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WORK PLAN FOR SEGREGATION AND CHARACTERIZATION OF INVESTIGATION- DERIVED WASTES STORED AT THE FORMER COBALT-60 FIELD

at the

Laboratory for Energy-Related Health Research (LEHR)
University of California at Davis, California

Prepared for:

United States Department of Energy
Oakland Operations Office
1301 Clay Street
Oakland, California 95612-5208

Prepared by:

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Emeryville, California 94608

September 4, 1998
Rev. 0

DOE Oakland Operations Office Contract DE-AC03-96SF20686

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Approvals Page

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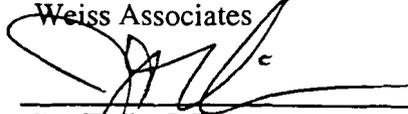


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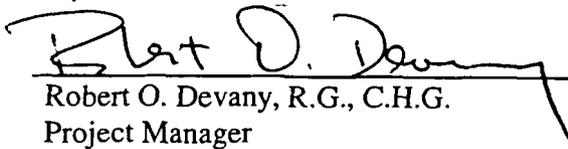


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APPENDICES

Appendix A Miscellaneous Materials and Waste Inventory - March 1998

ACRONYMS

AOC	Area of Containment
Bgs	Below ground surface
CA	Contaminated Area
COC	Chain-of-Custody
D&M	Dames & Moore
DQO	Data Quality Objective
FC	Field Coordinator
Gal	Gallons
GM	Geiger Müller Detector

HWP	Hazardous Work Permit
ID	Identification
IDW	Investigation-Derived Waste
IT	International Technology Corporation
ITEH	Institute of Toxicological and Environmental Health
LEHR	Laboratory for Energy-Related Health Research
LFI	Limited Field Investigation
OSHA	Occupational Safety and Health Administration
pCi/g	PicoCurie(s) Per Gram
PHSP	Project Health and Safety Plan
PID	Photoionization Detector
PPE	Personal Protective Equipment
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
SAP	Sampling and Analysis Plan
SCIN	Scintillation Detector
SHSO	Site Health and Safety Officer
SOP	Standard Operating Procedure
SQP	Standard Quality Procedure
STLC	Soluble Threshold Limit Concentration
TC	Toxicity Characteristic
TCLP	Toxicity Characteristic Leaching Procedure

TTLC	Total Threshold Limit Concentration
UC Davis	University of California at Davis
USDOE	United States Department of Energy
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WA	Weiss Associates

1. INTRODUCTION

This work plan presents the general approach and procedures for segregating and characterizing the investigation-derived waste (IDW) currently stored at the former Cobalt-60 (Co-60) Field at the Laboratory for Energy-Related Health Research (LEHR) site in Davis, California. The main purpose of this work plan is to generate the analytical data and information needed to determine the appropriate disposal option for these potential wastes. The waste evaluation process for off-site disposal of IDW is the same as for any other waste; the waste generator uses knowledge of the waste composition (process knowledge, site history, waste origin, etc.) to identify appropriate disposal sites. If sufficient information is not available, the waste will be tested to provide the necessary data.

Since 1987, two major phases of soil and ground water investigation have been completed at LEHR and have resulted in the generation of IDW. These include a Phase I investigation conducted by Wahler and Associates in 1987 – 1988, and a Phase II investigation conducted by Dames & Moore in 1990. Wastes resulting from these investigations were stored in labeled, 55-gallon drums. The wastes consist mainly of soil cuttings resulting from drilling soil borings and installing monitoring wells, and liquid wastes generated resulting from decontamination of drilling and sampling equipment.

Two efforts to organize and characterize the IDW stored at LEHR have been made by Dames & Moore (D&M) and International Technology Corporation (IT) in recent years. In November 1992, D&M completed a waste characterization for stored wastes generated during the Phase I and II investigations (D&M, 1992). This characterization identified the concentrations of LEHR site constituents in stored wastes for evaluation and disposal classification. Presentation of results included comparisons to 1992 background levels for radiologic parameters and California regulatory or action limits for other chemical parameters.

In December 1997, IT completed and submitted to Weiss Associates (WA) a "Draft Miscellaneous Materials and Waste Inventory Summary (Revision B) at the Laboratory for Energy-Related Health Research (LEHR), University of California at Davis, California" (IT, 1997). This inventory and a subsequent field reconnaissance in March 1998 (see Appendix A for March 1998 inventory) identified a total of 263 drums containing IDW. As part of the inventory, trained radiation workers recorded the locations of each of the 263 drums containing IDW stored within the former Co-60 Field, opened each drum, and recorded its contents. One additional drum containing water was identified in August 1998 with the markings "UCD-19, 3-1-94" on the outside of the drum.

Based on the available information described above, Table 1-1 shows a breakdown of the total number of drums stored at the former Co-60 Field as compared to their contents.

Table 1-1. Former Co-60 Field IDW Drum Summary

No. of drums	Anticipated drum contents based on existing data
242	Contain mostly soil
11	Contain liquid
11	Contain personal protective equipment (PPE) and/or plastic sheeting
264	TOTAL

1.1 GENERAL APPROACH

Several steps were followed in preparing this work plan and in evaluating the IDW for off-site disposal. These steps included:

- a) Reviewing all available data for the drums and developing a preliminary drum segregation scheme based on the origin of the drum contents and the available analytical data.
- b) Attempting to identify the origin of those drums currently of unknown origin;
- c) Comparing the available metals data for all drums with the waste designation criteria (i.e. total threshold limit concentration [TTLC], soluble threshold limit concentration [STLC], and toxicity characteristic leaching procedure [TCLP]); and,
- d) Reviewing waste profiling and acceptance criteria with likely disposal facilities to ensure that the sampling and analysis sections (Sections 3 and 4) will provide the necessary data for drum disposal.

Data obtained as a result of the work described in this Work Plan will be used to support the final disposition of the investigation-derived waste. A separate Work Plan will be developed to support repackaging, if any, and shipping and final disposition of respective wastes.

2. FIELD ACTIVITIES

This section describes the proposed field activities for the segregation and characterization of IDW stored at the former Co-60 Field. Field activities can be divided into three tasks that include 1) drum segregation, 2) waste phase separation, and 3) drum sampling and analysis. Drum segregation and characterization sampling activities are anticipated to begin in mid-September 1998. All work will be conducted in accordance with this detailed work plan, the Quality Assurance Project Plan (QAPP; WA, 1998a), and appropriate Standard Operating Procedures (SOPs; WA, 1998f).

2.1 Drum Segregation

Drum segregation involves physically organizing the 264 IDW drums for ease of sampling. Currently, the IDW is stored in rows I, J, K and L of the former Co-60 Field (IT, 1997). Based on the available analytical data (D&M, 1992), the 243 drums of soil IDW (see Appendix A) can be divided into five groups that include:

1. Group 1 - Drums with chemical concentrations above TTLC values as specified in Title 22 Code of California Regulations (CCR). Only Drum No. T6 contains soil with chlordane concentration (2,300 mg/kg) above the TTLC value of 2.5 mg/kg.
2. Group 2 - Drums with chemical concentrations below the TTLC values but above 10 times the STLC values. A total of 145 drums contain soil with metal (cadmium, lead, and nickel) and/or chlordane concentrations below the TTLC values but above 10 times the STLC values (see Table 2-1).
3. Group 3 - Drums with radiological concentrations (i.e. Cesium-137, Potassium-40, Radium-226, Strontium-90, and Thorium-232) that are more than three times the 1992 background values. A total of 17 drums from Group 2 contain soil with Strontium-90 concentration of 19 pCi/g (1992 background value = 0.87 pCi/g; see Table 2-1); a total of 2 drums contain soil with Cesium-137 concentration of 6.2 pCi/g (1992 background value = 0.1 pCi/g; see Table 2-1).
4. Group 4 - Drums with chemical concentrations below the 10 times STLC values and radiological concentrations below or less than three times the 1992 background values. This group consists of a total of 49 drums (see Table 2-1).
5. Group 5 - Drums with unknown waste origin, and therefore analytical data are not available. This group consists of a total of 45 drums (see Table 2-1).

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
1	D0001	BLG00001	Soil, 0-20'					✓	Row J
	D0002	BLG00001	Soil, 20-40'					✓	Row J
	D0004	BLG00002	Soil, 0-20'					✓	Row J
	D0005	BLG00002	Soil, 20-40'					✓	Row J
	D0007	BLG00003	Soil, 0-20'					✓	Row J
	D0008	BLG00003	Soil, 20-40'					✓	Row J
	D0010	BLG00004	Soil, 0-20'					✓	Row J
	D0011	BLG00004	Soil, 20-40'					✓	Row J
	D0013	BLG00005	Soil, 0-20'					✓	Row J
	D0014	BLG00005	Soil, 20-40'					✓	Row J
	D0016	BLG00006	Soil, 0-20'					✓	Row J
	D0017	BLG00006	Soil, 20-40'					✓	Row J
2	453	Decon Area	Soil					✓	Row J
	480	Decon Area	Soil					✓	Row I
	481	Decon Area	Soil					✓	Row I
	482	Decon Area	Soil					✓	Row I
	483	Decon Area	Soil with water					✓	Row L
	484	Decon Area	Soil					✓	Row I
	485	Decon Area	Soil with water					✓	Row L
	486	Decon Area (UCD-19, 22, 24)	Soil with water					✓	Row K
	488	Decon Area	Soil with water					✓	Row L
	491	Decon Area	Soil					✓	Row L
	492	Decon Area	Soil with water					✓	Row L
	493	Decon Area	Soil with water					✓	Row L
	505	Decon Area (UCD-19, 22, 24)	Soil					✓	Row L
	036	Rinse Area	Soil with water, auger cleanings	✓					
3	013	SB-12	Soil, 00-20'	✓					Row K
	014	SB-13	Soil with water	✓					Row K
	016	SB-13	Soil, 00-20'	✓					Row K
	007	SB-14	Soil, 00-20'	✓					Row K
	244	SB-22	Soil, 20-30'	✓					Row K
	247	SB-23	Soil, 15-30'	✓					Row K

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
	248	SB-24	Soil with PPE/ polysheeting, 15-30'	✓					Row L
	262	SB-26	Soil with PPE/ polysheeting, 20-30'	✓					Row L
	258	SB-27	Soil, 20-30' with PPE/ polysheeting	✓					Row K
	251	SB-28	Soil, 20-30'	✓					Row K
	030	SB-50	Soil, 00-20'	✓					Row L
	031	SB-50	Soil, 20-40'	✓					Row K
	032	SB-50	Soil with water, 40-50'	✓					Row L
4	012	SB-03	Soil with water, 00-20'				✓ (I)		Row L
	008	SB-03/UCD-06	Soil with water				✓ (I)		Row L
5	241	SB-19	Soil		✓				Row L
	242	SB-19	Soil with water, 00-10'		✓				Row L
	243	SB-21	Soil with water, 00-10'		✓				Row L
	245	SB-22	Soil, 00-20'		✓				Row K
	246	SB-23	Soil, 00-15' with water		✓				Row K
	249	SB-24	Soil, 00-15'		✓				Row K
	259	SB-25	Soil, 00-25'		✓				Row K
	260	SB-25	Soil, 20-30' with PPE/ polysheeting		✓				Row K
	261	SB-26	Soil, 00-25'		✓				Row J
	257	SB-27	Soil, 00-25' with water		✓				Row K
	252	SB-28	Soil, 00-20'		✓				Row K
6	D0029	SBL00021 (OU5, LF#3)	Soil Cutting, 5-10'					✓	Row J
	D0030	SBL00022 (OU5, LF#3)	Soil Cutting, 7-15'					✓	Row J
	D0031	SBL00032 (UCD Trenches)	Drill Cutting, 6-41.5'					✓	Row J
	D0033	SBL00033 (OU5, LF#2)	Drill Cutting, 1-13'					✓	Row J

