OF OPERATING IN NON-COMPLIANCE

N. A. The transfer pipeline will not be operated prior to the required repairs being completed.

5) NAME OF PROJECT MANAGER

The EG&G manager for the repair activities is Steve Keith, ER SPRP, extension 8541. The work package manager is Ray Boyle, ER SPRP, Extension 6926. The project manager is Andy Ledford, ER SPRP, extension 8673.

6) CRITIQUE MEETING NOTES

Copy of draft meeting notes are attached.

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TABLE 1
SUMMARY STATISTICS FOR STATION SW095
1991-1992

<u>Constituent</u>	<u>Number of Samples</u>	<u>Number of Detects</u>	<u>mean MG/L</u>	<u>Regulatory limit MG/L</u>	<u>Estimated Amount Released lb</u>
TOTAL METALS(1):					
Cadmium	24	0	.00184(2)	1.0(2)	0.000074
Chromium	26	8	.00984	5.0(2)	0.000394
Lead	28	2	.00123	5.0(2)	0.000049
Silver	22	2	.00393	5.0(2)	0.000157
ORGANICS:					
Methylene Chloride	25	0	.00230(3)	0.44(4)	0.000092
Carbon Tetrachloride	25	1	.00258	0.057(4)	0.000103
Chloroform	25	0	.00192(3)	0.046(4)	0.000076
Tetrachloroethene	25	0	.00250(3)	0.056(4)	0.000100
Toluene	25	0	.00250(3)	0.080(4)	0.000100
Trichloroethene	25	2	.00302	0.054(4)	0.000121
PLATING SUBSTANCES:					
Cyanide	25	1	.01000	1.2-1.9(4)	0.000400
Nickel	25	2	.01042	0.040(4)	0.000417

- (1) Concentration of metals below characteristic regulatory limit therefore, water is not regulated characteristic waste.
- (2) TCLP maximum concentration of contaminants for toxicity characteristic.
- (3) Mean calculated using half the detection limit for concentrations at the detection limit.
- (4) Land Disposal Restricted (LDR) Constituent Concentration treatment standard levels in wastewater (reference §268.43)

DRAFT

CRITIQUE MEETING MINUTES

OCCURRENCE TRACKING NUMBER: 1993 - 1077

MEETING DIRECTOR: P. J. LARSEN

PHONE NUMBER: 2996 ORGANIZATION: Liquid Waste Ops Bldg: 774

DATE PREPARED: 7/23/93 EVENT DATE: 7/21/93 MILITARY TIME: 1300

BUILDING: 308A PUMPHOUSE

PROCESS: TEMP MOD STORAGE TANKS

Did anyone attend a pre-critique of planning meeting for this critique?

No

If so, what was discussed and were any instructions given on what to say at the critique?

N/A

OPERATING CONDITIONS:

Normal Operations

SUMMARY OF INCIDENT: (Describe in sequential steps)

On July 20, 1993, between the hours of 0900-1000, a RCRA inspection of 308A and 308B was completed. 308A was operating according to procedure and all valves were appropriately lined-up. At approximately 1100 hours, LWTO operators commenced startup of one Building 910 evaporator unit. The unit had been functioning normally for approximately 2 hours when operators noticed a loss of feed to the system. The shift foreman immediately notified the building operations manager of the situation and they proceeded to the 308B pumphouse to investigate the loss of flow. Upon arrival at the 308B pumphouse, the foreman and manager observed water on the pumphouse floor. This water had caused the pump to shut down.

At approximately 1330 hours, LWTO personnel began pumping water from the floor of 308B (approximately 300 gallons). During the pumping operation LWTO personnel opened a valve and realized they had a siphon condition, which indicated a possible leak in the pipe from 308A to 308B. LWTO personnel proceeded to 308A central sump and observed water coming from a hole in the secondary containment.

INJURIES/ILLNESS: Yes No Describe:

DRAFT

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DRAFT

CRITIQUE MEETING MINUTES
OCCURRENCE #1993-1077
PAGE 2 OF 2

IMMEDIATE RESPONSE ACTION: (Action(s) taken to control and prevent further aggravation of situation)

LWTO personnel immediately isolated the appropriate valves in 308^B and opened a vent valve to stop the flow of water. This action also stopped the siphon condition. The appropriate valves were locked out and tagged out to prevent further water leakage to the sump. LWTO initiated a work package to remove any remaining water in the secondary containment. All water was removed from the 308B pumphouse floor by 2200 hours on July 20, 1993 and the pumphouse is now in a dry condition.

Departments involved:

Liquid Waste Operations

DRAFT

45

DRAFT

LIST OF MEETING ATTENDEES:

<u>Name</u>	<u>Organization</u>	<u>Phone</u>
P. J. Larsen	LWTO	2996/1964
D. L. McCoy	JCUSC	5298/1792
G. A. Pickerel	E&T	3836/5786
D. C. Foro	DOE-RFO/CED	
S. T. Kozel	E&T	2576/5268
R. W. Boyie	SPP	6926/4225
H. D. McDowell	DOENUO	4685
E. Pitchkolan	DOE-RFO/CED	3707
K. Fournier	LWTO	2250
M. Johnson	WRP	5033/1028
E. I. Atchison	SPP	8722/7018
J. A. Ledford	SPP	8673/5338

MEETING DIRECTOR

DATE

DRAFT

APPROVED OPERATIONS MANAGER

DATE

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PAC REFERENCE NUMBER: 300-156.1

IHSS Reference Number: 156.1, Industrial Area Operable Unit

Unit Name: Building 371 Parking Lot

Approximate Location: N750,000; E2,082,500

Date(s) of Operation or Occurrence

1969(?) - February 1973

Description of Operation or Occurrence

In February 1973, concern was raised because a contaminated soil pile north of Building 334 was located in the construction area for Building 371 (DOE, 1992). Inspection of aerial photographs show evidence of soil being placed in this area as early as 1969 from unknown activities. In February 1973, the soil was moved to an area east of the cargo container field (IHSS 165).

Physical/Chemical Description of Constituents Released

Some of the soil stored behind Building 334 originated from construction of an addition to Building 774 or from the removal of underground holding tanks in an area adjacent to Building 774. Soil samples were taken before the pile was removed from behind Building 334 (DOE, 1992). Results ranged from 3 to 704 disintegrations per minute per gram. Approximately 250 cubic yards of soil was removed from the 300 Area (DOE, 1992). An interview with a former employee on December 6, 1991 revealed that some of the soil may have originated from Building 707 (DOE, 1992). Interviewees for the CEARP Phase 1 document indicated that the soil pile was located under what is now the Building 334 parking lot. No documentation could be found to substantiate this. It is assumed that this is the same soil pile because the origins seem to correlate. Historical aerial photographs show signs of a soil pile in the southeast corner of what is now Building 371.

Responses to Operation or Occurrence

The soil pile was removed from the 300 Area and placed in the east end of the cargo container field which is IHSS 165 (PAC 900-165). See PAC 900-165 for additional information regarding the new location. A former employee recalled that some of the soil may have been transported to north and west of Building 559 until the area was eventually leveled out (DOE, 1992). This augments CEARP Interview Notes which state that the soil was spread out over the hillside southeast of where Building 374 is located.

Fate of Constituents Released to Environment

As documented in the Operable Unit 14 RFI/RI Data Summary Report (DOE, 1995), IHSS 156.1 (PAC 300-156.1), which is broken into two separate locations, was sampled extensively in 1995 (see Figure 3-2). Table 1-1 presents the isotopic radiological analysis showing all analysis below RFCA Tier II action levels and at or below established background levels.

Action/No Further Action Recommendation

During the 1995 study for IHSS 156.1, all analytical data were collected in accordance with an approved workplan and were below established Programmatic Preliminary Remediation Goals (PRGs) for that time. Currently, under RFCA (DOE, 1996), all analysis are below Tier II action levels and further, at or below established background levels for radionuclides. Sampling for IHSS 156.1 was consistent with current comprehensive risk assessment methodologies as agreed upon in a meeting held May 18, 2000 with the Agencies and no source could be identified. Therefore, IHSS 156.1 is proposed for No Further Action based upon comparison of the analytical data to current RFCA action levels.

Comments

This IHSS was studied in accordance with the IAG schedule for Operable Unit 14.

Information developed on this unit for the HRR study indicates that the IHSS location presented in the IAG is inaccurate. HRR information indicates that the contaminated soil was located south of Building 371 where the 371 parking lot is currently located.

No documentation could be found which detailed the fate of constituents potentially released to the environment at this location.

Analytical data from the Operable Unit 14 RFI/RI Data Summary Report (DOE, 1995) was delivered to the Agencies in 1999.

References

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1995, *Phase I RFI/RI Work Plan/Data Summary for Operable Unit 14, Radioactive Sites, Vol. 1, Draft*, Rocky Flats Environmental Technology Site, Golden, CO, June.

DOE, 1996, *Final Rocky Flats Cleanup Agreement*, Department of Energy, Rocky Flats Environmental Technology Site, Golden, CO, July.

Table 1-1

IHSS 156.1
Radionuclide Activities in Surface Soils

		1995/PPRG	Background	Tier II AL	SS43294	SS43294	SS43304	SS43314	SS43324	SS43334	SS43344	
Americium-241	pCi/g	2.37	.022	38	0.009	0.004	0.039	0	0.001	0.002	-0.001	
Plutonium-239/240	pCi/g	3.42	.066	252	0.001	0.002	0.16	0.001	-0.004	0	0	
Uranium-233, -234	pCi/g	44.7	2.25	307	1	1.1	1	0.97	1.2	1	1.1	
Uranium-235	pCi/g	0.173	.094	24	0.081	0.07	0.018	0.11	0.053	0.016	0.09	
Uranium-238	pCi/g	0.8	2.	103	1.2	1.1	0.89	0.83	1.3	0.84	0.98	
Tier II SOR	NA					0.02	0.02	0.01	0.02	0.02	0.01	0.02
Americium-241	pCi/g	2.37	.022	38	0.004	0.003	0	-0.003	0.002	0.003	0.001	
Plutonium-239/240	pCi/g	3.42	.066	252	0.003	-0.001	0	0.002	0.005	0.002	0	
Uranium-233, -234	pCi/g	44.7	2.25	307	1	0.73	1	0.94	0.78	0.88	0.99	
Uranium-235	pCi/g	0.173	.094	24	0.049	0.057	0.057	0.053	0.057	0	0.072	
Uranium-238	pCi/g	0.8	2.	103	1	0.76	0.94	0.68	0.94	0.82	1	
Tier II SOR	NA					0.02	0.01	0.01	0.01	0.01	0.01	0.02
Americium-241	pCi/g	2.37	.022	38	0.009	0.002	0.007	0.002	0.002	0.002	0.002	
Plutonium-239/240	pCi/g	3.42	.066	252	0.002	0.002	0.001	0.005	0.006	-0.003	0.004	
Uranium-233, -234	pCi/g	44.7	2.25	307	1.3	0.8	1.2	0.71	0.96	1.2	1.1	
Uranium-235	pCi/g	0.173	.094	24	0.027	0.042	0.078	0.054	0.11	0.13	0.061	
Uranium-238	pCi/g	0.8	2.	103	1.1	1.1	1.2	0.55	1.1	1.3	1.1	
Tier II SOR	NA					0.02	0.02	0.02	0.01	0.02	0.02	0.02
Americium-241	pCi/g	2.37	.022	38	-0.001	0.006	0.003	0.003	0.009	0.005	0.003	
Plutonium-239/240	pCi/g	3.42	.066	252	0.006	0.003	0.005	0.006	0.014	0.005	0.006	
Uranium-233, -234	pCi/g	44.7	2.25	307	0.74	0.74	0.78	1	0.72	0.61	0.75	
Uranium-235	pCi/g	0.173	.094	24	0.038	0.026	0.029	0.089	0.032	0.037	0.014	
Uranium-238	pCi/g	0.8	2.	103	0.75	0.75	0.99	0.93	0.61	0.44	0.68	
Tier II SOR	NA					0.01	0.01	0.01	0.02	0.01	0.01	0.01
Americium-241	pCi/g	2.37	.022	38	0.003	0.001	0.001	0.003	-0.002	0.001	-0.001	
Plutonium-239/240	pCi/g	3.42	.066	252	0.003	0	0.005	0.001	0.001	0.008	-0.001	
Uranium-233, -234	pCi/g	44.7	2.25	307	0.65	0.41	0.67	1.1	1.3	0.64	0.74	
Uranium-235	pCi/g	0.173	.094	24	0.043	-0.005	0.031	0.05	0.051	-0.02	0.047	
Uranium-238	pCi/g	0.8	2.	103	0.72	0.47	0.71	1.2	1.1	0.67	0.8	
Tier II SOR	NA					0.01	0.01	0.01	0.02	0.02	0.01	0.01
Americium-241	pCi/g	2.37	.022	38	0.001	0.001	-0.002	0.002	0.006	0.004	0.004	
Plutonium-239/240	pCi/g	3.42	.066	252	0.003	0.004	0.016	0.007	0	0	0.006	
Uranium-233, -234	pCi/g	44.7	2.25	307	0.5	0.84	0.72	0.8	0.62	0.45	0.79	
Uranium-235	pCi/g	0.173	.094	24	0.082	0.12	0.084	0.047	0.051	0	0.075	
Uranium-238	pCi/g	0.8	2.	103	0.54	0.74	0.8	1.1	0.54	0.67	0.74	
Tier II SOR	NA					0.01	0.01	0.01	0.02	0.01	0.01	0.01
Americium-241	pCi/g	2.37	.022	38	0.004	0.001	0.006	0.007	0.002	0	0.011	
Plutonium-239/240	pCi/g	3.42	.066	252	0	0.002	0.026	0.01	0.014	0.002	0.031	
Uranium-233, -234	pCi/g	44.7	2.25	307	0.55	0.84	0.87	0.92	0.65	0.91	0.58	
Uranium-235	pCi/g	0.173	.094	24	0.054	0.065	0.037	0.06	0.042	0.033	0.054	
Uranium-238	pCi/g	0.8	2.	103	0.47	1.1	0.86	0.73	0.63	0.93	0.76	
Tier II SOR	NA					0.01	0.02	0.01	0.01	0.01	0.01	0.01
Americium-241	pCi/g	2.37	.022	38	0.003	0.005	0.002	0.003	0.008	0.005	0.003	
Plutonium-239/240	pCi/g	3.42	.066	252	0	0.011	0.016	0.018	0.011	0.016	0.004	
Uranium-233, -234	pCi/g	44.7	2.25	307	1.1	0.77	0.82	0.75	0.83	0.85	0.81	
Uranium-235	pCi/g	0.173	.094	24	0.072	0.019	0.039	0.04	0	0.056	0.051	
Uranium-238	pCi/g	0.8	2.	103	1	0.9	0.91	0.78	0.66	0.99	0.71	
Tier II SOR	NA					0.02	0.01	0.01	0.01	0.01	0.01	0.01
	Units	1995/PPRG	Background	Tier II AL	SS43704	SS43804	SS43814	SS43824	SS43834	SS43844	SS43854	
Americium-241	pCi/g	2.37	.022	38	0.02	0.006	0.02	0.025	0.021	0.021	0.003	
Plutonium-239/240	pCi/g	3.42	.066	252	0.1	0.033	0.069	0.06	0.086	0.04	0.004	
Uranium-233, -234	pCi/g	44.7	2.25	307	0.67	1.4	0.76	0.84	0.85	0.77	0.86	
Uranium-235	pCi/g	0.173	.094	24	0.051	0.026	0.026	0.036	0.063	0.049	0.027	
Uranium-238	pCi/g	0.8	2.	103	0.71	1.3	0.7	0.66	0.76	0.69	0.91	
Tier II SOR	NA					0.01	0.02	0.01	0.01	0.01	0.01	0.01

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Table 1-1

IHSS 156.1
Radionuclide Activities in Surface Soils

	Units	1995 PPRG	Background	Tier II AL	SS438594	SS438894	SS438794	SS438694	SS438994	SS439094	SS438194
Americium-241	pCi/g	2.37	.022	38	0.01	0.003	0.003	0.002	0.002	0.006	0.007
Plutonium-239/240	pCi/g	3.42	.066	252	0.035	0.015	0.011	0.12	0.009	0.015	0.022
Uranium-233, -234	pCi/g	44.7	2.25	307	0.7	0.6	0.86	0.7	0.98	0.73	0.62
Uranium-235	pCi/g	0.173	.094	24	0.069	0.033	0.025	0.044	0.063	0.056	0.029
Uranium-238	pCi/g	0.8	2.	103	0.46	0.67	0.61	0.78	1	0.82	0.74
Tier II SOR	NA				0.01	0.01	0.01	0.01	0.02	0.01	0.01
	Units	1995 PPRG	Background	Tier II AL	SS439294	SS439394	SS439494	SS439594	SS439694	SS439794	SS439894
Americium-241	pCi/g	2.37	.022	38	0.004	0.007	0.004	0.007	0.01	0.019	0.035
Plutonium-239/240	pCi/g	3.42	.066	252	0.008	0.011	0.023	0.01	0.04	0.12	0.14
Uranium-233, -234	pCi/g	44.7	2.25	307	0.47	0.96	1	0.78	0.81	0.66	0.62
Uranium-235	pCi/g	0.173	.094	24	0.019	0.014	0.098	0.029	0.067	0.027	0.052
Uranium-238	pCi/g	0.8	2.	103	0.47	1.2	0.96	0.71	0.65	0.82	0.85
Tier II SOR	NA				0.01	0.02	0.02	0.01	0.01	0.01	0.01
PPRG - Programmatic Preliminary Remediation Goal											
AL - RFCA Soil Action Level											
SOR - Sum of Ratios											
Note: All results were validated as "V" : No problems with data were observed at the indicated level (validated), with one exception, Plutonium activity at Location 433294 was validated as "A" ;acceptable with qualification.											
Source: Data Summary Report 1, Operable Unit No. 14, Radioactive Sites											

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PAC REFERENCE NUMBER: 600-164.1

IHSS Reference Number: 164.1, Industrial Area Operable Unit

Unit Name: Radioactive Slab from Building 776

Approximate Location: N748,500; E2,083,500

Date(s) of Operation or Occurrence

September 1957

Description of Operation or Occurrence

After the 1957 fire in Building 771, a radioactively contaminated slab from the east wall of the building was placed in an area northwest of Building 881 for temporary storage. The area impacted is now covered by the southeast corner of the Building 881 Parking Lot (DOE, 1992).

Physical/Chemical Description of Constituents Released

Several hundred square feet of ground surface were affected. No documentation was found which detailed the constituents released to the environment. However, the concrete slab originated from Building 776 which is a plutonium manufacturing facility; therefore, it is possible that plutonium had contaminated the slab (DOE, 1992).

Responses to Operation or Occurrence

The slab was reportedly broken up, removed, and the area was cleaned (DOE, 1992).

Fate of Constituents Released to Environment

No documentation was found which detailed the fate of the constituents released to the environment. This IHSS was studied according to the IAG schedule for Operable Unit 14. As documented in the Operable Unit 14 Data Summary Report (DOE, 1995), fifteen surficial soil samples were collected (Figure 3-8) and analyzed for radionuclides within IHSS 164.1 (PAC 600-164.1). The isotopic analysis presented in Table 1-1 show that soils for this area are consistent with background activities and that potentially contaminated concrete was effectively cleaned up.

Table 1-1

IHSS 164.1 - Radionuclide Activities in Surface Soils

	Units	1995 PPRG	Background	Tier II AL	SS454694	SS454794	SS454894	SS454994	SS455094	SS455194	SS455194
Americium-241	pCi/g	2.37	.022	38	0.006	0.003	-0.002	-0.005	0.003	0.003	0.008
Plutonium-239/240	pCi/g	3.42	.066	252	0.012	0.028	0.037	-0.001	0.027	0.016	0.02
Uranium-233, -234	pCi/g	44.7	2.25	307	0.67	0.9	0.82	0.54	1.2	0.8	0.58
Uranium-235	pCi/g	0.173	.094	24	0.045	0.032	0.023	0.03	0.085	0.056	0.077
Uranium-238	pCi/g	0.8	2.	103	0.68	0.68	0.99	0.67	1.1	0.65	0.7
Tier II SOR	NA				0.01	0.01	0.01	0.01	0.02	0.01	0.01

	Units	1995 PPRG	Background	Tier II AL	SS455294	SS455394	SS455494	SS455594	SS455694	SS455794	SS455894
Americium-241	pCi/g	2.37	.022	38	0.016	0.004	0.012	0.002	0.001	0.007	0.003
Plutonium-239/240	pCi/g	3.42	.066	252	0.076	0	0.005	0.011	0.002	0	0.035
Uranium-233, -234	pCi/g	44.7	2.25	307	0.67	1	0.92	0.67	0.76	1.1	0.55
Uranium-235	pCi/g	0.173	.094	24	0	0.046	0.082	0.04	0.048	0.051	0.042
Uranium-238	pCi/g	0.8	2.	103	0.65	0.88	0.94	0.59	0.91	1	0.51
Tier II SOR	NA				0.01	0.01	0.02	0.01	0.01	0.02	0.01

	Units	1995 PPRG	Background	Tier II AL	SS455994
Americium-241	pCi/g	2.37	.022	38	0.008
Plutonium-239/240	pCi/g	3.42	.066	252	0.028
Uranium-233, -234	pCi/g	44.7	2.25	307	0.62
Uranium-235	pCi/g	0.173	.094	24	0.023
Uranium-238	pCi/g	0.8	2.	103	0.72
Tier II SOR	NA				0.01

PPRG - Programmatic Preliminary Remediation Goal
 AL - RFCA Soil Action Level
 SOR - Sum of Ratios

Note: All results were validated as "V" : No problems with data were observed at the indicated level (validated)

Source: Data Summary Report 1, Operable Unit No. 14, Radioactive Sites

Action/No Further Action Recommendation

During the 1995 study for IHSS 164.1, all analytical data were collected in accordance with an approved workplan and below established PRGs for that time. Currently, all analysis are below RFCA Tier II action levels (DOE, 1996) and further, at or below established background levels for radionuclides. Sampling methodology for IHSS 164.1 was consistent with current Sampling and Analysis Plans as agreed upon in a meeting held May 18, 2000 with the Agencies. No current or potential source of contamination could be identified. Therefore, IHSS 164.1 is proposed for No Further Action based upon comparison of the analytical data to current RFCA action levels.

The recommendation for NFA at this site is consistent with the criteria for recommending No Further Action decisions presented in RFCA (DOE, 1996).

Comments

Research conducted in preparation for the HRR identifies the concrete slab as originating from the Building 776, 777 production facilities in 1957. This is believed to be an error because Building 776 first came online in 1957 and no fires related to the building are identified. It is likely that the reference to a fire is inferring to the fire associated with building 771 in 1957.

Analytical data from the Operable Unit 14 RFI/RI Data Summary Report (DOE, 1995) was delivered to the Agencies in 1999.

References

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1995, *Operable Unit 14, Radioactive Sites, Draft Data Summary 1, Vol. 1*, Rocky Flats Environmental Technology Site, Golden, CO, June.

DOE, 1996, *Final Rocky Flats Cleanup Agreement*, Department of Energy, Rocky Flats Environmental Technology Site, Golden, CO, July.

PAC REFERENCE NUMBER: 600-1001(a)

IHSS Reference Number: Not Applicable

Unit Name: Spills of Unknown Oil in PAC 600-1001 (SIR #318)

Approximate Location: N749,000; E2,083,000

Date(s) of Operation or Occurrence

June 23, 1997

Description of Operation or Occurrence

On June 23, 1997, while conducting a surveillance walkdown of the Building 663 Laydown Yard (PAC 600-1001), two oil stained soil areas were identified immediately west of the building. The first stained area was approximately 10 feet west of the southwest corner of the building where a five-gallon bucket containing an oil-water mixture had overflowed due to recent rain. Stained soil around the bucket indicated that overflowing of the bucket had been ongoing for several years. During the assessment of the first finding, a second oil stain was identified approximately 100 feet north of the first where an abandoned piece of equipment was observed leaking what appeared to be hydraulic fluid onto the ground (soil). Radiological surveys were conducted at both sites followed by soil sampling and sampling of the unknown oil in the five-gallon bucket. The bucket and contents were placed into an overpack container and both oil stained areas were immediately cleaned up in accordance with plant procedures (RMRS, 1997).

Physical/Chemical Description of Constituents Released

Hazardous constituents which may be present due to past storage activities (refer to PAC Narrative 600-1001) include oil, still bottoms, perclene, waste coolant, and solids. Gasoline was released within PAC 600-1001 during a January 1990 incident (DOE, 1992).