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
	D0034	SBL00029 (OU5, LF#2)	Drill Cutting, 2-12'					✓	Row J
7	T01	Trench Bore	Soil, 0-20'	✓					Row K
	T02	Trench Bore	Soil, 0-20'	✓					Row K
	T03	Trench Bore	Soil, 0-20' with water	✓					Row K
	T04	Trench Bore	Soil with water, 0-20'	✓					Row L
	T05	Trench Bore	Soil with water, 0-20'	✓					Row L
8	T06	Trench Bore	Soil, 0-20'			✓ (2)			Row K
9	T07	Trench Bore	Soil, 0-20'	✓					Row K
	T08	Trench Bore	Soil, 0-20'	✓					Row K
	T09	Trench Bore	Soil, 0-20'	✓					Row K
10	T10	Trench Bore	Soil, 0-20', with PPE/ polysheeting		✓ (3)				Row K
11	001	UCD-01	Soil	✓					Row K
	002	UCD-01	Soil	✓					Row L
	003	UCD-01	Soil with water	✓					Row L
	006	UCD-01	Soil with water	✓					Row L
12	004	UCD-02	Soil, 30-60'	✓					Row K
	005	UCD-02	Soil with water, 00-30'	✓					Row L
	034	UCD-02	Soil with water, 2.5-60'	✓					Row L
	035	UCD-02	Soil	✓					Row K
13	026	UCD-03	Soil, 40-50'		✓				Row L
	027	UCD-03	Soil, 00-20'		✓				Row K
	028	UCD-03	Soil with water, 20-40'		✓				Row L
14	017	UCD-04	Soil, 00-30'	✓					Row K
	018	UCD-04	Soil, 30-55'	✓					Row L
	019	UCD-04	Soil with water, 30-55'	✓					Row L
	020	UCD-04	Soil	✓					Row K
15	022	UCD-05	Soil with water, 40-50'	✓					Row L
	023	UCD-05	Soil with water, 25-40'	✓					Row L
	024	UCD-05	Soil, 00-25'	✓					Row K
	025	UCD-05	Soil	✓					Row L

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
16	009	UCD-06	Soil with water	✓					Row L
	010	UCD-06	Soil	✓					Row K
	011	UCD-06	Soil with water, 00-20'	✓					Row L
17	043	UCD-07	Soil, 00-25' with water	✓					Row K
	044	UCD-07	Soil with water, 25-40'	✓					Row L
	045	UCD-07	Soil, >40'	✓					Row K
	046	UCD-07	Soil with water	✓					Row L
	047	UCD-07	Soil, >40'	✓					Row K
	050	UCD-07	Soil	✓					Row K
	054	UCD-07	Soil	✓					Row K
	062	UCD-07	Soil with water	✓					Row K
18	329	UCD-18	Soil, 00-20'		✓				Row J
	330	UCD-18	Soil, 20-35'		✓				Row J
	331	UCD-18	Soil, 35-50'		✓				Row K
	332	UCD-18	Soil, 50-60'		✓				Row K
	333	UCD-18	Soil, 60-70'		✓				Row K
	334	UCD-18	Soil, Ream		✓				Row K
	335	UCD-18	Soil, Ream		✓				Row K
	336	UCD-18	Soil, Ream		✓				Row K
	337	UCD-18	Soil, Ream with water		✓				Row K
	338	UCD-18	Soil, Ream		✓				Row K
19	339	UCD-18	Soil, Ream		✓				Row K
	340	UCD-18	Soil, Ream		✓				Row J
	341	UCD-18	Soil, Ream		✓				Row J
	342	UCD-18	Soil, Ream		✓				Row K
	344	UCD-18	Soil, Ream		✓				Row I
	345	UCD-18	Soil, Ream, with water		✓				Row I
	346	UCD-18	Soil, Ream		✓				Row I
	347	UCD-18	Soil, Ream		✓				Row I
	352	UCD-18	Soil		✓				Row K
20	300	UCD-19	Soil, 0-15', 9/26/90		✓				Row K
	301	UCD-19	Soil, 0-15', 9/26/90		✓				Row K
	519	UCD-19	Soil, Ream		✓				Row K

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
	520	UCD-19	Soil from spill		✓				Row K
	521	UCD-19	Soil from spill		✓				Row J
	522	UCD-19	Soil from spill		✓				Row K
	523	UCD-19	Soil from spill		✓				Row K
	524	UCD-19	Soil from spill		✓				Row J
21	302	UCD-19	Soil		✓		✓ (4)		Row K
	304	UCD-19	Soil		✓		✓ (4)		Row K
	305	UCD-19	Soil with water		✓		✓ (4)		Row K
	306	UCD-19	Soil		✓		✓ (4)		Row J
	307	UCD-19	Soil		✓		✓ (4)		Row K
	308	UCD-19	Soil		✓		✓ (4)		Row J
	309	UCD-19	Soil		✓		✓ (4)		Row J
	310	UCD-19	Soil		✓		✓ (4)		Row J
	311	UCD-19	Soil		✓		✓ (4)		Row J
22	312	UCD-19	Soil		✓		✓ (4)		Row J
	313	UCD-19	Soil		✓		✓ (4)		Row J
	314	UCD-19	Soil		✓		✓ (4)		Row I
	315	UCD-19	Soil		✓		✓ (4)		Row I
	316	UCD-19	Soil		✓		✓ (4)		Row K
	317	UCD-19	Soil		✓		✓ (4)		Row K
	318	UCD-19	Soil		✓		✓ (4)		Row I
	320	UCD-19	Soil		✓		✓ (4)		Row I
23	361	UCD-20	Soil, 0-15'		✓				Row J
	362	UCD-20	Soil, 15-30'		✓				Row J
	363	UCD-20	Soil, 45-55'		✓				Row K
	364	UCD-20	Soil, 30-45'		✓				Row K
	365	UCD-20	Soil, Ream		✓				Row J
	366	UCD-20	Soil, Ream		✓				Row J
	367	UCD-20	Soil, Ream		✓				Row I
	368	UCD-20	Soil, Ream		✓				Row I
	369	UCD-20	Soil, Ream		✓				Row I
	24	370	UCD-20	Soil, Ream		✓			
371		UCD-20	Soil, Ream		✓				Row I
372		UCD-20	Soil, Ream		✓				Row I
373		UCD-20	Soil, Ream		✓				Row J
374		UCD-20	Soil, Ream		✓				Row J
375		UCD-20	Soil, Ream		✓				Row J
380		UCD-20	Soil		✓				Row J

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
	381	UCD-20	Soil		✓				Row J
	382	UCD-20	Soil		✓				Row J
25	385	UCD-21	Soil, 0-15'		✓ (5)				Row J
	386	UCD-21	Soil, 15-30'		✓ (5)				Row J
	387	UCD-21	Soil, 30-45'		✓ (5)				Row K
	388	UCD-21	Soil, 45-55'		✓ (5)				Row K
	389	UCD-21	Soil, 55-70'		✓ (5)				Row J
	390	UCD-21	Soil, Ream		✓ (5)				Row J
	391	UCD-21	Soil, Ream		✓ (5)				Row K
	392	UCD-21	Soil, Ream		✓ (5)				Row K
	393	UCD-21	Soil, Ream		✓ (5)				Row K
26	394	UCD-21	Soil, Ream		✓ (5)				Row K
	395	UCD-21	Soil, Ream		✓ (5)				Row K
	396	UCD-21	Soil, Ream		✓ (5)				Row K
	397	UCD-21	Soil, Ream		✓ (5)				Row J
	398	UCD-21	Soil, Ream		✓ (5)				Row J
	399	UCD-21	Soil, Ream		✓ (5)				Row I
	400	UCD-21	Soil, Ream		✓ (5)				Row I
	401	UCD-21	Soil, Ream		✓ (5)				Row I
	402	UCD-21	Soil, Ream		✓ (5)				Row I
27	475	UCD-22	Soil, 20-35'		✓				Row K
	476	UCD-22	Soil, 0-20'		✓				Row J
	477	UCD-22	Soil, 35-50'		✓				Row K
	478	UCD-22	Soil, 50-65'		✓				Row K
	497	UCD-22	Soil, Ream with water		✓				Row K
	498	UCD-22	Soil, 65-70'		✓				Row K
	499	UCD-22	Soil, Ream		✓				Row K
	500	UCD-22	Soil, Ream		✓				Row K
	501	UCD-22	Soil, Ream		✓				Row K
	502	UCD-22	Soil, Ream		✓				Row K
	508	UCD-22	Soil, Ream		✓				Row K
	509	UCD-22	Soil, Ream		✓				Row K
	512	UCD-22	Soil, Ream		✓				Row K
	513	UCD-22	Soil and gravel, Ream		✓				Row L
28	406	UCD-23	Soil, 0-20'		✓				Row I
	407	UCD-23	Soil, 20-35'		✓				Row I
	408	UCD-23	Soil, 35-50'		✓				Row I
	409	UCD-23	Soil, 50-60'		✓				Row I
	410	UCD-23	Soil, 60-75'		✓				Row I
	411	UCD-23	Soil, Ream		✓				Row I

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
	412	UCD-23	Soil, Ream		✓				Row I
	413	UCD-23	Soil, Ream		✓				Row I
	414	UCD-23	Soil, Ream		✓				Row I
29	415	UCD-23	Soil, Ream		✓				Row I
	416	UCD-23	Soil, Ream		✓				Row I
	417	UCD-23	Soil, Ream		✓				Row I
	418	UCD-23	Soil, Ream		✓				Row I
	419	UCD-23	Soil, Ream		✓				Row I
	435	UCD-23	Soil, Ream		✓				Row K
	436	Unknown (Possibly UCD-23)	Soil		✓				Row K
	437	UCD-23	Soil, Ream		✓				Row J
	438	UCD-23	Soil, Ream		✓				Row J
30	443	UCD-24	Soil, 0-20'		✓				Row K
	444	UCD-24	Soil, 20-30'		✓				Row K
	445	UCD-24	Soil, 30-45'		✓				Row K
	446	UCD-24	Soil, 45-60'		✓				Row K
	447	UCD-24	Soil, 60-65'		✓				Row K
	448	UCD-24	Soil, 65-70'		✓				Row K
	449	UCD-24	Soil, Ream		✓				Row K
	450	UCD-24	Soil, Ream		✓				Row K
	451	UCD-24	Soil, Ream		✓				Row I
	452	UCD-24	Soil, Ream		✓				Row I
31	462	UCD-24	Soil, Ream		✓				Row I
	463	UCD-24	Soil, Ream		✓				Row I
	464	UCD-24	Soil, Ream		✓				Row K
	465	UCD-24	Soil, Ream		✓				Row K
	466	UCD-24	Soil, Ream		✓				Row K
	467	UCD-24	Soil, Ream		✓				Row K
	472	UCD-24	Soil, Ream		✓				Row K
	473	UCD-24	Soil, Ream		✓				Row K
	474	UCD-24	Soil, Ream		✓				Row K
32	M01	Unknown	Soil					✓	Row K
	M02	Unknown	Soil					✓	Row K
	M03	Unknown	Soil					✓	Row K
	M04	Unknown	Soil					✓	Row K
	M05	Unknown	Soil					✓	Row K
	M06	Unknown	Soil with water					✓	Row K
	M07	Unknown	Soil					✓	Row K
	M08	Unknown	Soil					✓	Row K