Following the June 23, 1997 discovery, independent sampling was conducted of both soil stained areas and the liquid remaining in the five-gallon bucket for fingerprint analysis (oil), radiological screens, isotopic analysis (Pu, U, Am), total CLP metals, total Volatile Organic Analysis (VOAs) and polychlorinated biphenyls (PCBs). Cleanup verification analysis of the soil from both locations found undetected or background concentrations for all parameters analyzed. Positive results for several compounds were identified in the liquid sample (shown below):

<u>Compound</u>	<u>Units (ppm)</u>
Ethylbenzene	43
Total Xylenes	260
1,1,1-Trichloroethane	230
1,2,4-Trimethylbenzene	100
N-Butylbenzene	44
Napthalene	61
1,3-Dichlorobenzene	25

Response to Operation or Occurrence

In response to the June 23, 1997 occurrence, the individual conducting the walkdown immediately notified supervision, the Shift Manager, and the RFETS Fire Department. The HAZMAT Team and Shift Superintendent responded to the site and initial radiological screening was conducted. Samples were collected from the liquid in the bucket and both soil areas. Gravel and soil from the two sites were containerized per plant procedure and transported to a RCRA permitted storage facility (RFETS Fire Dept. Response Tracking 97-318).

Fate of Constituents Released to the Environment

With the exception of the June 23, 1997 occurrence, no documentation was found which detailed the fate of the constituents released to the environment (DOE, 1992). Sampling and analysis adequately characterized the compounds associated with the oil in the five-gallon bucket and stained soil in both areas. The area was immediately cleaned up in accordance with plant procedures and the soil was containerized prior to transporting to a RCRA permitted storage facility. In addition, the five-gallon bucket and contents were overpacked prior to removal. There were no other contaminants associated with the release and the spill was verified to be cleaned up.

Action/No Further Action Recommendation

The 1997 Annual Update to the HRR initially reported this occurrence as an addition to the original PAC 600-1001 Narrative. Clarification was necessary based upon review of this narrative and it was decided in a meeting with the Agencies on May 18, 2000 to track the June 23, 1997 occurrence as PAC 600-1001(a). It was further agreed that PAC 600-1001(a) was approved as NFA.

Comments

PAC 600-1001 requires further investigation given the information provided in the HRR (DOE, 1992)

The June 23, 1997 release did not result in any injury or potential hazard to human health or the environment.

References

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1997, *Serious Incident Report #318*, Rocky Flats Environmental Technology Site, Golden, CO, June.

RMRS, 1997, *Environmental Operations CERCLA History Files*, Rocky Flats Environmental Technology Site, Golden, CO, July.

PAC REFERENCE NUMBER: 700-123.1

IHSS Reference Number: 123.1, Industrial Area Operable Unit

Unit Name: Valve Vault 7

Approximate Location: N750,000; E2,084,000

Date(s) of Operation or Occurrence

April 4, 1983

Description of Operation or Occurrence

Valve Vault 7 is located to the southwest of Building 707, adjacent to the north side of the Protected Area (PA) inner fence. Valve Vault 7 controls the 800 Area main process waste line (DOE, 1992).

On April 4, 1983, a check valve in Valve Vault 7 malfunctioned allowing process wastewater to backflow into the sump. The vault filled with process wastewater and overflowed. The high water level alarm system in Valve Vault 7 was apparently inoperative at the time of the overflow (DOE, 1992). The process wastewater drained into an adjacent storm runoff collection system ditch near Eighth Street and Sage Avenue and flowed east toward South Walnut Creek and the B-Series drainage ponds. Runoff was noticed flowing across the former 750 Parking Lot, the Building 991 normal runoff drainage (DOE, 1992).

Physical/Chemical Description of Constituents Released

The release consisted of process wastewater from the 800 and 400 Areas which typically contained uranium, solvents, oils, beryllium, nitric acid, hydrochloric acid, and fluoride (DOE, 1992).

Responses to Operation or Occurrence

The transfer of liquid waste from the holding tanks at Building 881 was discontinued after personnel verified that wastewater was flowing out of Valve Vault 7. Temporary dikes were constructed to contain the overflow (DOE, 1992). A dam was constructed in the ditch east of the guard shack at Portal #1 and another dam was placed just west of Guard Shack 762. Drainage from the area was diverted to Pond B-1. Attempts were made to remove oil by using chemical absorbent bats. Environmental samples were taken from the vault and other areas of concern. Water was pumped out of the vault and the containment dikes and transferred to Waste Processing by tanker truck. Snow melt water was retained in the ditch for several days and later transferred to Process Waste Storage. The malfunctioning check valve was replaced, the sump pump was replaced and

repair of the electrical system was initiated. A new type of check valve was ordered for all the check valves in the waste transfer system (DOE, 1992). The ditch along Sage Avenue between Valve Vault 7 and Ninth Street was cleaned of all visible contamination. The excavated material was stored for drying in the old Building 771 parking lot.

Fate of Constituents Released to Environment

The runoff diversion activities were partially successful. Oil from the spill was visible in Pond B-1. A small amount of oil was observed in Pond B-4 and Pond B-5. All visible contamination was excavated from the ditch along Ninth Street (DOE, 1992). No documentation was found which detailed the complete removal of release constituents from the site. Analysis of water samples from Pond B-1 and Pond B-4 one week following the incident indicated normal pH, and no concentrations of oil, nitrate, or radioactivity. Evaluation of data for Pond B-5, the only pond that discharged off site during that period did not indicate material from the spill. Pond B-5 water was to have been held for about two weeks after April 15, 1983 before being released to Great Western Reservoir. One reference indicated the environmental impact was negligible (DOE, 1992).

IHSS 123.1 (PAC 700-123.1) was studied in accordance with the IAG schedule for Operable Unit 8. As documented in the Operable Unit 8 Data Summary Report (DOE, 1995), IHSS 123.1 was sampled at nine locations (see Figure 3-4 & 3-5) for inorganics, radionuclides, volatile organic compounds, and semi-volatile organic compounds. These data were validated, compared to background concentrations (if applicable), and then compared to soil actions levels presented in Attachment 5 of RFCA. There were no detections with the exception of benzo(a)pyrene which was present in the sample but below the MDL (Table 1-1).

Action/No Further Action Recommendation

During the 1995 study for IHSS 123.1, all analytical data were collected in accordance with an approved workplan. Currently, all analysis are below RFCA Tier II action levels (DOE, 1996) and at or below established background levels for radionuclides. Sampling methodology for IHSS 123.1 was consistent with current Sampling and Analysis Plans (SAPs) and no current source of contamination could be identified. Therefore, IHSS 123.1 is proposed for No Further Action based upon comparison of the analytical data to current RFCA action levels.

The recommendation for NFA at this site is consistent with the criteria for recommending No Further Action decisions presented in RFCA (DOE, 1996).

Comments

Analytical data from the Operable Unit 8 RFI/RI Data Summary Report (DOE, 1995) was delivered to the Agencies in 1999.

Table 1-1
IHSS 123.1 Surface Soil Sample Analytical Results
Maximum Concentration/Activity Detected vs. Background and RFCA Soil Action Levels

DESCRIPTION	Maximum Detected	Units	1st 10' Open Space Use	1st 10' Open Space Use	Background	Exceed Background	Exceed 1st 10'	Exceed 1st 10'
AMERICIUM-241	0.028	pCi/g	215	38	0.022	Yes	No	No
PLUTONIUM-239/240	0.11	pCi/g	1429	252	0.066	Yes	No	No
URANIUM-233,-234	1.2	pCi/g	1738	307	2.25	No	No	No
URANIUM-235	0.1	pCi/g	135	24	0.094	Yes	No	No
URANIUM-238	1.2	pCi/g	586	103	2	No	No	No
ALUMINUM	8650	mg/kg	1.00E+06	1.00E+06	16902	No	No	No
ANTIMONY	3	mg/kg	7.68E+02	7.68E+02	NA	NA	No	No
ARSENIC	4	mg/kg	2.99E+02	2.99E+00	10.09	No	No	Yes
BARIUM	137	mg/kg	1.33E+05	1.33E+05	141.26	No	No	No
BERYLLIUM	0	mg/kg	1.04E+02	1.04E+00	0.966	No	No	No
CADMIUM	0	mg/kg	1.92E+03	1.92E+03	1.612	No	No	No
CHROMIUM (TOTAL)	15	mg/kg	NA	NA	16.99	No	NA	NA
COBALT	11	mg/kg	1.15E+08	1.15E+08	10.91	Yes	No	No
COPPER	61	mg/kg	7.11E+07	7.11E+07	18.06	Yes	No	No
IRON	18500	mg/kg	5.76E+05	5.76E+05	18037	Yes	No	No
LEAD	18	mg/kg	NA	NA	54.62	No	NA	NA
LITHIUM	8	mg/kg	3.84E+04	3.84E+04	11.55	No	No	No
MANGANESE	473	mg/kg	8.36E+04	8.36E+04	365.08	Yes	No	No
MERCURY	0.06	mg/kg	5.76E+02	5.76E+02	0.134	No	No	No
MOLYBDENUM	1	mg/kg	9.61E+03	9.61E+03	NA	NA	No	No
NICKEL	12	mg/kg	3.84E+04	3.84E+04	14.91	No	No	No
SELENIUM	1	mg/kg	9.61E+03	9.61E+03	1.224	No	No	No
SILVER	2	mg/kg	9.61E+03	9.61E+03	NA	NA	No	No
STRONTIUM	44	mg/kg	1.00E+06	1.00E+06	48.94	No	No	No
TIN	2	mg/kg	1.00E+06	1.00E+06	NA	NA	No	No
TANADIUM	28	mg/kg	1.34E+04	1.34E+04	45.59	No	No	No
ZINC	474	mg/kg	5.76E+05	5.76E+05	73.76	Yes	No	No
1,2,4-TRICHLOROBENZENE	370	ug/kg	1.92E+07	1.92E+07	NA	NA	No	No
1,2-DICHLOROBENZENE	370	ug/kg	1.73E+08	1.73E+08	NA	NA	No	No
1,4-DICHLOROBENZENE	370	ug/kg	1.87E+07	1.87E+05	NA	NA	No	No
2,4,5-TRICHLOROPHENOL	1800	ug/kg	1.92E+08	1.92E+08	NA	NA	No	No
2,4,6-TRICHLOROPHENOL	370	ug/kg	1.59E+08	4.07E+05	NA	NA	No	No
2,4-DICHLOROPHENOL	370	ug/kg	5.76E+06	5.76E+06	NA	NA	No	No
2,4-DIMETHYLPHENOL	370	ug/kg	3.84E+07	3.84E+07	NA	NA	No	No
2,4-DINITROPHENOL	1800	ug/kg	3.84E+08	3.84E+06	NA	NA	No	No
2,4-DINITROTOLUENE	370	ug/kg	6.59E+05	6.59E+03	NA	NA	No	No
2,6-DINITROTOLUENE	370	ug/kg	6.59E+05	6.59E+03	NA	NA	No	No
2-CHLORONAPHTHALENE	370	ug/kg	1.54E+08	1.54E+08	NA	NA	No	No
2-CHLOROPHENOL	370	ug/kg	9.61E+06	9.61E+06	NA	NA	No	No
2-METHYLNAPHTHALENE	370	ug/kg	7.68E+07	7.68E+07	NA	NA	No	No
2-METHYLPHENOL	370	ug/kg	9.61E+07	9.61E+07	NA	NA	No	No
2-NITROANILINE	1800	ug/kg	1.15E+05	1.15E+05	NA	NA	No	No
3,3'-DICHLOROBENZIDINE	740	ug/kg	9.96E+05	9.96E+03	NA	NA	No	No
4,6-DINITRO-2-METHYLPHENOL	1800	ug/kg	1.92E+05	1.92E+05	NA	NA	No	No
4-CHLOROANILINE	370	ug/kg	7.68E+06	7.68E+06	NA	NA	No	No
4-METHYLPHENOL	370	ug/kg	9.61E+06	9.61E+06	NA	NA	No	No
4-NITROPHENOL	1800	ug/kg	1.54E+07	1.54E+07	NA	NA	No	No
ACENAPHTHENE	370	ug/kg	1.15E+08	1.15E+08	NA	NA	No	No
ANTHRACENE	370	ug/kg	5.76E+08	5.76E+08	NA	NA	No	No
BENZO(a)ANTHRACENE	370	ug/kg	6.14E+05	6.14E+03	NA	NA	No	No
BENZO(a)PYRENE	360	ug/kg	6.14E+04	6.14E+02	NA	NA	No	No
BENZO(b)FLUORANTHENE	360	ug/kg	6.14E+05	6.14E+03	NA	NA	No	No
BENZO(k)FLUORANTHENE	370	ug/kg	6.14E+06	6.14E+04	NA	NA	No	No

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Table 1-1
IHSS 123.1 Surface Soil Sample Analytical Results
Maximum Concentration/Activity Detected vs. Background and RFCA Soil Action Levels

DESCRIPTION	Maximum Detected	Units	Iter I Open Space Use	Iter I Open Space Use	Background	Exceed Background	Exceed Iter I	Exceed Iter II
BENZOIC ACID	1800	ug/kg	1.00E+09	1.00E+09	NA	NA	No	No
BENZYL ALCOHOL	370	ug/kg	5.76E+08	5.76E+08	NA	NA	No	No
BIS(2-CHLOROETHYL)ETHER	370	ug/kg	4.07E+05	4.07E+03	NA	NA	No	No
BIS(2-CHLOROISOPROPYL)ETHER	370	ug/kg	6.40E+06	6.40E+04	NA	NA	No	No
BIS(2-ETHYLHEXYL)PHTHALATE	370	ug/kg	3.20E+07	3.20E+05	NA	NA	No	No
BUTYL BENZYL PHTHALATE	370	ug/kg	3.84E+08	3.84E+08	NA	NA	No	No
CHRYSENE	360	ug/kg	6.14E+07	6.14E+05	NA	NA	No	No
DIBENZO(a,h)ANTHRACENE	370	ug/kg	6.14E+04	6.14E+02	NA	NA	No	No
DIBENZOFURAN	370	ug/kg	7.68E+06	7.68E+06	NA	NA	No	No
DIETHYL PHTHALATE	370	ug/kg	1.00E+09	1.00E+09	NA	NA	No	No
DIMETHYL PHTHALATE	370	ug/kg	1.00E+09	1.00E+09	NA	NA	No	No
DI-n-OCTYL PHTHALATE	370	ug/kg	1.00E+09	3.84E+07	NA	NA	No	No
FLUORANTHENE	360	ug/kg	7.68E+07	7.68E+07	NA	NA	No	No
FLUORENE	370	ug/kg	7.68E+04	7.68E+04	NA	NA	No	No
FLUORIDE	4	ug/kg	1.15E+08	1.15E+08	NA	NA	No	No
HEXACHLOROBENZENE	370	ug/kg	2.80E+05	2.80E+03	NA	NA	No	No
HEXACHLOROBUTADIENE	370	ug/kg	5.75E+06	5.75E+04	NA	NA	No	No
HEXACHLOROCYCLOPENTADIENE	370	ug/kg	1.33E+07	1.33E+07	NA	NA	No	No
HEXACHLOROETHANE	370	ug/kg	1.25E+08	3.20E+05	NA	NA	No	No
INDENO(1,2,3-cd)PYRENE	370	ug/kg	6.14E+05	6.14E+03	NA	NA	No	No
ISOPHORONE	370	ug/kg	1.00E+09	4.72E+06	NA	NA	No	No
NAPHTHALENE	370	ug/kg	7.68E+07	7.68E+07	NA	NA	No	No
NITROBENZENE	370	ug/kg	9.61E+05	9.61E+05	NA	NA	No	No
N-NITROSO-DI-n-PROPYLAMINE	370	ug/kg	6.40E+04	6.40E+02	NA	NA	No	No
N-NITROSODIPHENYLAMINE	370	ug/kg	3.65E+08	9.15E+05	NA	NA	No	No
PENTACHLOROPHENOL	1800	ug/kg	1.49E+07	3.74E+04	NA	NA	No	No
PHENOL	370	ug/kg	1.00E+09	1.00E+09	NA	NA	No	No
PYRENE	360	ug/kg	5.76E+07	5.76E+07	NA	NA	No	No

NA Not Applicable

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References

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1994, *Phase I RFI/RI Work Plan for Operable Unit 8, 700 Area, Vol. 1*, Rocky Flats Environmental Technology Site, Golden, CO, October.

DOE, 1995, *Operable Unit 8, Data Summary Report, 700 Area, Vol. 1*, Rocky Flats Environmental Technology Site, Golden, CO, September.

DOE, 1996, *Final Rocky Flats Cleanup Agreement*, Department of Energy, Rocky Flats Environmental Technology Site, Golden, CO, July.

PAC REFERENCE NUMBER: 900-108

IHSS Reference Number: 108, Buffer Zone Operable Unit

Unit Name: Trench T-1

Approximate Location: N749,500; E2,086,000

Date(s) of Operation or Occurrence

November 1954 - December 1962

Description of Operation or Occurrence

Historical documents indicate that at least 125 drums of depleted uranium chips and lathe coolant were buried in Trench 1 located northwest of Gate 9 and adjacent to the Building 901 Guard Tower (Figure 3.6). The original Trench T-1 dimensions were approximately 200 ft long, 15 ft wide, and 5 ft deep however, documentation indicates that the trench was extended in 1955 (DOE, 1992). The drums were covered with two feet of soil and the corners of the trench were marked (DOE, 1992).

The drums buried in Trench 1 consisted of potentially pyrophoric uranium oxide from Building 444 and off-Site sources. Drum packing methods are unclear and may have varied.

A report from November 1954 described a procedure for placing 30-gallon drums of combustible material inside 55-gallon drums of graphite. Six of these drums were placed in a trench described as being in the same area as Trench T-1. It is unclear whether this was the burial method for all drums in the trench (DOE, 1992).

In October 1982, a metal drum was punctured during routine weed cutting. The drum contained a mixture of water and oil. The liquid was pumped into a new drum to await disposal. Another account of a 1982 event may describe the same or a similar incident involving two drums uncovered by weed cutting activities. One drum reportedly contained an oily sludge with 4.3 picocuries per gram (pCi/g) plutonium and 1.2 microcuries per gram (μ Ci/g) uranium (DOE, 1992).

Physical/Chemical Description of Constituents Released

Approximately 25,000 kilograms of depleted uranium chips were contained in the estimated 125 buried drums (DOE, 1992).

An inventory receipt records 38 drums disposed in the trench from November 17, 1954 to June 1, 1956. Most of the records indicate the contents to be metal turnings and still bottoms (residue from a distillation process), although 10 drums contained cemented cyanide waste. The drums of concreted cyanide were placed in the same trench as highly combustible waste from Building 444. Some of the drums contained copper alloy (DOE, 1992).

Inventory lists indicating the number of drums of oil disposed by on-site burning or burial and the origin of the drums are available from April 1954 through April 1966 with the exception of a gap from August 1957 through August 1958. Eighty-five of the estimated 125 drums are documented in this record (DOE, 1992).

Two drums of "special" wastes from Building 444 which were placed in the trench in 1955 were removed and returned to Building 444 in 1956 at the request of the Accountability Group (DOE, 1992).

In 1958, authorization was granted for additional disposal in the trench of over 15,000 pounds of depleted uranium chips from Building 444. In 1962, authorization was again given for the disposal of approximately 7,500 pounds of depleted uranium chips (DOE, 1992). The depleted uranium chips were containerized in drums.

Responses to Operation or Occurrence

A radiometric survey was performed in the area in October 1977 that identified four small hot spots ranging from 500 to 18,000 cpm of activity. The spots were marked and mapped. A radiometric survey was performed in June 1980 which identified numerous hot spots suspected to be depleted uranium. Two boxes of uranium-contaminated soil were removed from the southeast corner of the Perimeter Security Zone (PSZ) in the spring of 1982 during construction of the PSZ. It is not clear if the material removed is associated with the Oil Burn Pit (IHSS 153) or the trench. Additionally, several monitoring wells were installed in October 1987 (DOE, 1992).

In the summer of 1995, electromagnetic surveys and ground penetrating radar confirmed the presence of drums and/or metallic objects in the Trench T-1 location. The surveys indicate that a majority of the metallic objects were located in the westernmost half of the trench (DOE, 1997).

A Proposed Action Memorandum (PAM) to remediate the site as part of a CERCLA Accelerated Source Removal Action was approved by the Regulatory Agencies in April 1998 (RMRS, 1998a). The excavation phase of the source removal action was initiated on June 10, 1998 and completed on August 20, 1998. The action included the excavation

of materials buried in the trench and segregation of material during excavation and packaging of the waste streams based on waste type. The excavated trench length was 230 ft with 160 drums of depleted uranium and 10 drums of cemented cyanide removed from the excavation. Most of the Trench 1 waste is being stored in RCRA Unit 15 B after initially being stored in an area on the north side of the Trench 1 project site within a Temporary Unit established for the project waste. A field modification to the PAM was made to allow movement to and storage of T-1 remediation wastes in RCRA Unit 15 B (Kaiser-Hill, 1999).

Because VOCs and PCBs were detected at or above regulatory thresholds (i.e., RCRA, TSCA) in the drums of depleted uranium, the material could not be shipped to the treatment subcontractor for recycle as planned in the PAM. The Trench 1 waste will remain in interim storage at Rocky Flats until an off-site treatment process can be identified and the waste can be treated for off-site disposal (Kaiser-Hill, 1999).

Fate of Constituents Released to Environment

The removal action was completed and verification samples were collected from the excavation bottom and sidewalls (Figure 3.7). Sampling was performed in accordance with the Sampling and Analysis Plan to Support the Source Removal at the Trench T-1 Site, IHSS 108 (RMRS, 1998b). Samples were collected and analyzed for radionuclides by gamma spectroscopy, VOCs, PCBs (as appropriate), and cyanide (as appropriate). Based on validated analytical results, the T-1 Closeout Report (RMRS, 1999) concluded that the trench has been successfully remediated relative to RFCA action levels and cleanup levels as specified in the PAM.

Sampling of the clean soil stockpile (segregated using a FIDLER and organic vapor analyzers during excavation) was performed in accordance with the Sampling and Analysis Plan. Results indicate, using the 95% Upper Confidence Level, that action levels specified in the PAM were met. This soil stockpile was therefore returned to the excavation.

In addition, soil from 1,434 drums of Investigation Derived Material (IDM) was returned to T-1 as part of the trench backfilling operations. Approval for placement of this material was given by the EPA. These and other T-1 actions are documented in the Closeout Report generated for the project (RMRS, 1999).

Action/No Further Action Recommendation

No further action is warranted for Trench T-1 and therefore IHSS 900-108 is being proposed for NFA at this time. A source removal action was completed in the summer of 1998. This action was authorized by an approved PAM. The removal action was completed and verification samples were collected from the excavation bottom and sidewalls. Sampling was performed in accordance with the approved Sampling and Analysis Plan. Based on validated analytical results, the trench was successfully remediated to RFCA action levels and cleanup levels specified in the PAM.

A Closeout Report for the project was prepared and serves as the reference document for all activities and analytical data associated with the project (RMRS, 1999). The closeout report documents the waste and contaminants removed, the condition of the excavation following the removal action and analytical results. Because the source of contamination was successfully removed, IHSS 108 meets the criteria set fourth in RFCA (DOE, 1996) for NFA.

As requested by the Regulatory Agencies (CDPHE/EPA, 2000), the status of the search for a treatment process, and offsite facility that meets regulatory requirements for the CERCLA/RCRA/TSCA/Low Level mixed waste, will be reported. The status of the search will be reported in the 4th quarter RFCA report or as part of an overall Site waste management report. The status and disposition of the other waste types including soils, excavated debris and cemented cyanide wastes, will also be reported.

Comments

During backfilling operations on December 18, 1998, a five-gallon container was discovered in the north sidewall of the trench. The contents of the container were historic sample bottles which were rendered inert, sampled and then placed in a 55-gallon steel drum on a layer of soil and appropriately dispositioned as waste to be shipped offsite (RMRS, 1999).

References

Colorado Department of Public Health and Environment and U.S. Environmental Protection Agency, 2000, *Letter from Steven Gunderson and Tim Rehder to Joe Legare re Annual Update for the Historical Release Report (September 1999)*, June 23.

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, CDPHE and EPA, 1996, *Final Rocky Flats Cleanup Agreement*, July 19.

DOE, 1997, *Annual Update for the Historical Release Report*, RF/RMRS-97-073.UN., Rocky Flats Environmental Technology Site, Golden, CO, September.