Table 2-1. Soil IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
	M09	Unknown	Soil with water					✓	Row L
33	NN01	Unknown	Soil with water					✓	Row K
	NN02	Unknown	Soil					✓	Row K
	NN03	Unknown	Soil					✓	Row L
	NN04	Unknown	Soil					✓	Row K
	NN05	Unknown	Soil					✓	Row K
	NN06	Unknown	Soil with water					✓	Row K

Notes:

STLC = Soluble threshold limit concentration

TTLC = Total threshold limit concentration

PPE = Personal Protective Equipment

- (1) Cesium-137 concentration = 6.2 pCi/g (1992 background = 0.1 pCi/g)
- (2) Chlordane concentration of drum no. T6 = 2,300 mg/kg
- (3) Chlordane concentration of drum no. T10 = 2.15 mg/kg
- (4) Strontium-90 concentration = 19 pCi/g (1992 background = 0.87 pCi/g)
- (5) Chlordane concentration > 10 x STLC (0.36 mg/kg; 10 x TCLP = 0.30 mg/kg)

In order to maximize the sampling efficiency in the field and minimize confusion, the soil drums containing like-wastes as shown on Table 2-1 will be segregated as described below (see Figure 2).

- 1) Drum No. T6 (chlordane concentration of 2,300 mg/kg) will be physically segregated outside of Row E of the former Co-60 Field.
- 2) 145 drums representing Group 2 will be physically segregated for composite sampling and will be grouped together (by waste origin) along Row E.
- 3) 2 drums representing Group 3 will be physically segregated for composite sampling and will be grouped (by waste origin) together along Row F (17 drums with Strontium-90 concentration above 1992 background value are in Group 2).
- 4) 49 drums comprising Group 4 will be physically segregated for composite sampling and will be grouped together (by waste origin) along Row G; and,
- 5) 45 drums of unknown waste origin will be physically segregated for composite sampling and will be grouped together along Row H.

The 11 water IDW drums will be segregated for composite sampling along Row F. The 11 PPE IDW drums will be grouped together (by waste origin) with soil IDW drums.

As part of the drum segregation process, all drums will be:

- a) placed on plastic sheeting;
- b) grouped within their respective grouping according to common waste origin (i.e. UCD-1, -2, -3, etc).
- c) oriented so that all drum labels face north and are easy to read and inventory, and,
- d) arranged and spaced so that the drums can be easily opened and sampled.

2.2 Repackaging Liquid Fraction of 40 Drums

According to the LEHR Draft Miscellaneous Materials and Waste Inventory (IT, 1997) and field reconnaissance in March of 1998, 40 of the 264 drums stored in the Co-60 Field contain IDW comprised of both soil and water (see Appendix A). Prior to sampling, free water in these drums will be bailed and re-packaged in containers suitable for storage and transport of liquid waste. WA will employ hand bailers, large syringes, basters and other liquid extraction implements as determined appropriate in the field.

As shown on Table 2-2, drums requiring repackaging of the liquid fraction are currently stored in Rows I, K, and L of the former Co-60 Field and can be divided into four groups based on the available analytical data (D&M, 1992). Table 2-2 also shows that the contents of:

- 9 drums with metal and/or chlordane concentrations above the 10 times STLC values (Group 2);
- 3 drums (1 drum from Group 2) with radiological concentrations above 3 times the 1992 background values (Group 3);
- 19 drums with chemical concentrations below the 10 times STLC values and radiological concentrations below or less than 3 times the 1992 background values (Group 4); and,
- 10 drums with unknown waste origins, and therefore analytical data are not available (Group 5).

Free liquid present within in each category of drums will be decanted into clean, 55-gallon drums for sampling and analysis as described above.

Table 2-2. Soil IDW Drums Containing Water Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Radiological > 3x Background	No Analytical Data	Current Location	Volume (gallons)
1	014	SB-13	Soil with water	✓				Row K	20
	003	UCD-01	Soil with water	✓				Row L	30
	006	UCD-01	Soil with water	✓				Row L	2
	009	UCD-06	Soil with water	✓				Row L	30
	046	UCD-07	Soil with water	✓				Row L	20
	062	UCD-07	Soil with water	✓				Row K	25
	011	UCD-06	Soil with water, 00-20'	✓				Row L	40
	005	UCD-02	Soil with water, 00-30'	✓				Row L	40
	T04	Trench Bore	Soil with water, 0-20'	✓				Row L	40
	T05	Trench Bore	Soil with water, 0-20'	✓				Row L	40
2	023	UCD-05	Soil with water, 25-40'	✓				Row L	40
	044	UCD-07	Soil with water, 25-40'	✓				Row L	5
	019	UCD-04	Soil with water, 30-55'	✓				Row L	40
	034	UCD-02	Soil with water, 2.5 - 60'	✓				Row L	10
	032	SB-50	Soil with water, 40-50'	✓				Row L	5
	022	UCD-05	Soil with water, 40-50'	✓				Row L	20

Table 2-2. Soil IDW Drums Containing Water Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Radiological > 3x Background	No Analytical Data	Current Location	Volume (gallons)
	036	Rinse Area	Soil with water, auger cleanings	✓				Row L	10
	043	UCD-07	Soil, 00-25' with water	✓				Row K	5
	T03	Trench Bore	Soil, 0-20' with water	✓				Row K	20
3	012	SB-03	Soil with water, 00-20'			✓ (1)		Row L	50
	008	SB-03/ UCD-06	Soil with water			✓ (1)		Row L	40
4	305	UCD-19	Soil with water		✓	✓ (2)		Row K	5
5	242	SB-19	Soil with water, 00-10'		✓			Row L	40
	243	SB-21	Soil with water, 00-10'		✓			Row L	40
	028	UCD-03	Soil with water, 20-40'		✓			Row L	10
	246	SB-23	Soil, 00-15' with water		✓			Row K	30
	257	SB-27	Soil, 00-25' with water		✓			Row K	30
	337	UCD-18	Soil, Ream with water		✓			Row K	30
	497	UCD-22	Soil, Ream with water		✓			Row K	30
	346	UCD-18	Soil, Ream, with water		✓			Row I	25
6	483	Decon Area	Soil with water				✓	Row L	10
	485	Decon Area	Soil with water				✓	Row L	25
	486	Decon Area (UCD-19, 22, 24)	Soil with water				✓	Row K	40

Table 2-2. Soil IDW Drums Containing Water Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Radiological > 3x Background	No Analytical Data	Current Location	Volume (gallons)
	488	Decon Area	Soil with water				✓	Row L	10
	492	Decon Area	Soil with water				✓	Row L	25
	493	Decon Area	Soil with water				✓	Row L	25
7	M06	Unknown	Soil with water				✓	Row K	20
	M09	Unknown	Soil with water				✓	Row L	40
8	NN01	Unknown	Soil with water				✓	Row K	5
	NN06	Unknown	Soil with water				✓	Row K	30

Notes:

STLC = Soluble threshold limit concentration

TTLIC = Total threshold limit concentration

(1) Cesium-137 concentration = 6.2 pCi/g (1992 background = 0.1 pCi/g)

(2) Strontium-90 concentration = 19 pCi/g (1992 background = 0.87 pCi/g)

2.3 IDW Drums Containing Water Only

Eleven IDW drums reported contain water only from previous investigations (see Appendix A). These drums are listed in Table 2-3 below.

Table 2-3. Water IDW Drums Stored at Co-60 Field

Composite No.	Drum No.	Origin of Waste	Contents	Chemicals Above STLC	Chemical Above WQG	Radiological > 1992 Background	No Analytical Data	Current Location	Volume (gallons)
1	D0003	BLG00001	Grout rinse water, 0-20'				✓	Row L	40
	D0006	BLG00002	Grout rinse water				✓	Row L	40
	D0009	BLG00003	Grout rinse water				✓	Row L	40
	D0012	BLG00004	Grout rinse water				✓	Row L	40
	D0015	BLG00005	Grout rinse water				✓	Row L	40
	D0018	BLG00006	Grout rinse water				✓	Row L	40
	D0022	BLG Borings	Decon water				✓	Row L	40
	D0024	CPT	Decon water				✓	Row L	20
	D0032	SBL00032	Decon water, 0-41.5'				✓	Row L	40
2	801	2 Blue Tank Trailer Drums	Water		✓ (1)			Row L	55
3	Unknown	UCD-19	Water				✓	Row H	20

Notes:

STLC = Soluble threshold limit concentration

WQG = Water Quality Goal

1992 Background Values:

Carbon-14 = 500 pCi/L

Strontium-90 = 0.5 pCi/L

Tritium = 1,614 pCi/L

(1) Chromium concentration = 100 µg/L (WQG = 50 µg/L)

Hexavalent chromium concentration = 110 µg/L (WQG = 50 µg/L)

Total dissolved solids = 673 mg/L (WQG = 500 mg/L)

2.4 IDW Drums Containing PPE

Eleven IDW drums reportedly contain PPE, used plastic sheeting and miscellaneous trash from previous investigations (see Appendix A). These drums are listed on Table 2-4 presented below. In addition, five soil IDW drums contain PPE/plastic sheeting (Drum Nos. 248, 258, 260, 262, and T10; see Appendix A).

Table 2-4. PPE IDW Drums Stored at Co-60 Field

Drum No.	Origin of Waste	Contents	< All Criteria	Chemicals Above 10 x STLC	Chemical Above TTLC	Radiological > 3x Background	No Analytical Data	Current Location
D0019	BLG Borings	PPE/ polysheeting (Decon Pad)					✓	Row L
D0020	BLG Borings	PPE/ polysheeting					✓	Row L
D0021	BLG Borings	PPE/ polysheeting					✓	Row L
D0023	CPT	PPE/ polysheeting					✓	Row L
M10	Unknown	PPE/ polysheeting, trash					✓	Row L
M11	Unknown	PPE/ polysheeting, trash					✓	Row L
M12	Unknown	PPE/ polysheeting, trash					✓	Row L
M13	Unknown	PPE/ polysheeting, trash					✓	Row L
349	UCD-18	PPE/ polysheeting		✓				Row L
404	UCD-21	PPE/ polysheeting		✓				Row L
504	SB-25/26/ 27/28	PPE/ polysheeting		✓				Row L

Notes:

STLC = Soluble threshold limit concentration

TTLC = Total threshold limit concentration

1.5 Drum Sampling and Analysis

Drum sampling will involve collecting representative samples of IDW from each of the drums for off-site laboratory analysis. In an effort to obtain characterization analytical data in a cost-effective manner, each drum will be sampled and samples from drums containing like-waste (common waste origin) will be composited into one sample for analysis. Sample compositing will be performed by the contracted laboratory.