Kaiser-Hill, 1999, *Field Modification to PAM for T-1 Project*, attachment to email from Tom Greengard to Gary Kleeman and Carl Spreng, May 27.

Putzier, 1970, *A Summary of On-Site Radioactive Waste Disposal*, E.A. Putzier, April 22

RMRS, 1998a, *Final Proposed Action Memorandum for the Source Removal at Trench 1, IHSS 108*, RF/RMRS-97-001, Rocky Flats Environmental Technology Site, Golden, CO, February.

RMRS, 1998b, *Sampling and Analysis Plan to Support the Source Removal at the Trench T-1 Site, IHSS 108*, RF/RMRS-98-205. Rocky Flats Environmental Technology Site, Golden, CO, April.

RMRS, 1999, Closeout Report for the Source Removal at the Trench 1 Site IHSS 108, RF/RMRS-99-302.UN, Rocky Flats Environmental Technology Site, Golden, CO, Rev., 0, June.

PAC REFERENCE NUMBER: 900-183

IHSS Reference Number: 183, Buffer Zone Operable Unit

Unit Name: Gas Detoxification Area

Approximate Location: N748,500; E2,086,000

Date(s) of Operation or Occurrence

Approximately 1963 - Approximately 1983

Description of Operation or Occurrence

Building 952 was constructed in 1963 as a Toxic Gas Storage building where it was managed by the Industrial Hygiene group. Beginning in approximately January 1967, bottles containing hazardous gases were transported by the Rocky Flats Fire Department from various buildings to Building 952 for storage. Typically, shipments consisted of one or two lecture-size gas bottles. Gases were stored for up to five years prior to disposal. Selected gases were detoxified at the site. The method of detoxification was selected based on the characteristics of the material. Others were packed and shipped to off-site vendors for disposal (DOE, 1992). There are no reports of a release to the surrounding soils having occurred from the storage of this material.

Physical/Chemical Description of Constituents Released

No documentation was found which detailed any releases to the building or surrounding soils resulting from this practice (DOE, 1992).

Responses to Operation or Occurrence

Selected gases were detoxified using various commercial neutralization processes available at the time. Neutralization processes included reaction with water, acid, caustic, carbon, or air. Byproducts were disposed of as process wastes. Upon completion of the neutralization process for each type of gas, the glassware used in the process was triple rinsed, crushed, and deposited in the Present Landfill (DOE, 1992).

Fate of Constituents Released to Environment

No documentation was found which detailed any release from IHSS 183 (PAC 900-183) (DOE, 1992). This IHSS was studied as part of Operable Unit 2 (DOE, 1995).

As presented in the HRR and supporting reference material, past releases from IHSS 183 (PAC 900-183) are not known to have occurred (DOE, 1992). The reference material, which included records on the movement, storage and disposal of toxic gases, Industrial

Hygiene status reports, and the RCRA 3004U waste management report, were re-evaluated to support the assertion that a release at IHSS 183 has not occurred (Hill, 1968a and 1968b; Piltingsrud, 1968; Hayden, 1981; Unknown, 1987). IHSS 183 was investigated as part of the OU2 RFI/RI and, for investigative purposes, was grouped with IHSS 140 (PAC 900-140) because of the close proximity of these two IHSSs. Of the nine boreholes located within IHSS 140, one borehole (12791) was located near IHSS 183. Samples were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, metals and radionuclides. Only methylene chloride (2 ppb) and acetone (15 ppb) were detected in borehole 12791. These chemicals were not retained in the OU2 RFI/RI or the associated human health risk assessment as chemicals of concern; DOE 1995). With respect to ecologic receptors, IHSS 183 was not identified as a source area in the Ecological Risk Assessment for the Woman Creek Watershed (DOE, 1996).

Action/No Further Action Recommendation

IHSS 183 is proposed for No Further Action at this time for the following reasons: 1) there is no evidence or knowledge of a release to the surrounding soils at this location; 2) no current source of contamination can be identified; 3) the DOE submitted RCRA clean closure certification for RCRA Unit 23 in March 1996 (see attached); and 4) recommendation for NFA at this site is consistent with the criteria for recommending No Further Action decisions presented in RFCA, Attachment 6, RCRA Guidance (DOE, 1996).

Comments

It is recognized that IHSS 183 (PAC 900-183) overlaps with IHSS 155 which will be addressed as a separate action.

References

DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1995, *Final Phase I RFI/RI Report 903 Pad, Mound, and East Trenches Area, Operable Unit 2*, RF/ER-95-0079.UN, Rocky Flats Environmental Technology Site, Golden, CO, October.

DOE, 1996, *Final Phase I RFI/RI Report Woman Creek Priority Drainage, Operable Unit 5*, RF/ER-96-0012.UN, Rev 0, Rocky Flats Environmental Technology Site, Golden, CO, April.



Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

MAR 11 1996

96-DOE-07436

Mr. Joe Schieffelin, Unit Leader
Hazardous Waste Control Program
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Mr. Schieffelin:

The United States Department of Energy, Rocky Flats Field Office (DOE, RFFO) is submitting the enclosed Resource Recovery and Conservation Act (RCRA) closure certification for RCRA Unit 23. The Part A Permit Application and the Site's Part B Operating Permit (RCRA Permit) describes Unit 23, Gas Cylinder Storage, Building 952. The Site's Part B Operating Permit, specifically Part VIII (A)(5)(h) and (A)(7)(6)(2)(vii) establishes the permit condition for the enclosed Closure Certification. This clean closure certification is based on a visual inspection of the premises by Site personnel and an independent Professional Engineer registered within the State of Colorado. There is no evidence to suggest that any releases or spills of hazardous waste or constituents have ever occurred in Unit 23; therefore, with this final documentation, RCRA Unit 23 is clean closed.

This letter also serves as a Class 1 Permit Modification to remove Unit 23 from the RCRA Permit. The reference to Unit 23 is hereby removed from the Table of Contents, the Part A Permit Application, and Part III Unit Specific Conditions in the RCRA Permit. In addition, Paragraph A.5.h pertaining to Unit 23 is removed from Part VIII of the RCRA Permit. These changes are effective as of the date of this letter. The changes are administrative in nature and are therefore, submitted as a Class 1 Permit Modification pursuant to Appendix 1 to 6 CCR 1007-3, §100.63.

If you have any questions regarding this matter, please contact Mr. David Maxwell, of my staff, at 966-4017.

Sincerely,



Keith Klein
Deputy Manager

Enclosure

cc w/o enc:
C. Gilbreath, CDPHE, RFFO
D. Grosek, EAG, RFFO
D. Maxwell, ELG, RFFO
G. Uetrecht, CAI
K. North, K-H

RCRA Closure Certification
for
RCRA Unit 23

Rocky Flats Environmental Technology Site
Golden, Colorado 80402-0464

Prepared by
Rocky Mountain Remediation Services

January 1996

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Closure Certification - RCRA Unit 23

1.0 Introduction

The purpose of this report is to certify the closure of Resource Conservation and Recovery Act (RCRA) Unit 23 (Building 952, Gas Cylinder Storage) at the Rocky Flats Environmental Technology Site (RFETS). ERM-Rocky Mountain, Inc. (ERM) has been retained as an independent third party by Rocky Mountain Remediation Services to perform this certification. This report provides the data to support the closure determination by the owner/operator of a facility and an independent, registered Professional Engineer, as required by 6 Colorado Code of Regulations (CCR) 1007-3, Part 264. The data required for closure determination of Unit 23 is included in this report.

This closure of RCRA Unit 23 was performed in accordance with applicable Colorado Hazardous Waste Act (CHWA) regulations for RCRA permitted units as defined within 6 CCR 1007-3 Section 264, and the RFETS RCRA Part B Permit, Section VIII, "Closure of Permitted Units."

1.1 Project Description

RCRA Unit 23 (Building 952) is constructed of a 4-inch concrete slab floor and corrugated steel roof and walls. The concrete floor has an epoxy painted surface. The building is located east of the 881 Hillside. Unit 23 was identified as a permitted hazardous waste management unit regulated by RCRA; thus Unit 23 was permitted for storing nonradioactive hazardous waste in gas cylinders and lecture bottles.

1.2 Historical Overview

RCRA Unit 23 stored a total of 19 gas lecture bottles (approximately 2 inches in diameter and 12 inches long) between April 1988 and December 1994. All the lecture bottles had an accumulation start date of April 21, 1988. The bottles were anchored to steel racks and stored upright on the concrete floor.

A private subcontractor, Emergency Technology Services Corporation (ETSC), was hired in the summer of 1992 to inspect the condition of the cylinders and valves to ensure they were in a safe configuration and that the integrity of the cylinders had not been compromised. ETSC found no anomalous conditions with respect to the gas cylinders or their storage. Based on process knowledge and the weekly RCRA inspections, documentation exists to confirm the fact that there was never a release, spill, or breach from the cylinders while they were managed in RCRA Unit 23. The last lecture bottles containing hazardous waste were shipped off site for disposal on December 21, 1994. There has been no storage of hazardous waste in the unit since then.

The closure plan in the permit for RCRA Unit 23 does not require soil or surface rinse sampling due to the nature of the hazardous waste that was stored in the unit (expired or excess compressed gas cylinders). Documentation of clean closure is based on a visual inspection of the premises and a review of the applicable documentation by an independent Professional Engineer, registered within the State of Colorado.

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Closure Certification - RCRA Unit 23

2.0 RCRA Closure Certification Activities

The following activities were performed by ERM and RMRS personnel to certify the closure of RCRA Unit 23.

A review of the inspection records and other pertinent documentation was conducted on December 21, 1995. Weekly inspections commenced in May 1988 and continued through November 1995. The following information is recorded with respect to this record inspection.

- Inspection records were thorough and complete and presented no evidence of spills or leaks from the hazardous waste containing cylinders that were stored in the unit.
- All cylinders were evaluated and leak tested, as applicable, in January 1992. All cylinders passed inspection, confirming the integrity of the cylinders.
- Secondary containment pans were installed in June 1992.
- Pictures of the bottles were taken in February 1993. A review of these pictures shows no evidence that the physical integrity of any of the cylinders had been compromised.
- Inspection records also indicate that a roof leak occurred in March 1994. The roof was immediately repaired; all subsequent RCRA inspections indicate no further evidence of moisture present in the unit.
- Cylinder C00015 was water-dip tested by EnviroCheck, Inc. on November 16, 1994. The cylinder passed the test with no evidence of leakage from the cylinder.
- All cylinders were shipped off site during the week of December 13, 1994, with the last shipment occurring on December 21, 1994.

A physical inspection of Unit 23 was also conducted on December 21, 1995. The following information is recorded with respect to the inspection of this unit.

- The unit was in good condition. Some minor rust staining from the wall fasteners was noted. There was no excessive corrosion or deterioration of the structural or fabricated steel.
- The concrete floor was in good condition, showing no signs of excessive deterioration. The unit floor had been sealed with gray epoxy paint; however there were some very small superficial cracks in the floor.
- All floor and roof vents were in good condition, with no visible obstructions or corrosion observed.
- The exterior of the unit is in good condition. There are no signs of unusual corrosion or degradation of the building.
- There was no evidence of spills or leaks around the outside of the unit.

Closure Certification - RCRA Unit 23

3.0 Conclusion and Closure Certification

The closure performance standards identified in the Part B RCRA permit for RCRA Unit 23 have been met based on the physical inspection of the unit and review of the applicable RCRA Unit 23 management records. Also, there is no record or physical evidence to suggest that leaks or spills ever occurred from any of the hazardous waste cylinders to the RCRA storage unit or surrounding area. In summary, there is no evidence to suggest that during any of the inspections, evaluations, or testing of the bottles, any cylinders had ever suffered an integrity breach. Therefore, RCRA Unit 23 is considered closed in accordance with 6 CCR 1007-3, Section 264.

The undersigned hereby certify that closure of the RCRA Unit 23 at the Rocky Flats Environmental Technology Site was performed in accordance with applicable regulations and the approved closure plan.



Roland C. Hea P.E.
Professional Engineer
Roland C. Hea
ERM - Rocky Mountain, Inc.

1/30/96
Date

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PAC REFERENCE NUMBER: 900-1318

IHSS Reference Number: Not Applicable
Unit Name: Release of F001 Listed Waste Water to Soil
Occurrence Report #: RFO-KHLL-ENVOPS-1996-0011
Approximate Location: N749,995; E2,086,231

Date(s) of Operation or Occurrence

October 7, 1996

Description of Operation or Occurrence

On October 7, 1996 at approximately 10:00 a.m., workers discovered a small amount of waste-water leaking from a level-indicating valve associated with the SW-59 collection tank. The valve was positioned on the north side of the tank and the estimated volume of water (which contained F001 listed RCRA constituents) reaching the soil was approximately one pint. The fitting was tightened immediately which stopped the leak and the area was monitored for VOCs during cleanup of the soil (DOE, 1996).

Physical/Chemical Description of Constituents Released

Historical characterization of the SW-59 seep water shows elevated levels of VOCs. Contaminants identified in the SW-59 Collection Seep are as follows:

<u>Compound</u>	<u>Station</u>	<u>Exceedance Value</u>	<u>Units</u>	<u>OU2 ARAR</u>
Carbon Tetrachloride	SW-59	40	ug/L	5
Chloroform	SW-59	8	ug/L	1
Tetrachloroethene	SW-59	18	ug/L	1
Trichloroethene	SW-59	26	ug/L	5

Response to Operation or Occurrence

Upon discovery of the waste water leaking from the level-indicating valve, workers tightened a fitting which immediately stopped the leak. The spill area was contained after the area was monitored for VOCs. The affected soil and rock were containerized. Approximately one 55 gallon drum of soil was removed and transported to a RCRA Hazardous Waste Management Unit (RCRA Unit No.18.03) after radiological screening was performed. Cleanup verification samples were collected to verify that the site was cleaned up and a RCRA Contingency Plan Implementation Report (CPIR) was filed (DOE, 1996). The CPIR Report 1996-0011 is attached for reference to this PAC Narrative.

Fate of Constituents Released to the Environment

Approximately one 55 gallon drum of soil and rock potentially contaminated with EPA Waste Code F001 was removed and transported to a RCRA Hazardous Waste Management Unit. No radiological contamination was found in the area of the release. Analytical data later confirmed that the potentially contaminated soil had been removed (see attached CPIR).

The location where the spill occurred was physically removed during the installation of the Mound Plume Treatment System collection trench in 1997.

Action/No Further Action Recommendation

This PAC does not warrant further investigation due to the small amount of material released to the environment, the immediate cleanup response, and the cleanup verification samples showing that the release was adequately cleaned up, a current or potential source of contamination does not exist. PAC 900-1318 is therefore proposed for NFA consistent with RFCA guidance.

Comments

This PAC was inadvertently numbered as 900-1307 in the 1997 Annual Update and proposed as NFA (DOE, 1997). The PAC Reference Number has been corrected as PAC 900-1318.

The minimal release was directly attributable to a 24-hour tank and pipe inspection conducted at the facility. The incident did not result in any injury or potential hazard to human health or the environment.

Radiological screening (rad screens) were performed onsite prior to VOC sample shipment. Isotopic analysis was not performed based upon historical characterization data of the seep (SW-59).

References

DOE, 1996, *Occurrence Report (RFO-KHLL-ENVOPS-1996-0011)*, Rocky Flats Environmental Technology Site, Golden, CO, October.

DOE, 1997, *Annual Update for the Historical Release Report*, RF/RMRS-97-073.UN, Rocky Flats Environmental Technology Site, Golden, CO, September.

RMRS, 1997, *Consolidated Water Treatment Facility Quarterly Operating Report, Fourth Quarter*, Rocky Flats Environmental Technology Site, Golden, CO, January.

RMRS, 1997, *Environmental Operations CERCLA History Files*, Rocky Flats Environmental Technology Site, Golden, CO, July.

OCCURRENCE REPORT

Environmental Management

(Name of Facility)

Balance-of-Plant

(Facility Function)

Rocky Flats Env. Technology Site / Kaiser-Hill Company, L.L.C.

(Name of Laboratory, Site or Organization)

Name: M. T. Vess
Title: Facility Manager

Telephone No.: (303)966-6540

(Facility Manager/Designee)

Name: JENSEN, J A
Title: OCCURRENCE INVESTIGATOR

Telephone No.: (303)966-4946

(Originator/Transmitter)

Name: R. L. Burns (Telcon)

Date: 11/08/1996

(Authorized Classifier (AC))

1. OCCURRENCE REPORT NUMBER: RFO--KHLL-ENVOPS-1996-0011
Release Of F001 Listed Waste Water To Soil

2. REPORT TYPE AND DATE:	Date	Time
[] Notification	10/08/1996	1222 MTZ
[] Initial Update	11/04/1996	0748 MTZ
[] Latest Update	11/08/1996	1347 MTZ
[X] Final	11/13/1996	1051 MTZ

3. OCCURRENCE CATEGORY:
[] Emergency [] Unusual [X] Off-Normal [] Cancelled

4. NUMBER OF OCCURRENCES: 1 ORIG. OR:

5. DIVISION OR PROJECT: Kaiser-Hill Company, L.L.C.

6. SECRETARIAL OFFICE: EM - Environmental Management

7. SYSTEM, BLDG., OR EQUIPMENT:
Operable Unit II, Seep Location SW-59

8. UCNI?: No

9. PLANT AREA: Operable Unit II

10. DATE AND TIME DISCOVERED:
10/07/1996 1000 (MTZ)

11. DATE AND TIME CATEGORIZED:
10/07/1996 1135 (MTZ)

12. DOE NOTIFICATION:

13. OTHER NOTIFICATIONS:

10/07/1996	1155 (MTZ)	WRP, Harold Wells (by FD)	DYNCORP
10/08/1996	0830 (MTZ)	CDPH&E, Alstatt by Wells	COLORADO
10/08/1996	0600 (MTZ)	CDPH&E, Kray by Jensen	COLORADO
10/08/1996	0800 (MTZ)	CDH/EMU, Jones by Wells	COLORADO
10/07/1996	1158 (MTZ)	Fac Rep, McCranie (by FD)	DOE/RFFO

14. SUBJECT OR TITLE OF OCCURRENCE:

Release Of F001 Listed Waste Water To Soil

15. NATURE OF OCCURRENCE:

02) Environmental
B. Hazardous Substances/Regulated Pollutants/Oil Releases

16. DESCRIPTION OF OCCURRENCE:

During normal operations, it was noted that less than one gallon, but, more than one pint of F001 Resource Conservation and Recovery Act (RCRA) listed waste water was released to the soil from a leaking gauge connection.

17. OPERATING CONDITIONS OF FACILITY AT TIME OF OCCURRENCE:

Normal Operations

18. ACTIVITY CATEGORY:

Normal Operations

19. IMMEDIATE ACTIONS TAKEN AND RESULTS:

1. The RCRA Contingency plan was implemented at the direction of Kaiser Hill Compliance and Performance Assurance group.
2. The connection was tightened which stopped the leak.
3. The area was contained and the soil and rock affected was cleaned up and disposed of per approved procedure.
4. Confirmatory sampling was taken to verify proper and adequate cleanup (Environmental Protection Agency (EPA) sample #22101 DL and Building 881 sample #SS00033RG).

20. DIRECT CAUSE:

- 1) EQUIPMENT/MATERIAL PROBLEM
A. Defective or Failed Part

21. CONTRIBUTING CAUSE(S):

22. ROOT CAUSE:

- 1) EQUIPMENT/MATERIAL PROBLEM
A. Defective or Failed Part

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23. DESCRIPTION OF CAUSE:

The cause analysis documentation for this occurrence is being maintained in the Occurrence Report history file.

Both the direct and root cause have been determined to have been a leaking (faulty) gauge connection. The cause of the loose connection may be attributable to an individual who may have bumped into the fitting during installation of insulation. The entire system pressure tested satisfactorily approximately two (2) weeks ago. This pressure testing was covered as part of a tank modification in Internal Work Control Package (IWCP) #T0087005.

The minimal release is directly attributed to a required 24 hour inspection as required by RCRA driven tank and pipe inspections.

24. EVALUATION: (By Facility Manager/Designee)

Due to the requirement for regularly scheduled system inspections, the RCRA regulated material release was held to a minimum, however, the presence of secondary containment may have prevented any requirements for RCRA release reporting to both State and Federal Agencies, and will be investigated for feasibility for installation.

Personnel working on or near these systems must remain alert to the potential for leaks due to bumping or otherwise disturbing fittings, gauges and connections, and must, as a precaution notify appropriate supervision of these occurrences

25. IS FURTHER EVALUATION REQUIRED?: Yes [] No [X]

26. CORRECTIVE ACTIONS:

(* = Date added/revised since final report was signed off)

01) Provide continued appropriate training of personnel to conduct tank & pipe inspections per all applicable Policies, Procedures, and Agreements.

TARGET COMPLETION DATE: 10/08/1996 COMPLETION DATE: 10/08/1996

02) Evaluate the feasibility of installation of secondary containment to preclude a release to the soil from any future, similar occurrences.

TARGET COMPLETION DATE: 11/04/1996 COMPLETION DATE: 11/04/1996

03) Check/re-check, and tighten all fittings, hose connections and other points of potential leakage on an appropriate schedule to avert future releases.

26. CORRECTIVE ACTIONS: (continued)
(* = Date added/revised since final report was signed off)

TARGET COMPLETION DATE: 10/08/1996 COMPLETION DATE: 10/08/1996

27. IMPACT ON ENVIRONMENT, SAFETY AND HEALTH:
Impact on Environment, Safety, & Health

There was considered to be only minimal initial impact on the environment, and no impact on Personnel Safety and/or Health.

28. PROGRAMMATIC IMPACT:

There were only minimal identified programmatic impacts resulting from this occurrence.

29. IMPACT UPON CODES AND STANDARDS:

There were no identified impacts on Codes and Standards.

30. LESSONS LEARNED:

Due to Policy, Procedure, and Agreement driven inspections of RCRA associated tanks and piping systems, a much larger release was averted, thus substantially reducing clean-up efforts required.

31. SIMILAR OCCURRENCE REPORT NUMBERS:

1) RFO--EGGR-ENVOPS-1993-0002

32. USER FIELD #1:

961565

33. USER FIELD #2:

34. DOE FACILITY REPRESENTATIVE INPUT:

Entered by:

Date:

35. DOE PROGRAM MANAGER INPUT:

Entered by:

Date:

36. SIGNATURES: (FM's original signature on hardcopy)

Approved by: M. T. Vess
Facility Manager/Designee

Date: 11/08/1996
Telephone No.: (303)966-6540

35. SIGNATURES: (FM's original signature on hardcopy) (continued)

Approved by: CHRIST, JOSEF W Date: 11/13/1996
DOE Facility Representative/Designee Telephone No.: (303)966-7717

Approved by: Approval delegated to FR Date:
DOE Program Manager/Designee Telephone No.:

303 966 7717

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

22101 DL

Lab Name: E.G.&G., Rocky Flats

Contract:

Lab Code: GLAB

Case No.:

SAS No.: 97L0

SDG No.:

Matrix: (soil/water) SOIL

Lab Sample ID: SS00033RG

Sample wt/vol: 2.500 (g/mL) G

Lab File ID: OCT1501

Level: (low/med) LOW

Date Received: 10/07/96

% Moisture: not dec. Not Det.