Tables 2-1, 2-2, and 2-3 assign a unique composite number to each group of drums containing IDW from a common waste origin. For example, composite No. 11 for soil IDW consists of 4 discrete soil samples collected from the 4 drums originating from boring UCD-01. As can be seen on Table 2-1, there are instances when 1 drum of IDW comprises a composite, and in other instances up to 14 drums containing like-waste from a common waste origin comprise the composite.

As described above, the IDW consists of solid waste such as soil and grout, liquid waste resulting from equipment decontamination and ground water sampling, and plastic sheeting and PPE. Each of these IDW media will be sampled as described below.

1.5.1 Soil

- 1) Drums containing IDW soil will be sampled using a hand auger or drive rod. Prior to sampling, all drums will be opened. The drum lids will be opened just enough to allow monitoring of the head space for total volatile organic constituents with a photoionization detector (PID) and for radiologic constituents using a rate meter coupled with a GM probe.
- 2) After monitoring the drums for volatiles and radiologic constituents, samples from each drum will be collected. Samples will be collected using a hand auger or drive rod and 2" x 6" sample sleeves (a minimum of four sleeves will be collected for each composite sample). Soil samples will be collected from about the middle of the drum. All samples will be stored in ice-cooled containers for sample shipping preparation.
- 3) The contract laboratory will be instructed to composite samples from each group (composite number shown on Table 2-1, above) into one sample for analysis (for example, all samples collected from drums with soil waste from boring UCD-01 will be composited into one sample); and,
- 4) A total of 33 soil composite samples and 3 field duplicates will be collected (see Table 2-1). Composite samples will be analyzed for Radionuclides, Metals (including Hexavalent Chromium), Nitrate, Volatile Organic Compounds (VOC), Semi-Volatile

Organic Compounds (SVOC) and organochlorine Pesticides/PCBs (See Table 2-5) except for Composite No. 1 (BLG00001 through BLG00006) which will be analyzed for Radionuclides only. In addition, 20% of the samples (i.e. 7 samples) will be analyzed for Herbicides and 10% of the samples (i.e. 3 samples) will be analyzed for Formaldehyde, pH, Reactive Cyanide, Reactive Sulfide and Paint Filter (see Table 2-5).

Table 2-5. Laboratory Analytical Methods Planned for Soil IDW Characterization

Parameter	Analytical Method	Required Detection Limit (pCi/g for radionuclides, mg/kg for chemicals)
<u>Radionuclides:</u>		
Americium-241	Lab SOP	0.01
Carbon-14	Lab SOP	0.1
<u>Gamma Emitters</u>		
Actinium-228	EPA Method 901.1	0.1
Bismuth-212	EPA Method 901.1	0.1
Bismuth-214	EPA Method 901.1	0.1
Cesium-137	EPA Method 901.1	0.01
Cobalt-60	EPA Method 901.1	0.005
Lead-210	EPA Method 901.1	0.5
Lead-212	EPA Method 901.1	0.1
Lead-214	EPA Method 901.1	0.1
Potassium-40	EPA Method 901.1	1
Radium-223	EPA Method 901.1	2
Radium-228	EPA Method 901.1	0.1
Radium-226	EPA Method 901.1	0.1
Thallium-208	EPA Method 901.1	0.05
Thorium-228	Lab SOP	0.1
Thorium-230	Lab SOP	0.05
Thorium-232	Lab SOP	0.05
Thorium-234	EPA Method 901.1	0.5
Gross Alpha	EPA Method 9310	1
Gross Beta	EPA Method 9310	1
Plutonium-241	Lab SOP	0.5
Strontium-90	EPA Method 905.0	0.05
Tritium	EPA Method 906.0	1
Uranium-233/234	Lab SOP	0.025
Uranium-235	Lab SOP	0.01
Uranium-238	Lab SOP	0.025
<u>Metals</u>		
Antimony	EPA Method 6010/7000s	0.5

Parameter	Analytical Method	Required Detection Limit (pCi/g for radionuclides, mg/kg for chemicals)
Arsenic	EPA Method 6010/7000s	2
Barium	EPA Method 6010/7000s	40
Beryllium	EPA Method 6010/7000s	1
Cadmium	EPA Method 6010/7000s	0.25
Chromium (total)	EPA Method 6010/7000s	1
Chromium (+6)	EPA Method 3060A/7196	0.05
Cobalt	EPA Method 6010/7000s	10
Copper	EPA Method 6010/7000s	0.25
Iron	EPA Method 6010/7000s	20
Lead	EPA Method 6010/7000s	0.3
Manganese	EPA Method 6010/7000s	3
Mercury	EPA Method 6010/7000s	0.1
Molybdenum	EPA Method 6010/7000s	0.1
Nickel	EPA Method 6010/7000s	1
Selenium	EPA Method 6010/7000s	1
Silver	EPA Method 6010/7000s	0.1
Thallium	EPA Method 6010/7000s	0.5
Vandium	EPA Method 6010/7000s	1
Zinc	EPA Method 6010/7000s	4
<u>General Chemistry</u>		
Nitrate	EPA Method 300.0	1
Formaldehyde	AOAC Method 20.062	1
PH	EPA Method 9045	0.1 (pH unit)
Reactive Cyanide	EPA Method 7.3.3.2	250
Reactive Sulfide	EPA Method 7.3.4.2	500
Paint Filter	EPA Method 9095	---
<u>Organics:</u>		
Volatile Organic Compounds	EPA Method 8260	As specified in method
Semi-Volatile Organic Compounds	EPA Method 8270	As specified in method
Organochlorine Pesticides (and PCBs)	EPA Method 8080	As specified in method
Herbicides	EPA Method 8151	As specified in method

2.5.2 Liquid

- 1) Prior to sampling, each drum will be opened just enough to allow monitoring of the head-space for volatile organic constituents with a PID, and radiologic constituents using a rate meter coupled with a GM probe.

- 2) After monitoring, a sample from each drum will be collected. Samples will be collected using a disposable polyethylene bailers. The bailer will be submersed to the approximate middle of the water column in the drum and removed. Water in the bailer will then be transferred to clean sample containers and stored in ice-cooled containers for sample shipping.
- 3) The samples will be submitted to the contract laboratory for compositing and analysis. Water not submitted for analysis will be placed back into the drum from which it was collected.
- 4) The laboratory will be instructed to composite the samples from each group into one sample for analysis.
- 5) Composite water samples will be analyzed for Tritium, Carbon-14, Strontium-90, Radium-226, VOCs (for chloroform), Nitrate as N, and Hexavalent Chromium (UC Davis wastewater treatment plant discharged requirements). A total of 11 water samples and 1 field duplicate will be collected (see Tables 2-2 and 2-3).

2.5.3 PPE

Drums containing PPE will be associated with one or more of the soil drums; therefore, the drums will be disposed along with the associated soil at the facility determined to be appropriate for that soil (see Table 2-4).

3. SAMPLING ACTIVITIES

This section describes the sampling procedures to be used during the IDW drum sampling. Soil sample collection will be conducted in accordance with SOP 3.1, Surface and Shallow Subsurface Soil Sampling (WA, 1998f) adapted to the soil in-drum situation. Sample chain-of-custody records will be prepared in accordance with SOP 1.1, Chain of Custody (WA, 1998f). Sample handling, packaging, and shipping will be conducted in accordance with SOP 2.1, Sample Handling, Packaging and Shipping (WA, 1998f). Samples will be collected from appropriate depths as described in Section 2.

3.1 Chemical and Radiological Analysis

Section 2.5.1 and 2.5.2 describe the chemical and radiological analyses that will be performed on samples collected during the IDW sampling program.

3.2 Sampling Methodology

The estimated number of samples to be collected from each grouping of IDW drums is described in Section 2 and shown on Tables 2-1, 2-2, and 2-3. The location of each sample of solid waste collected during the IDW sampling phase is also described in Section 2.

As described in Section 2, soil samples will be collected from drums using a hand auger or drive rod and 2" x 6" brass or stainless steel sleeves. Liquid samples as shown on Tables 2-2 and 2-3 will be collected using disposable polyethylene bailers and decanted into appropriately sized and compatible containers.

3.3 Sample Documentation

The usability of the data obtained during this investigation will depend on its quality. A number of factors relate to data quality. Sample collection methods are as important to consider as the methods used for sample analysis. Following proper procedures for both sample collection and analysis reduces sampling and analytical error. To ensure sample integrity, samples will be handled using complete chain-of-custody (COC) documentation and preserved using proper sample preservation techniques, holding times, and proper shipment methods. Obtaining valid and comparable data also requires adequate QA/QC procedures and documentation.

The components of the sample documentation and custody system will include the following:

- COC form,
- Field logbook,
- Sample numbers,
- Sample labels; and,
- Custody seals.

3.3.1 Chain-of-Custody Form

COC forms will be completed by the sample team members to track sample custody as well as to specify the requested analyses. COC forms will be completed in accordance with the requirements of SOP 1.1, Chain of Custody (WA, 1998f).

3.3.2 Field Logbook and/or Field Activity Daily Logs

Descriptions and observations made during field and sampling activities will be documented in the field logbook and/or Field Activity Daily Logs (FADL). The following will be recorded in the field logbook:

- Project name and number;
- Location of site;
- Purpose of sampling;
- Description of field activities;
- Names of sampling personnel;
- Date and time of entries;
- Sample matrix;
- Date and time of sample collection;
- Sample locations, identification (ID) number and methodology;
- Field observations;
- Results of field measurements; and,
- Results of field calibrations for instruments used.

3.3.3 Sample Numbers

A unique alphanumeric identification number will be assigned to each sample collected, using the following format:

aabbcc

Where,

aa = Type of sample and matrix

SS - soil sample

WS - water sample

bbb = Three-letter acronym designating the sample area at the site

IDW - Investigation-Derived Waste

ccc = Chronological sample number (e.g., 001, 002, 003)

For example, SSIDW010 is the tenth soil sample obtained from drummed IDW for this investigation.

3.3.4 Sample Labels

Sample labels will be attached to individual sample containers and will contain the following information:

- Project number;
- Sample ID number;
- Date and time collected;
- Initials of sampler; and,
- Requested analyses.

3.3.5 Custody Seals

Custody seals will be used to detect tampering and will be placed over the lid of coolers and annotated with the following information:

- Project number;
- Sample ID number;
- Date and time; and,
- Initials of sampler.

3.4 Sampling Procedures

The following methodology will be followed to collect the samples described in this work plan.

A sample preparation area will be established adjacent to the sampling site. The sample preparation area will be set up on an elevated work surface such as a table. This work surface will be covered with poly sheeting to minimize the spread of any contamination. The following equipment will then be staged in the vicinity of the work area:

- Spill kit;
- Sample containers;
- Demineralized water;
- Sampling tools; and,
- Custody seals and chain-of-custody forms.

Samples will be collected from the drums described in Section 2 and summarized on Tables 2-1, 2-2, and 2-3. Soil sample collection will be performed in accordance with SOP 3.1, Surface and Shallow Subsurface Soil Sampling (WA, 1998f) adapted to the soil in-drum situation. Samples will be analyzed for the parameters specified in Sections 2.5.1 and 2.5.2. These parameters were derived from integration of existing site data, existing drum characterization data, and review of potential disposal facilities acceptance criteria. Decontamination of sampling equipment will be performed in accordance with SOP 6.1, Sampling Equipment and Well Material Decontamination (WA, 1998f).