Date Analyzed: 10/15/96

GC Column: DBVRX ID: .32 (mm)

Dilution Factor: 2.0

Soil Extract Volume: _____ (uL)

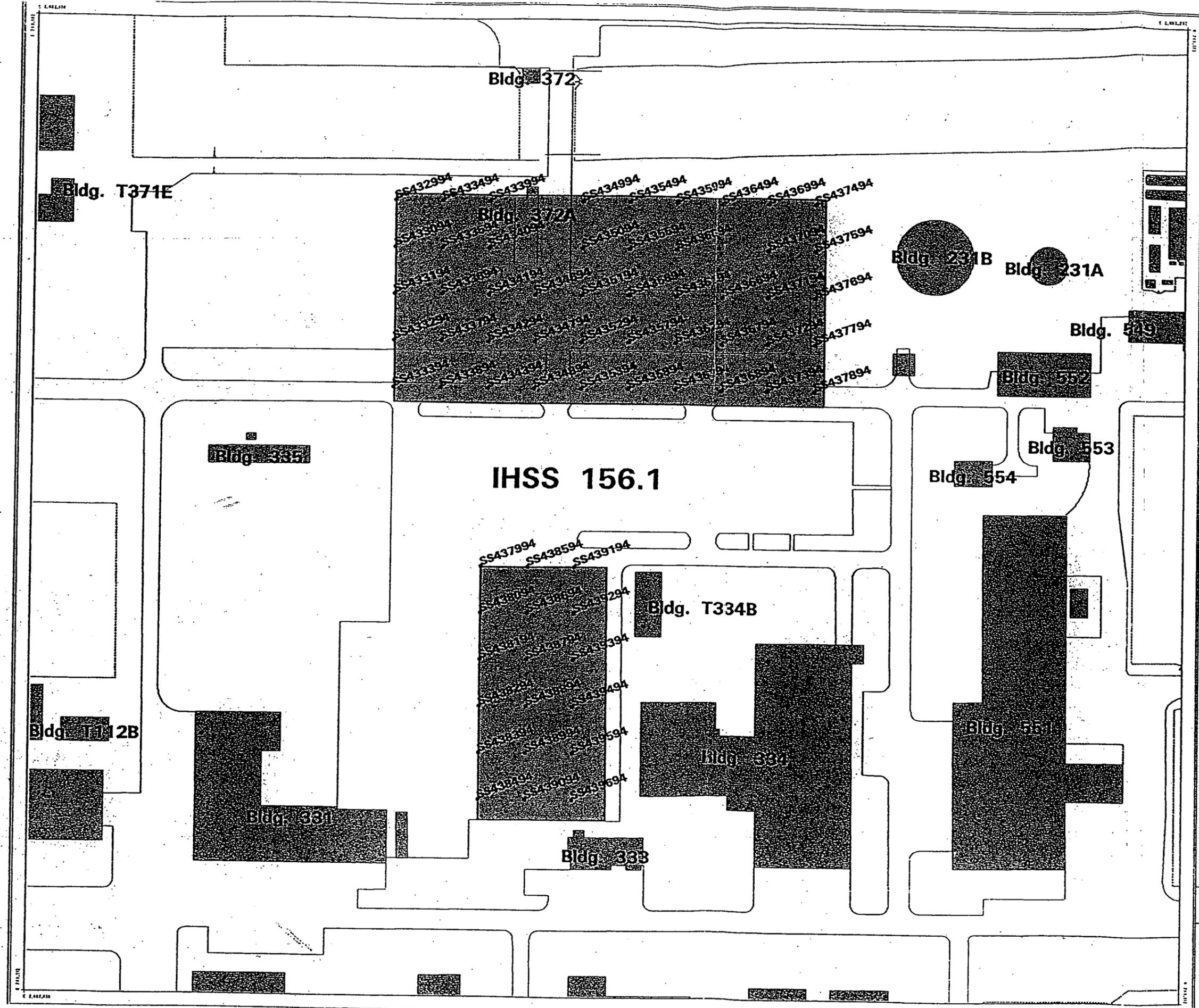
Soil Aliquot Volume: _____ (uL)

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Q

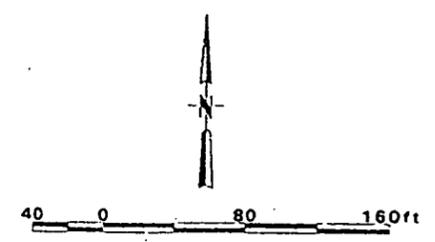
CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	-----Chloromethane	20.	U D
74-83-9	-----Bromomethane	20.	U D
75-01-4	-----Vinyl Chloride	20.	U D
75-00-3	-----Chloroethane	20.	U D
75-09-2	-----Methylene Chloride	10.	U D
67-64-1	-----Acetone	5.	BJD
75-15-0	-----Carbon Disulfide	10.	U D
75-35-4	-----1,1-Dichloroethene	10.	U D
75-34-3	-----1,1-Dichloroethane	10.	U D
544-59-2	-----1,2-Dichloroethene (total)	10.	U D
67-66-3	-----Chloroform	10.	U D
107-06-2	-----1,2-Dichloroethane	10.	U D
78-93-3	-----2-Butanone	3.	BJD
71-55-6	-----1,1,1-Trichloroethane	10.	U D
56-23-5	-----Carbon Tetrachloride	10.	U D
75-27-4	-----Bromodichloromethane	10.	U D
78-87-5	-----1,2-Dichloropropane	10.	U D
10061-01-5	-----cis-1,3-Dichloropropane	10.	U D
79-01-6	-----Trichloroethene	10.	U D
124-48-1	-----Dibromochloromethane	10.	U D
79-00-5	-----1,1,2-Trichloroethane	10.	U D
71-43-2	-----Benzene	10.	U D
10061-02-6	-----trans-1,3-Dichloropropene	10.	U D
75-25-2	-----Bromoform	10.	U D
108-10-1	-----4-Methyl-2-Pentanone	20.	U D
591-78-6	-----2-Hexanone	20.	U D
127-18-4	-----Tetrachloroethene	2.	JD
79-34-5	-----1,1,2,2-Tetrachloroethane	10.	U D
108-88-3	-----Toluene	10.	U D
108-90-7	-----Chlorobenzene	10.	U D
100-41-4	-----Ethylbenzene	10.	U D
100-42-5	-----Styrene	10.	U D
1330-20-7	-----Xylene (total)	10.	U D

87/87 PCE is prob. in the GC/MS auto sampler if was in the prev. days blank. they have had ...

FIGURE 3-2
OUI4-IHSS 156.1
SURFACE-SOIL SAMPLE LOCATIONS



- EXPLANATION**
- Surface-Soil Sample Location
 - OUI4 IHSS
 - Buildings or other structures
 - Lakes and ponds
 - Building footprint (where overlaps IHSS)
 - Fences
 - Paved roads
 - Dirt roads



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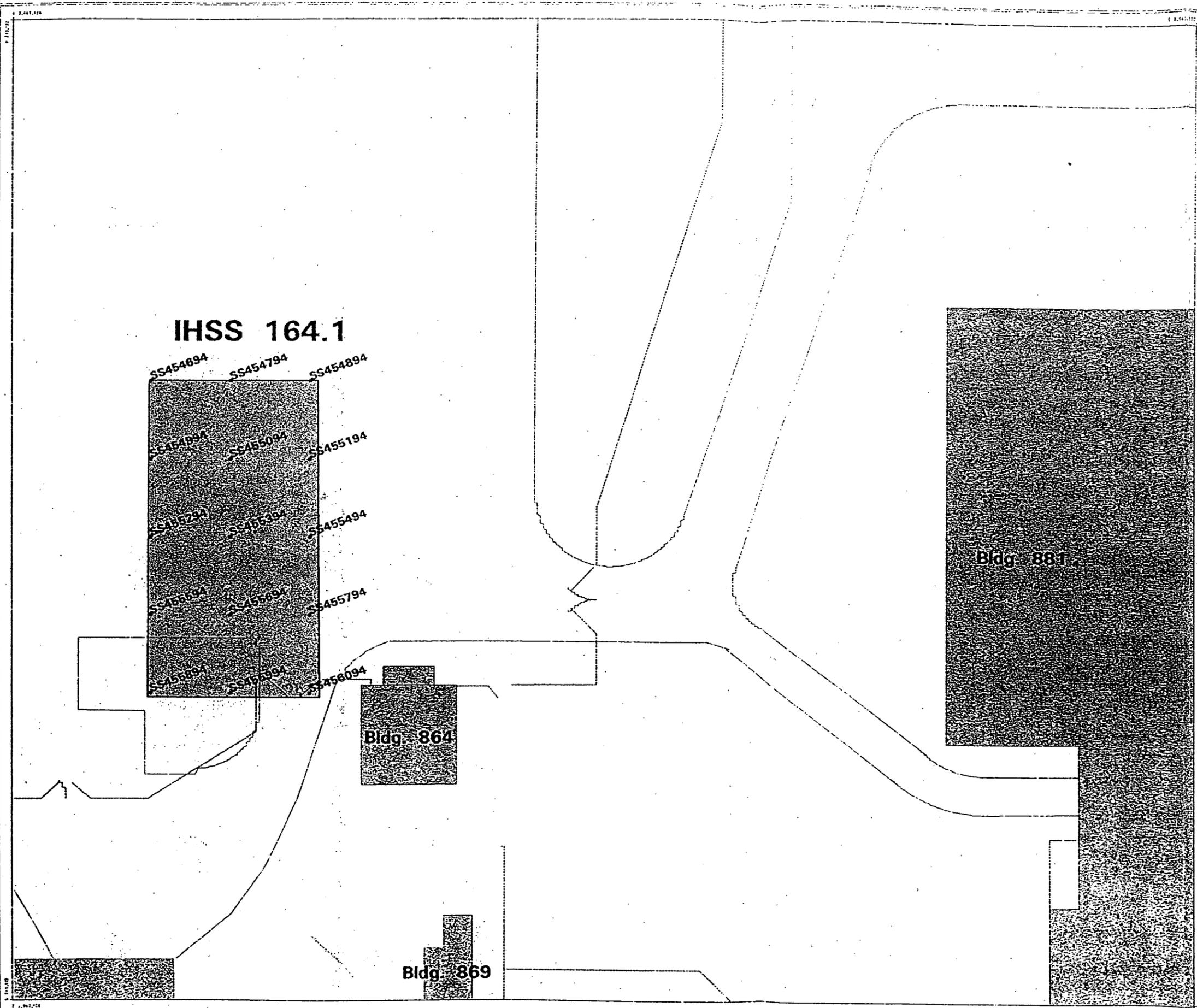
Prepared by:
EG&G ROCKY FLATS
 EG&G Rocky Flats
 P.O. Box 464
 Golden, Colorado 80402-0464

49

FIGURE 3-8
OU14-IHSS 164.1
SURFACE-SOIL SAMPLE LOCATIONS

EXPLANATION

- Surface-Soil Sample Location
-  OU14 IHSS
-  Buildings or other structures
-  Lakes and ponds
- Building footprint (where overlaps IHSS)
- Fences
- Paved roads
- - - Dirt roads



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Prepared by:
 **EG&G ROCKY FLATS**
 EG&G Rocky Flats
 P.O. Box 464
 Golden, Colorado 80402-0464

MAP ID: ou-14

May 12, 1988

users/mgabriel/ou14/iss1641_e_fig.amr

Metals (mg/kg) Radionuclides (pCi/g)

E 2,011,123

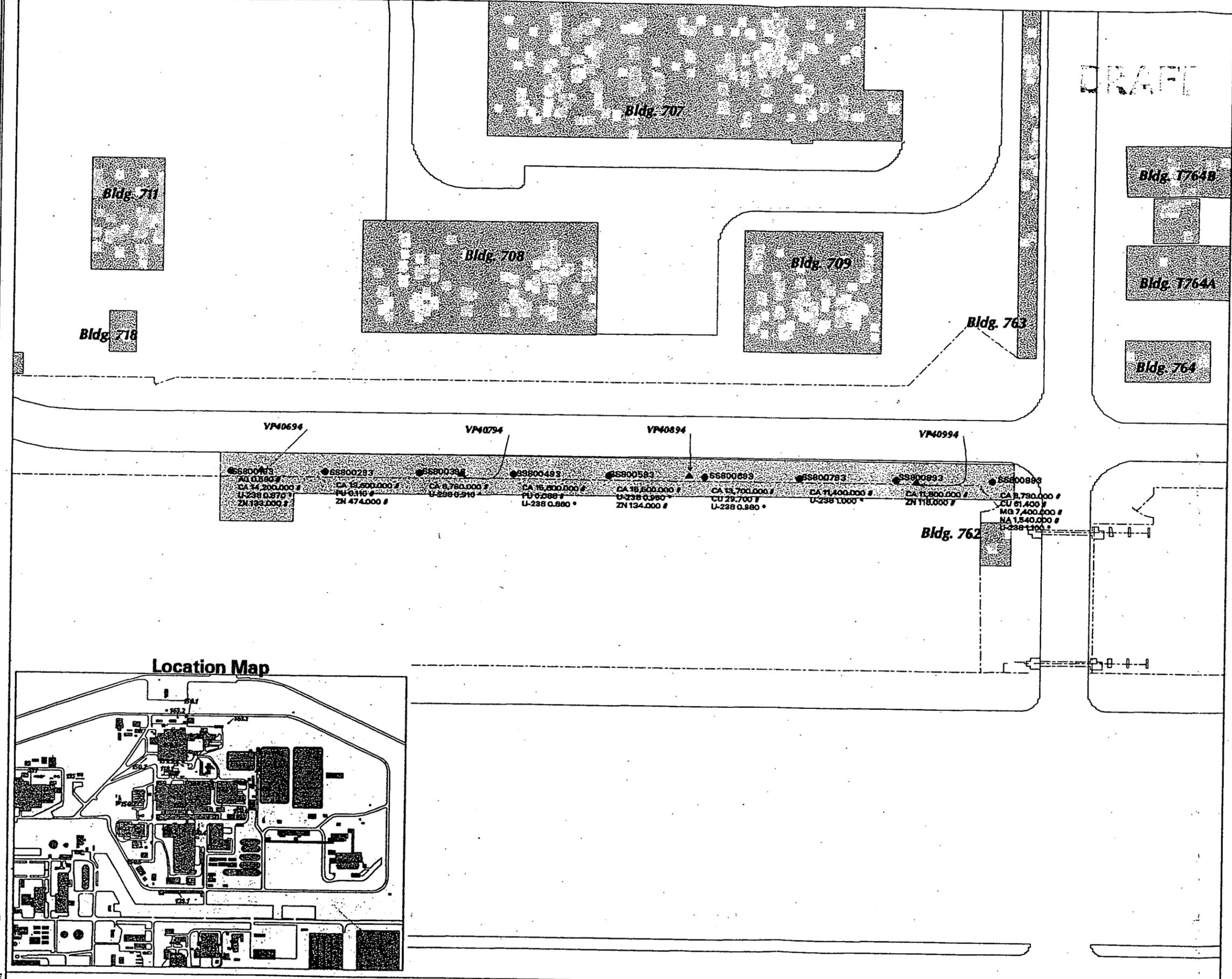


FIGURE 3-4
OU8-IHSS 123.1
SURFACE-SOIL ANALYTICAL
RESULTS FOR INORGANICS

EXPLANATION

- Surface Soil Sample Location
- Analyte elevated above background
- ▲ Vertical Soil Profile Sample Location Data Provided in Appendix C.
- OU8 IHSS
- Buildings or other structures
- Building footprint (where overlaps IHSS)
- Fences
- Paved roads
- - - Dirt roads

AG = Silver
 CA = Calcium
 CU = Copper
 MG = Magnesium
 NA = Sodium
 PU = Plutonium-239/240
 U-238 = Uranium-238
 ZN = Zinc

Analytical results are indicated by the chemical symbol, result, and threshold flag. Flags are:

- Positive detection above PRG
- # Positive detection above background
- ⊙ Positive detection above PRG and background

Estimated or "J" qualified values are reported as positive detections. See associated data tables for full data presentation.



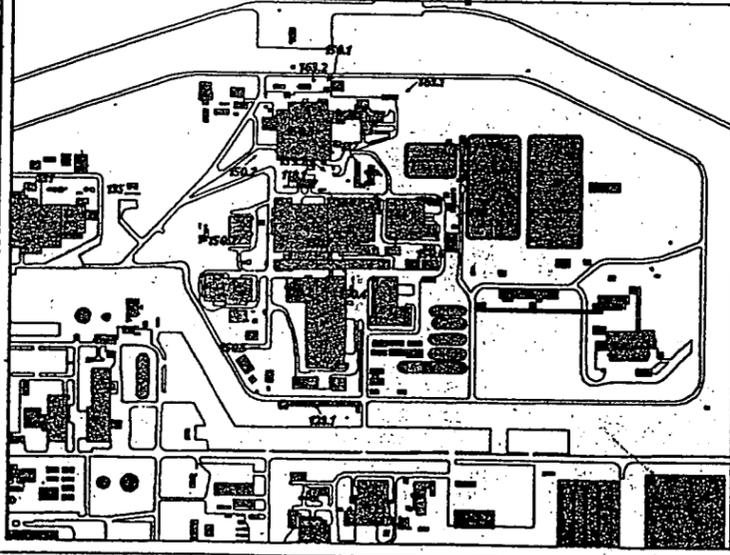
U.S. Department of Energy
 Rocky Flats Environmental Technology Site

Prepared by:



Rocky Mountain Remediation Services
 A Limited Liability Company
 7100 East Bellvue Avenue, Suite 300
 Englewood, Colorado 80110

Location Map



www/klara/621805/projects/ou8/ou8/comp/tables/031231.html

DIVAS ($\mu\text{g}/\text{kg}$):

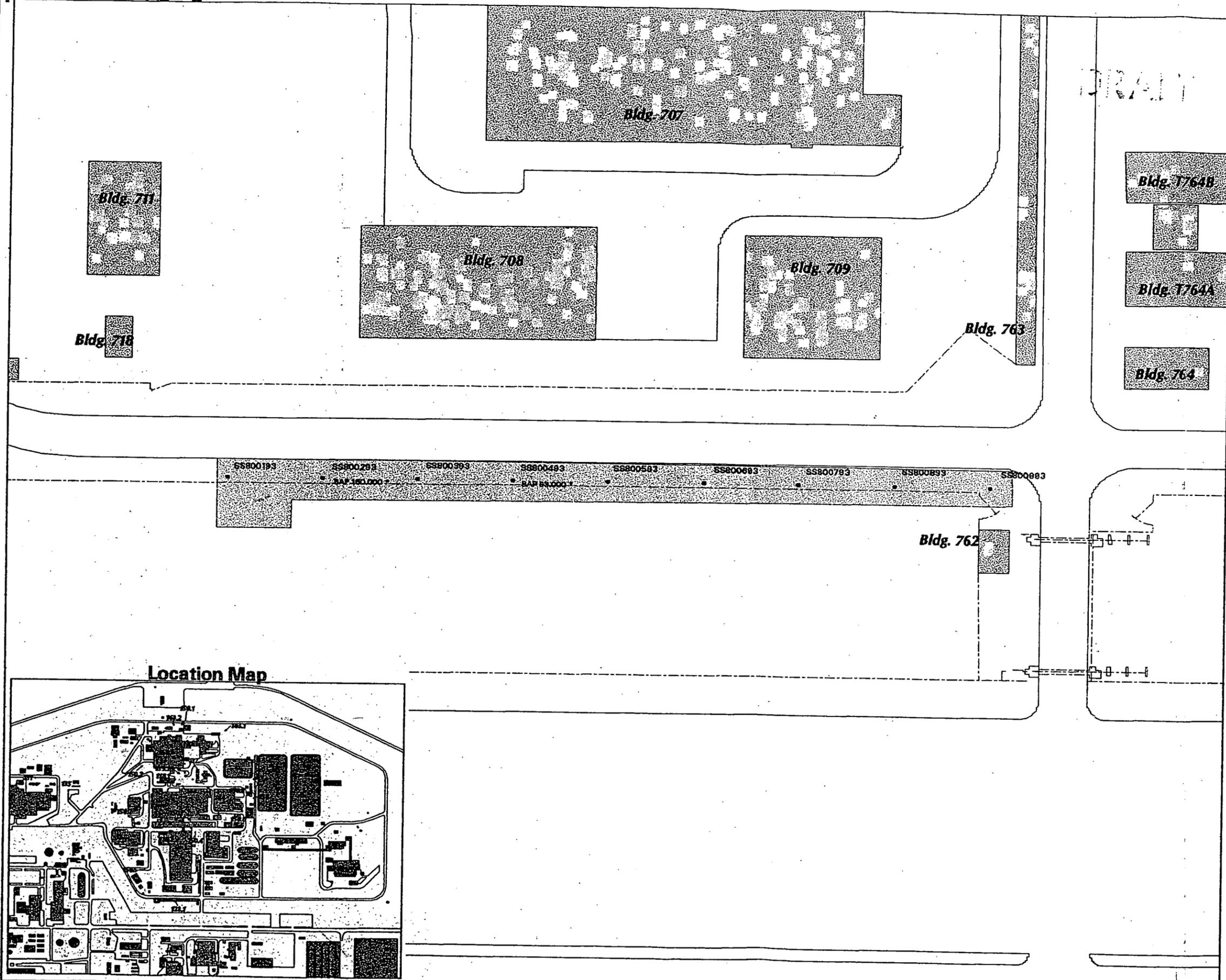


FIGURE 3-5
OU8-IHSS 123.1
SURFACE-SOIL ANALYTICAL
RESULTS FOR ORGANICS

- EXPLANATION**
- Surface Soil Sample Location
 - OU8 IHSS
 - Buildings or other structures
 - Building footprint (where overlaps IHSS)
 - Fences
 - Paved roads
 - - - Dirt roads

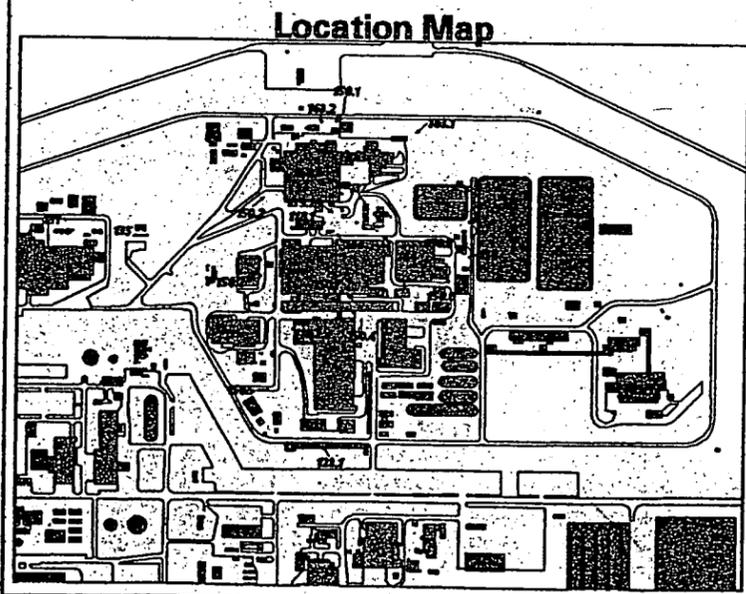
DRAFT

BAP = Benzo(a)pyrene

Analytical results are indicated by the chemical symbol, result, and threshold flag. Flags are:

- Positive detection above PRG
- # Positive detection above background
- ⊙ Positive detection above PRG and background

Estimated or "U" qualified values are reported as positive detections. See associated data tables for full data presentation.



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Prepared by:



Rocky Mountain Remediation Services
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 7100 East Bellview Avenue, Suite 300
 Englewood, Colorado 80110

Asere/V/vera/4621806/projects/ou/ou8/ecoplata/aso1231.am

Figure 3.6

Trench 1
Site Location

EXPLANATION

Contours (5' intervals)

Trench 1 Tent

Trench 1

Standard Map Features

Buildings and other structures

Solar Evaporation Ponds (SEP)

Lakes and ponds

Streams, ditches, or other drainage features

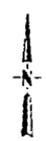
Fences and other barriers

Paved roads

Dirt roads

DATA SOURCE:
Buildings, fences, hydrographs, roads and other structures from 1994 aerial fly-over data captured by EG&G RSI, Las Vegas. Digitized from the orthophotographs, 1/95

Trench 1



Scale = 1 : 6430
1 inch represents approximately 453 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

Prepared by:
 Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 484
Golden, CO 80402-0484

MAP ID: 99-0000 September 17, 1999

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NT_87_w:\projects\99-0126\enlco_n1.e

Figure 3.7

Trench 1

Excavation Verification and Sample Locations

EXPLANATION

- ✕ Location of 5-gal Container
- ▭ Excavation Boundary
- ⋯ Approx. Trench Grid Location
- Tent Location
- Sample Location
- Sample + Duplicate

- EB0201 = Sample Location
- 052 = Abbreviated Sample Number Representing 98A211-052
- GS = Gamma Spectroscopy Analysis
- V = Volatile Organic Compound Analysis
- CN = Cyanide Analysis
- P = PCBs
- W = Western Third of 20' Sample Cell
- C = Center Third of 20' Sample Cell
- E = Eastern Third of 20' Sample Cell

Standard Map Features

- Fences and other barriers
- == Paved roads
- - - Dirt roads

DATA SOURCE:
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs. 1/95 IHSB 106 Boundary based on survey of fence post locations



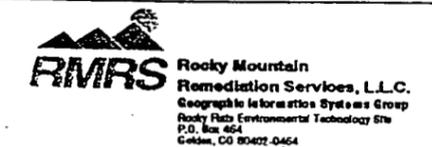
Scale = 1 : 240
1 inch represents 20 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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

Prepared by:



MAP ID: 99-0130

September 17, 1999