4. QUALITY ASSURANCE

This section presents the quality assurance and control issues related to the scope of work described in this document. The objective of this section is to provide a framework to ensure that quality is integrated within every aspect of the project work. The section is prepared in conjunction with the Final Project Quality Assurance Plan (QAPP) (WA, 1998a) by referencing applicable and appropriate sections of the QAPP.

Personnel involved in conducting or supervising the work presented in this work plan are responsible for certifying that they have been instructed in applicable sections of the work plan, including health and safety, as may effect their work. This certification will be obtained, documented and filed for each effected worker by the Project Task Leader, or designee, in accordance with the requirements outlined in the QAPP.

4.1 Responsibilities

Section 2 of the QAPP is applicable in its entirety. Roles and responsibilities of individuals are defined in the QAPP.

Weiss Associates (WA) - Weiss Associates responsibilities include management and oversight in all areas. WA will obtain the required samples, coordinate with the selected laboratory, and review/validate the analytical data. WA will provide on-site health and safety oversight.

International Technology Corporation (IT) - IT is responsible for providing a qualified forklift operator. IT will coordinate with ITEH for the use of the on-site forklift. IT is responsible for providing all required on-site radiological support.

Environmental Management Services, Inc. (EMS) - EMS will be responsible for acting as a liaison with the disposal facility for all waste management activities, including the evaluation of disposition options. EMS will be the point of contact for guidance for all waste management issues.

4.2 Quality Control Management

Section 3 of the QAPP is applicable in its entirety. The SOPs, specifications and other supporting documents prepared for this work comply with specific requirements of the QAPP. This section serves as the Total Quality Control Plan for this action. Quality control meetings including inspections will be held to discuss all aspects of work that impact quality.

4.3 Document Control and Records Management

Section 4 of the QAPP is applicable in its entirety. The IDW characterization will result in development of a number of documents and records that are to be managed as set fourth in this section. Typical records that will be generated under this task include: certifications and training records, health and safety records, field activity logs, photographs, etc. The Field Coordinator will be responsible for maintenance and updates for the specified project submittals.

4.4 Personnel Training and Qualification

Section 5 of the QAPP is applicable in its entirety. The fieldwork will be conducted by individuals who are physically capable of performing the work; have demonstrated capability to perform the specific functions in accordance with the approved procedures and work plan; and are familiar with technical aspects of the equipment and procedures that are used. Field personnel will be trained to meet the requirements of the Health and Safety Plan and quality effecting tasks prior to commencement of work. Subcontracted services will be selected based on a demonstrated record of experience and certifications necessary to perform safely and accurately the assigned project tasks.

4.5 Instructions, Procedures, and Drawings

Section 6 of the QAPP is applicable in its entirety. The applicable SOPs, SQPs and health and safety procedures (HSPs) developed for the project were developed in accordance with this section of the QAPP. Additional SOPs, SQPs, and HSPs may be developed as needed according to the guidelines of the QAPP.

4.6 Procurement Quality Assurance Activities

Section 7 of the QAPP is applicable in its entirety. This section describes the requirements for the preparation, review, and approval of procurement documents and changes thereto to ensure that quality assurance controls are maintained.

4.7 Field Activities

Section 8 of the QAPP is applicable in its entirety. This section describes the field operations associated with the environmental investigation activities to assure that sampling strategies are implemented consistent with the project planning documents, including this work plan.

In addition to the field sampling activities, fieldwork activities will be conducted under this section. The previous sections describe the field operations associated with the segregation and characterization activities to assure that fieldwork is implemented consistent with the project planning documents. The QA/QC will be implemented using the graded approach. Each subcontractor will be held responsible for their work, and shall perform all first line acceptance inspections. The Project QA Specialist (PQAS) and Project Task Leader (PTL) will be responsible for inspection and accepting completed work from subcontractors. The Project QA Manager and Project Manager have final acceptance authority for the quality of all removal action work. A three-phase QC system consisting of preparatory, initial and follow up phase inspections will be implemented as discussed in Section 13 of the QAPP. The PQAS will be responsible for ensuring that testing and inspections are in accordance with accepted industry methods and practices. PQAS responsibilities include but are not limited to: conducting inspections, daily tailgate meetings, reviewing schedules, conducting site surveillance, generating daily reports and authorizing temporary work shut down if work practices or procedures are determined to be incorrect or out of compliance and cannot be immediately corrected.

4.8 Analytical Activities

Section 9 of the QAPP is applicable in its entirety. This section of the QAPP describes the specifications and controls that the laboratories are required to perform in support of the project tasks. Laboratory pre-qualifications consistent with this section are stipulated in the procurement requirements.

4.9 Report Preparation

Section 11 of the QAPP is applicable in its entirety. This section describes the methods and requirements for the preparation, review, and approval of project reports. The report type anticipated under this IDW characterization activity include but are not limited to data reports and technical memorandums containing field data summary reports.

4.10 Review of Work Activities

Section 12 of the QAPP is applicable in its entirety. This section describes the technical and formal peer review required on end products of the project activities. These reviews include technical and peer review of all end products of project activities.

4.11 Inspections

Section 13 of the QAPP is applicable in its entirety. This section provides the criteria for the performance of inspection on IDW characterization work. These inspections typically cover field activities that require planned inspections to assess that the quality of work meets project standards. A three-phase inspection system will be utilized during the segregation and characterization activities. Preparatory and initial phase inspections will be conducted for each phase of work, and follow-up phase inspections will be conducted weekly for all tasks lasting more than one week.

4.12 Calibration and Maintenance of Measuring and Test Equipment

Section 14 of the QAPP is applicable in its entirety. This section of the QAPP describes the responsibilities and methods for the control, calibration, and preventative maintenance of measurement and test equipment, used in activities affecting quality to assure their proper operation.

4.13 Test Control

Section 15 of the QAPP is applicable in its entirety. This section of the QAPP describes the controls to be implemented for the performance of tests required to verify the acceptability of the environmental removal action for the project task.

4.14 Non-Conformance Control and Corrective Actions

Section 16 of the QAPP is applicable in its entirety. This section of the QAPP describes the responsibilities and methods for all personnel to promote and ensure continuous improvement of items and work processes thereby enhancing the effectiveness of the program or project tasks and resultant quality.

4.15 Change Control

Section 17 of the QAPP is applicable in its entirety. This section of the QAPP addresses the process to be implemented on a project task for changes from the Work Plan, procedures, SAP, or specific requirements. In the case where actual field conditions result in a significant impact to the way work can be completed, a change can be made to the work process under this guidance.

4.16 Audits and Surveillance

Section 18 of the QAPP is applicable in its entirety. This section of the QAPP establishes the methods and responsibilities for planning, scheduling, and performing audits, surveillance, and management assessments. Planned and scheduled audits shall be performed by the PQAS or designee to verify compliance with all aspects of the Work Plan.

4.17 Materials, Equipment, Tools

Materials, equipment, and tools required to complete the scope of work may include, but are not limited to the following:

- Sample containers and coolers, as required;
- Sampling equipment;
- Polyethylene sheeting;
- DOT approved 17-H 55-gallon drums;
- Reinforced drum liners (10 mil.);
- Radiological instrumentation;
- Industrial hygiene monitoring equipment;
- Photography equipment and supplies;
- PPE; and,
- Fork-lift.

5. DATA MANAGEMENT

Samples collected for laboratory analysis will be analyzed by General Engineering Laboratories, Inc. (GEL) in Charleston, South Carolina. Laboratory reports (hard copies and electronic files) will be forwarded from GEL to WA, contact Santiago Lee. These results will be validated and transferred to the project database in accordance with procedures described in the QAPP (WA, 1997b).

Data validation will be performed by WA according to the procedures defined in SOP 21.1 Data Validation (WA, 1998f).

6. INVESTIGATION-DERIVED WASTE MANAGEMENT

A hand auger or drive rod will be used to collect samples of solid IDW. Disposable polyethylene bailers will be used to collect liquid samples of IDW. Excess solid or liquid IDW generated as the result of sampling will be returned to the drum from which they originated.

6.1 Decontamination Solutions

Decontamination solutions will consist of water (with detergent-alconox) used to clean the sample collection tools. When possible, preliminary decontamination will be conducted so that the sediment and rinseate generated as the result of cleaning the sampling equipment will be discharged into the void-space (within the drums) from which the respective soil sample was collected.

7. HEALTH AND SAFETY CONSIDERATIONS

Health and safety considerations for the activities detailed within this Work Plan are covered by the following documents: the Project Health and Safety Plan (PHSP) (WA, 1998b); Health and Safety Procedures (HSPs) (WA, 1998e) and Standard Operating Procedures (SOPs)(WA, 1998f), as referenced in this Work Plan; the Contingency Plan and General Emergency Response Procedures (CPGERP) (WA, 1998d); the As Low As Reasonably Achievable (ALARA) Program (WA, 1997), and the Radiation Protection Program (RPP)(WA, 1998g). The health and safety considerations presented in this section of the Work Plan coupled with the foregoing listed documents represent the safety and health program required by 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response and 10 CFR 835, Occupational Radiation Protection, for these work activities.

7.1 Hazard Analysis

A job hazard analysis identifies potential safety, health and environmental hazards and provides for the protection of personnel. Hazard analysis helps to ensure that all waste safety concerns are met. The Activity Hazard Analyses (AHAs) to be followed for this project entitled "Soil Sampling" and "Contaminated Soil and Waste Excavation" are included in the Appendix of the PHSP. A hazard analysis for these activities, as well as specific additional control measures to be followed, are described in Section 5 of the PHSP. Specific sections describing hazard analysis and control have been included from the PHSP, where applicable.

During these activities, the Site Coordinator (SC), Site Health and Safety Officer (SHSO), Radiological Control Manager (RCM), Radiological Safety Officer (RSO), Radiological Control Technician (RCT), or Health and Safety Coordinator (HSC) will monitor the site for any changes in conditions that would require modification of work conditions (i.e., personal protective equipment [PPE]). In the event that changes arise in radiological or industrial health and safety conditions that are not covered by this Work Plan or referenced documents, this Work Plan will be modified in accordance with the procedures contained in Standard Quality Procedure 11.1 (SQP), "Fieldwork Variances/Request For Information" (WA, 1998c).

7.1.1 Confined Space Entry

Confined space entry is not anticipated for the performance of any planned Work Plan activity. If a confined space entry becomes necessary, procedures specified in HSP 5.1, Confined Space Entry, will be followed.

7.1.2 Radiological Exposure

The IDW soils, PPE, and materials may contain low-level radioactive material from prior animal research activities. The predominant radionuclides used during these activities were Radium-226 and Strontium-90. Based on previous investigations and removal actions, the radionuclides of concern from an occupational exposure standpoint during these Work Plan activities appear to be limited to Radium-226, Strontium-90, Cesium-137 and Tritium.

Exposure to radionuclides will be evaluated and controlled by the RCTs in accordance to SOPs and HSPs established as part of the RPP. Alpha, gross beta, and gross gamma contamination levels will be determined by RCTs using field procedures/analysis and utilized as indicators of the presence of radionuclides above background levels. Ingestion of radionuclides will be minimized by whole-body frisks, proper use of PPE and personal hygiene (e.g. washing of hands and face). Engineering controls will be used wherever possible to reduce the potential for internal and external exposure to As Low As Reasonably Achievable (ALARA) levels. Engineering controls are the preferred method to reduce airborne radioactivity exposure and will be utilized in lieu of respiratory protection whenever possible. The use of administrative procedures for the control of occupational radiological worker exposures is not anticipated for this project. Applicable ALARA procedures and principles to be followed for conducting this work are presented in the ALARA Program (WA, 1997). ALARA procedures, as may be necessary, will be presented to the workforce prior to the start of work.

Personnel in the vicinity of the IDW drums shall wear modified Level D PPE as described in Section 7.2.4. The level of PPE will be modified if monitoring results dictate a need for a change in the personal protective equipment ensemble.

7.1.3 Chemical Exposure

The IDW may contain chemicals (organic and inorganic) from prior animal research activities or waste disposal activities. No chemicals are anticipated at levels that may present an occupational exposure concern with the possible exception of chlordane. Appropriate protective measures will be employed to limit worker exposure to chemicals. No VOCs of occupational concern have been identified in the IDW.

IDW segregation and sampling may present exposure to chemicals and nuisance dust through contact, ingestion and inhalation. Contact with chemicals will be evaluated and controlled by the proper use of PPE. Real time air monitoring of volatile organic compounds (VOCs) will be collected using field procedures/analysis and evaluated as a potential occupational hazard. Ingestion of chemicals will be minimized by avoiding contact where possible, proper use of PPE and personal hygiene (e.g. washing of hands and face). Permissible Exposure Limits (PELs) for chemical exposure are listed in Section 5 of the PHSP. Engineering controls will be used to reduce the potential exposure to chemicals, where practical.

Personnel in the exclusion zone shall wear modified Level D PPE as described in Section 7.2.4. The level of PPE will be modified if monitoring results dictate a need for a change in the personal protective equipment ensemble. One drum (T6) is suspected of containing chlordane at concentrations of 2,000 ppm. Level C PPE will be utilized when handling this drum.

During IDW investigative and sampling activities, direct instrumentation (PID) will be used to detect the potential presence and concentration of VOCs. The chemical of occupational concern anticipated during the IDW activities is chlordane. However, air monitoring (PID) will still be conducted and, if the PID concentrations are above the action levels denoted in the PHSP Section 6, then PPE will be modified accordingly and additional engineering controls to be implemented when feasible. Monitoring will continue throughout the project during IDW investigative and sampling activity to reduce the likelihood of potential exposure to unanticipated chemicals.

No contact with ground or surface water is planned for these IDW activities. However, occupational safety and health issues dealing with ground or surface water contact are covered in the PHSP should this situation arise.

7.1.4 Heat Stress

This activity is scheduled to be performed at a time between September and October when wearing PPE puts workers at considerable risk of heat stress. All workers will have medical clearance prior to working onsite and there will be an acclimation period for workers. Measurements with a Wet-Bulb-Globe-Temperature (WBGT) instrument will be conducted and working conditions will be evaluated to minimize heat stress. Based on weather conditions and the PPE used, a work regime will be established in accordance with the PHSP, Section 5 and HSP 3.1, Working in Hot Environments.

Heat stress prevention will include the following mitigation measures: properly rested workers prior to work; scheduled breaks; appropriate water intake; and, rotation of heavy work tasks. Monitoring will also be conducted by body temperature measurements and visual observations of workers as discussed in Section 5 of the PHSP. Also, HSP 3.1, Working in Hot Environments, will be implemented for any work conducted during the hot weather months at LEHR

7.2 Hazard Controls

The following control measures will be implemented during the IDW activities. These control measures are intended to supplement the PHSP.

7.2.1 Hazardous Work Permit

Hazardous Work Permits (HWPs) will be used to control work in the exclusion zone and other areas where hazardous conditions may exist. An HWP will be issued in accordance with the procedures specified in the PHSP (WA, 1998b) and in accordance with HSP 17.1, Hazardous Work Permits. The following information will be described or referenced in the HWP:

- Scope of work to be performed;
- Anticipated radiological, safety, and industrial hygiene conditions;
- PPE and respiratory protection requirements;
- Radiological and industrial hygiene monitoring requirements;
- Dosimetry requirements;
- Work Plan or Activity Hazard Analysis;
- Period for which the HWP is valid; and,
- Additional requirements for entry.

7.2.2 Site Control and Work Zones

The site control and work zones will be enclosed by boundary ropes or ribbons supported with stanchions. The placement of the stanchions and boundaries will be controlled by the RSO and/or the SHSO to facilitate access to the work area for equipment. The boundaries for site control and work zones will be set up and signs posted in accordance with the PHSP and the RPP.

7.2.3 Heat Stress

To minimize the effects of heat related injuries, an area will be established to conduct entrance/exit activities, sample preparation and other support functions. This area will be covered with a portable tarp, when necessary, to provide the workers with shade. The controls associated with heat stress are specified in the PHSP. The SHSO shall ensure that all workers are aware of the signs and symptoms of heat stress, engineering control measures, and the need to replenish body fluids during morning tailgate safety meetings (TSMs). The buddy system will also be used to help monitor heat stress symptoms while working. Integrated heat stress monitoring will be performed daily to determine the proper work/rest cycle.

7.2.4 PPE

Workers in the exclusion zone will wear modified Level D PPE in accordance with the PPE selection matrix in the PHSP unless otherwise specified in the HWP for the task.

Modified Level D PPE will consist of the following when specified in the HWP:

- Hard hat, American National Standards Institute (ANSI) approved;
- Steel-toed chemical resistant boots or boot covers;
- Chemical resistant coveralls;
- Safety glasses with side shields;
- Chemical resistant gloves inner and outer gloves;
- Full tape of wrists, and ankles; and,
- Leather work gloves.

7.2.5 Decontamination Procedures

The decontamination area will be set up adjacent to the exclusion zone (EZ) for equipment and personnel. The area will be delineated with traffic cones and/or radiological barrier tape. The decontamination zone will be posted with the appropriate warning sign.

Decontamination procedures will be conducted in accordance with Section 10 of the PHSP for personnel decontamination, equipment decontamination and PPE decontamination. For radiological hazard work decontamination the radiological workers will perform whole-body frisks and, if contamination is found, the RCT will be notified to determine the extent of contamination and direct/supervise decontamination.

Equipment and respirators (if used) will be cleaned and, prior to removal from the decontamination area, will be surveyed by the RCT in accordance with Section 10 of the PHSP.

7.2.6 Training

Personnel performing activities associated with the IDW activities will receive training covering this Work Plan.

Applicable workers who will enter radiologically controlled areas shall have:

- Completed at least 40 hours of hazardous waste operations-related training, as required by Occupational Safety and Health Administration (OSHA) Regulation 29 CFR 1910.120;
- Completed an 8-hour refresher course within the past 12 months if they completed the 40-hour training more than 12 months prior to the start of the field activities;
- Training covering the Contingency Plan and General Emergency Response Procedures (WA, 1998d);
- A minimum of three days of actual field experience under the direct supervision of a trained, experienced supervisor. The SC shall have also completed an additional 8 hours of relevant supervisory health and safety training;
- Hazard Communications training in accordance with Section 15 of the PHSP;
- Site Hazard Briefing to include instructions on emergency response procedures, location of emergency equipment, and location of emergency notification list; and,
- Attend Tailgate Safety Meetings.

Applicable workers who will enter radiological control areas shall have:

- Successfully completed Radiological Worker II training in accordance with the RPP;
- Completed site-specific Radworker training in accordance with the RPP;
- Training in accordance with the requirements specified in SQP-3.2, "Indoctrination and Training" (WA, 1998c), for the specific job assignments; and,
- General Employee Radiological Training (GERT) for those workers that are not Radiological Worker II trained and routinely entering controlled areas encountering radiological barriers, postings or radioactive material.

Employees engaged with hazardous waste materials shall have:

- Initial Assignment training as defined in Section-14 of the PHSP;
- Training on the Health and Safety Planning Documents as defined in Section 14 of the PHSP;
- PPE Training;

- Verification of respirator fit test (if respirator usage is required);
- Medical Surveillance; and,
- Training on preparing hazardous materials for shipment.

All visitors entering the site areas that require Level A, B, or C PPE for entry will provide evidence of having completed the 40-hour HAZWOPER course. Visitors entering the CZ will be escorted and required to complete GERT training. The PHSM may deny site access to any personnel with appropriate justification.

Two or more people certified in First Aid, CPR and Blood Born Pathogens will be on-site at all times when hazardous waste operations are conducted.

7.2.7 *Buddy System*

The buddy system is a method of organizing employees into work groups and is designed to provide those employees with assistance when needed. Each employee in a work group is designated to be observed by at least one other person. Assignment of designated partners should take place during the TSM.

The responsibility of the buddy is to:

- Provide assistance, if needed;
- Maintain line of sight contact or verbal contact with workers in the EZ;
- Observe for signs of chemical exposure, physical trauma, or heat stress such as:
 - changes in complexion and skin discoloration;
 - changes in coordination or demeanor;
 - excessive saliva and pupillary response; or,
 - changes in speech pattern;
- Periodically verify the integrity of all protective clothing; and,
- Notify the SC if emergency help is needed.

Entry to or exit from the EZ under the conditions described earlier without a designated partner is prohibited.

7.2.8 Safety Equipment

In addition to other equipment specified in this Work Plan, the following safety equipment will be staged in the support zone:

- First aid kit;
- Portable eyewash station and hand shower;
- Hearing protection;
- Spill kit;
- Air horn;
- Directions to medical facilities;
- Heat stress monitoring equipment;
- Portable radio for emergency communications;
- Hearing protection; and,
- Fire extinguisher.

7.2.9 Spill Containment

In addition to the mitigation measures presented in this Work Plan, a spill and discharge control plan has been prepared to provide contingency measures for potential spills and discharges from handling and movement of potentially hazardous wastes such as contaminated soil and ground water encountered during field activities. This spill and discharge control plan is in the PHSP and the CPGERP.

7.2.9.1 Task-Specific Liquid Spill Analysis

During the performance of work there are several instances where a liquid spill may occur. These activities include:

- IDW Phase separation (separating liquid from drums containing soil); and,
- Physically moving the drums in the segregation process.

7.2.9.2 Task-Specific Equipment Requirements

At a minimum, the following spill/containment equipment will be pre-positioned in the work area.

- Absorbent and booms (capable of containing and absorbing 55-gallons of liquid);
- Containers to hold spent absorbent material; and,
- HEPA vacuum with power source.

7.2.10 Air Monitoring

Air monitoring is essential to ensure that all field personnel will be adequately protected from airborne contaminants. Air monitoring will be conducted in accordance with HSP 6.1-Air Monitoring.

All personal direct reading instrumentation readings (PID) taken for the purpose of determining appropriate H&S precautions shall be collected/taken in the approximate "breathing zone" of site personnel and integrated over an appropriate time interval.

Real-time continuous monitoring during IDW activities to assist in identification of hazards will consist of visual inspection, radiological survey instrument readings, and PID measurements. Use of Level C (or higher) protection will be utilized whenever justified by site conditions as presented in this Work Plan and the PHSP.

Direct read instruments (PID) will be used to monitor VOCs. VOCs are not likely to be encountered, however, if the PID has a reading above the action levels presented in Table 7-1, then the level of PPE in use will be assessed immediately and modified as necessary. All available data will be evaluated for selection of the PPE level and the HWP will be modified if necessary.

The appropriate air monitoring equipment will be acquired and assessed for suitability prior to the readiness review. All equipment will be maintained and calibrated in accordance with manufacturer's recommendations. Air monitoring will be conducted daily or until collected data is sufficient to predict exposures to airborne contaminants.

Table 7-1 Airborne Radiological and Chemical Action Levels

Compound	Action Level	Action
VOCs	5 ppm	Action to include the following progressive steps: <ul style="list-style-type: none">• Notify SHSO and RSO of concentrations;• SHSO or RSO to stop work or apply engineering controls, as necessary;• SHSO or RSO to decide if upgrade of PPE to Level C with full-face respirators with organic/HEPA cartridges is necessary; and,• Ensure 8-hr TWA exposure is below Permissible Exposure Levels (PELs).

7.2.11 Chemical Exposure

During drummed IDW sampling activities, grab samples and direct instrumentation (PID, GM) will be used to detect the presence of hazardous chemicals and radioactivity.

7.2.12 Heat Stress

This work activity is scheduled to be performed at a time when workers may be affected by heat related injuries. Heat stress may be a concern due to the open nature of the work area and the time of year (September) at which activities are scheduled to be performed.

8. REFERENCES

- Dames and Moore (D&M), 1992, Waste Characterization, Stored Wastes, LEHR Environmental Restoration, Davis, California, November 16, 1992.
- Environmental Protection Agency (EPA), 1991, Management of Investigation Derived Wastes During Site Inspections, OSWER Directive 9345.3-02, Environmental Protection Agency, Washington, D.C.
- International Technology Corporation (IT), 1997, Draft Miscellaneous Materials and Waste Inventory Summary at the Laboratory for Energy-Related Health Research (LEHR), University of California at Davis, IT Corporation, December.
- Weiss Associates (WA), 1997, Final As Low As Reasonably Achievable (ALARA) Program Management, Rev. 2, LEHR, University of California at Davis, California, June.
- WA, 1998a, Final Quality Assurance Project Plan for Environmental Waste Management, LEHR, University of California at Davis, California, Weiss Associates, Rev 1, February.
- WA, 1998b, Final Project Health and Safety Plan for Environmental Restoration/Waste Management, Rev. 0, LEHR, University of California at Davis, California, Weiss Associates, January.
- WA, 1998c Final Standard Quality Procedures for Environmental Restoration/Waste Management, Rev. 0, LEHR, University of California at Davis, California, Weiss Associates, February.
- WA, 1998d, Final Contingency Plan and General Emergency Response Procedures, Rev. 1, LEHR, University of California at Davis, California, Weiss Associates, January.
- WA, 1998e, Final Health and Safety Procedures, LEHR, University of California at Davis, California, Weiss Associates, January.
- WA, 1998f, Final Standard Operating Procedures, LEHR, University of California at Davis, California, Weiss Associates, March.
- WA, 1998g, Final Radiological Protection Program, Rev. 2, LEHR, University of California at Davis, California, Weiss Associates, January.

FIGURES

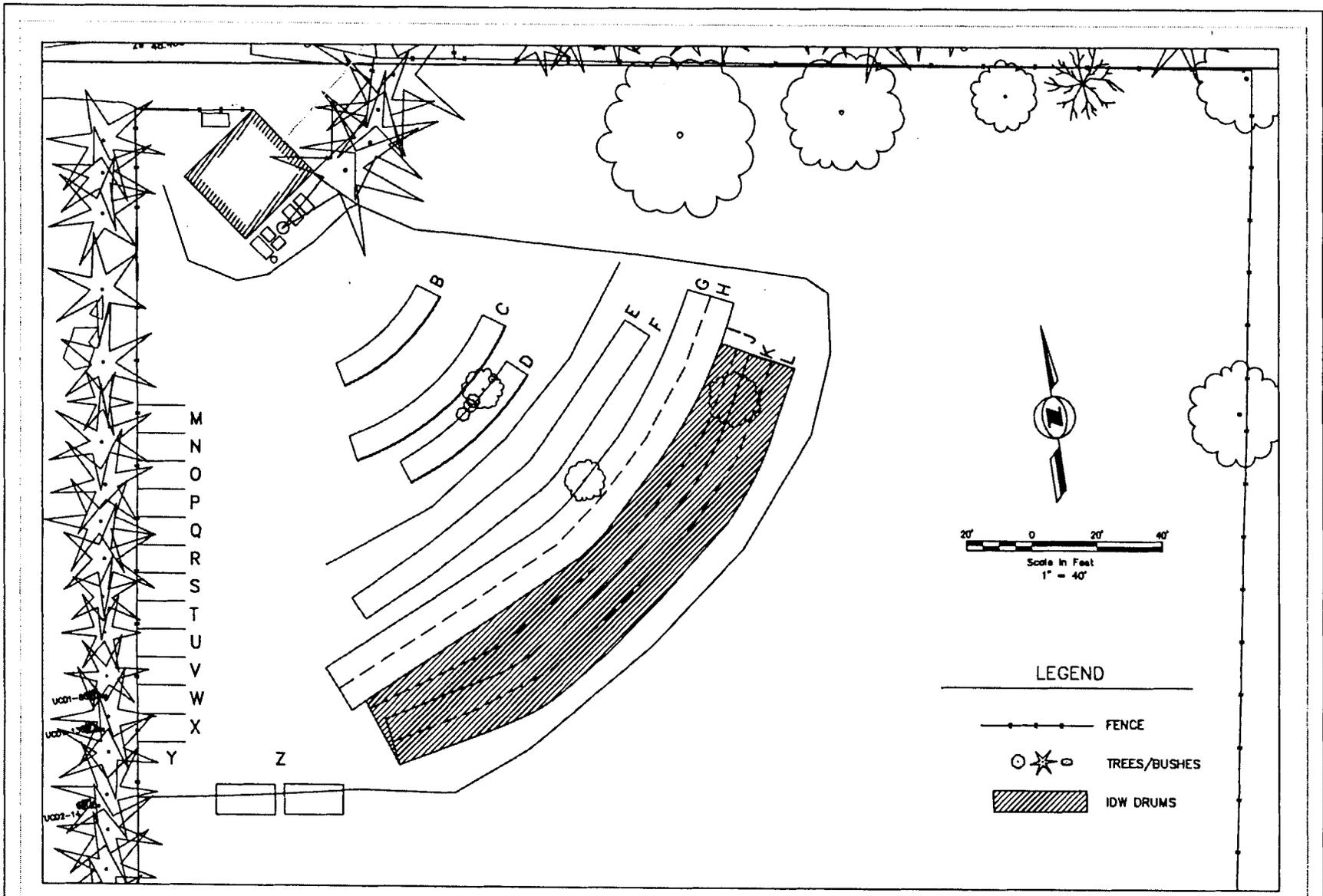


Figure 1. Cobalt-60 Field Storage Area-LEHR Facility, Davis, California

WEISS ASSOCIATES

Work Plan for Segregation and Characterization of IDW Stored at the Former Co-60 Field
 LEHR Environmental Restoration/Waste Management
 DOE Contract No. DE-AC03-96SF20686

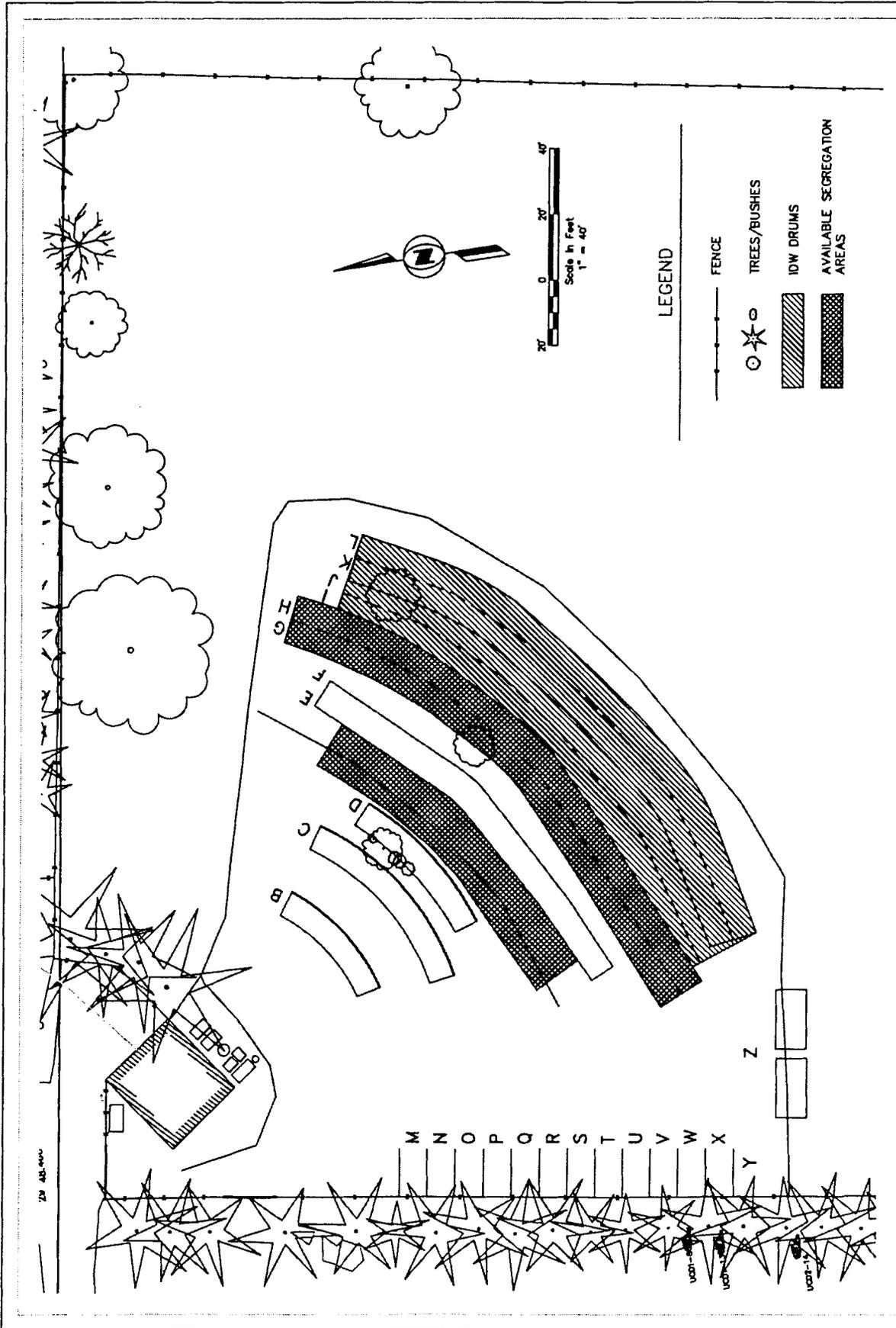


Figure 2. Cobalt-60 Field Storage Area, Drum Segregation Areas-LEHR Facility, Davis, California WEISS ASSOCIATES

APPENDIX A

MISCELLANEOUS MATERIALS AND WASTE INVENTORY MARCH 1998

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "I"**

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
314	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
315	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
318	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
320	700	Full	soil, dry, hard	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
344	700	Full	soil, dry, loose	significant rust, holes, liner	DOE II	UCD-18	Ream	NH
345	700	Full	soil, dry, loose	significant rust, holes, no liner	DOE II	UCD-18	Ream	NH
346	540	3/4	soil and liquid (25 gal), loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
347	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
367	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
368	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
369	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
370	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
371	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
372	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
399	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH
400	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH
401	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH
402	540	3/4	soil, moist, loose	outside rust, no holes, no liner	DOE II	UCD-21	Ream	NH
406	540	3/4	soil, moist, loose	outside rust, no holes, no liner	DOE II	UCD-23	0-20 ft	NH
407	540	3/4	soil, moist, loose	outside rust, no holes, no liner	DOE II	UCD-23	20-35 ft	NH
408	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	35-50 ft	NH
409	700	Full	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	50-60 ft	NH
410	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	60-75 ft	NH
411	350	1/2	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
412	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
413	540	3/4	soil, dry, loose	no rust, no holes, liner	DOE II	UCD-23	Ream	NH
414	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
415	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "I"**

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
416	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
417	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
418	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
419	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
451	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-24	Ream	NH
452	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-24	Ream	NH
462	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-24	Ream	NH
463	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-24	Ream	NH
480	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
481	350	1/2	soil, dry, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
482	700	Full	soil, dry, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
484	700	Full	soil, dry, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH

Total Number of Drums in Row "I" = 40

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "J"**

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
D0001	700	Full	soil, dry, loose	no rust, no holes, liner	DOE	BLG00001	0-20 ft	NH, IDW, 0 ppm, 20 cpm
D0002	540	3/4	soil, dry, loose	no rust, no holes, liner	DOE	BLG00001	20-40 ft	NH, IDW, 0 ppm, 20 cpm
D0004	540	3/4	soil, dry, loose	no rust, no holes, liner	DOE	BLG00002	0-20 ft	NH, IDW, 0 ppm, 20 cpm
D0005	700	Full	soil, dry, loose	no rust, no holes, liner	DOE	BLG00002	20-40 ft	NH, IDW
D0007	540	3/4	soil, moist, loose	no rust, no holes, liner	DOE	BLG00003	0-20 ft	NH, IDW, 0 ppm, 40 cpm
D0008	700	Full	soil, moist, loose	no rust, no holes, liner	DOE	BLG00003	20-40 ft	NH, IDW, 0 ppm, 40 cpm
D0010	700	Full	soil, dry, loose	no rust, no holes, liner	DOE	BLG00004	0-20 ft	NH, IDW
D0011	350	1/2	soil, dry, loose	no rust, no holes, liner	DOE	BLG00004	20-40 ft	NH, IDW
D0013	540	3/4	soil, dry, loose	no rust, no holes, liner	DOE	BLG00005	0-20 ft	NH, IDW, 0 ppm, 10 cpm
D0014	700	Full	soil, dry, loose	no rust, no holes, liner	DOE	BLG00005	20-40 ft	NH, IDW, 0 ppm, 20 cpm
D0016	700	Full	soil, dry, loose	no rust, no holes, liner	DOE	BLG00006	0-20 ft	NH, IDW, 0 ppm, 0 cpm
D0017	700	Full	soil, dry, loose	no rust, no holes, liner	DOE	BLG00006	20-40 ft	NH, IDW, 0 ppm, 0 cpm
D0029	100	1/4	soil, moist, loose	outside rust, no holes, no liner	DOE	SBL00021	5-10 ft	NH, IDW
D0030	540	3/4	soil, concrete, dry, loose	outside rust, no holes, no liner	DOE	SBL00022	7-15 ft	NH, IDW
D0031	540	3/4	soil, dry, loose	no rust, no holes, no liner	DOE	SBL00032	6-41.5 ft	Soil cuttings, NH, IDW
D0033	50	1/10	soil, dry, loose	outside rust, no holes, no liner	DOE	SBL00033	1-13 ft	drill cuttings
D0034	150	1/5	soil, dry, loose	outside rust, no holes, no liner	DOE	SBL00029	2-12 ft	drill cuttings
261	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-26	0-25 ft	NH
306	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
308	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
309	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
310	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
311	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
312	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
313	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
329	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	0-20 ft	NH

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "J"**

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
330	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	20-35 ft	NH
340	540	3/4	soil, dry, loose	outside rust, no holes, liner	DCE II	UCD-18	Ream	NH
341	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
361	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	0-15 ft	NH
362	540	3/4	soil, dry, loose	outside rust, no holes, liner	DCE II	UCD-20	15-30 ft	NH
365	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
366	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
373	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
374	540	3/4	soil, dry, loose	outside rust, no holes, liner	DCE II	UCD-20	Ream	NH
380	350	1/2	soil, dry, loose	outside rust, no holes, liner	DCE II	UCD-20	Ream	NH
381	700	Full	soil, dry, loose	outside rust, no holes, liner	DCE II	UCD-20	Ream	NH
382	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	Ream	NH
385	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	0-15 ft	NH
386	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	15-30 ft	NH
389	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	30-45 ft	NH
390	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH
397	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH
398	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH
437	540	3/4	soil, wet, hard	no rust, no holes, liner	DOE II	UCD-23	Ream	NH
438	350	1/2	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-23	Ream	NH
453	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
476	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-22	0-20 ft	NH
521	700	Full	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	from spill	NH
524	700	Full	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	from spill	NH

Total Number of Drums in Row "J" = 50

MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "K"

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
M1	80	1/10	soil, wet, loose	outside rust, holes, liner	DOE	Mystery	Mystery	NH
M2	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
M3	350	1/2	soil, dry, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
M4	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
M5	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
M6	350	1/2	soil and liquid (20 gal), wet, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
M7	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
M8	175	1/4	soil, dry, loose	outside rust, no holes, liner	DOE	Mystery	Mystery	NH
NN01	540	3/4	soil and liquid (5 gal), wet, loose	outside rust, no holes, liner	Not Available	Not Available	Not Available	NH
NN02	540	3/4	soil, dry, loose	outside rust, no holes, liner	Not Available	Not Available	Not Available	NH
NN04	540	3/4	soil, dry, loose	outside rust, no holes, liner	Not Available	Not Available	Not Available	NH
NN05	540	3/4	soil, dry, loose	outside rust, no holes, liner	Not Available	Not Available	Not Available	NH
NN06	540	3/4	soil and liquid (30 gal), wet, loose	outside rust, holes, liner	Not Available	Not Available	Not Available	NH
T1	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE I	T1	0-20 ft	NH/Wahler
T2	540	3/4	soil, very moist, loose	outside rust, holes, liner	DOE I	T2	0-20 ft	NH/Wahler
T3	540	3/4	soil and liquid (20 gal), wet, loose	outside rust, no holes, liner	DOE I	T3	0-20 ft	NH/Wahler
T6	540	3/4	soil, very moist, loose	outside rust, holes, liner	DOE I	T6	0-20 ft	NH/Wahler
T7	540	3/4	soil, dry, loose	outside rust, holes, liner	DOE I	T7	0-20 ft	NH/Wahler
T8	350	1/2	soil, dry, loose	outside rust, no holes, liner	DOE I	T8	0-20 ft	NH/Wahler
T9	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE I	T9	0-20 ft	NH/Wahler
T10	540	3/4	soil and PPE/polysheeting, very moist, loose	outside rust, holes, loose	DOE I	T10	0-20 ft	NH/Wahler
1	540	3/4	soil, very moist, loose	outside rust, holes, loose	DOE I	UCD-01	Not Available	NH
4	540	3/4	soil, very moist, loose	outside rust, holes, loose	DOE I	UCD-02	30-60 ft	NH
7	350	1/2	soil, very moist, loose	outside rust, holes, loose	DOE I	SB-14	0-20 ft	NH
10	230	1/4	soil, very moist, loose	outside rust, holes, loose	DOE I	UCD-06	Not Available	NH
13	350	1/2	soil, dry, loose	outside rust, no holes, loose	DOE I	SB-12	0-20 ft	NH

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "K"**

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
14	540	3/4	soil and liquid (20 gal), wet, hard	outside rust, holes, liner	DOE I	SB-13	No Available	NH
16	540	3/4	soil, dry, loose	outside rust, holes, liner	DOE I	SB-13	0-20 ft	NH
17	540	3/4	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-04	0-30 ft	NH
20	175	1/4	soil, very moist, loose	outside rust, holes, liner	DOE I	UCD-04	Not Available	NH/Wahler
24	540	3/4	soil, moist, loose	outside rust, no holes, liner	DOE I	UCD-05	0-25 ft	NH
27	540	3/4	soil, dry, liner	outside rust, no holes, liner	DOE I	UCD-03	0-20 ft	NH
31	350	1/2	soil, dry, liner	outside rust, no holes, liner	DOE I	SB-50	20-40 ft	NH
35	175	1/4	soil, very moist, liner	outside rust, holes, liner	DOE I	UCD-02	Not Available	NH
43	540	3/4	soil and liquid (5 gal), wet, loose	outside rust, holes, liner	DOE I	UCD-07	0-25 ft	NH
45	540	3/4	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-07	>40 ft	NH
47	540	3/4	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-07	>40 ft	NH
50	700	Full	soil, very moist, liner	outside rust, holes, liner	DOE I	UCD-07	Not Available	NH
54	140	1/4	soil, very moist, liner	outside rust, holes, liner	DOE I	UCD-07	Not Available	NH/Wahler
62	540	3/4	soil and liquid (25 gal), wet, loose	outside rust, no holes, liner	DOE I	UCD-07	Not Available	NH
244	350	1/2	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-22	20-30 ft	NH
245	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-22	0-20 ft	NH
246	540	3/4	soil and liquid (30 gal), wet, loose	outside rust, no holes, liner	DOE II	SB-23	0-15 ft	NH
247	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-23	15-30 ft	NH
249	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-24	0-15 ft	NH
251	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-28	20-30 ft	NH
252	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-28	0-20 ft	NH
257	540	3/4	soil and liquid (30 gal), wet, loose	outside rust, no holes, liner	DOE II	SB-27	0-25 ft	NH
258	540	3/4	soil and PPE/polysheeting, dry, loose	outside rust, holes, liner	DOE II	SB-27	20-30 ft	NH
259	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	SB-25	0-25 ft	NH
260	350	1/2	soil and PPE/polysheeting, dry, hard	outside rust, no holes, liner	DOE II	SB-25	20-30 ft	NH

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "K"**

Drum No.	Weight (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
300	700	Full	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	0-15 ft	NH
301	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	0-15 ft	NH
302	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
304	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
305	540	3/4	soil and liquid (5 gal), wet, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
307	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
316	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
317	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-19	Not Available	NH
331	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	35-50 ft	NH
332	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	50-60 ft	NH
333	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	60-70 ft	NH
334	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
335	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
336	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
337	700	Full	soil and liquid (30 gal), wet, hard	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
338	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
339	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
342	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Ream	NH
352	175	1/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-18	Not Available	NH
361	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	0-15 ft	NH
362	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	15-30 ft	NH
363	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	45-55 ft	NH
364	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-20	30-45 ft	NH
387	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	30-45 ft	NH
388	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	45-55 ft	NH
391	540	3/4	soil, dry, loose	outside rust, no holes, liner	DOE II	UCD-21	Ream	NH

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "L"**

Drum No.	Weight of Drum Contents (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
D0003	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG00001	0-20 ft	NH, IDW, 0ppm, 0cpm
D0006	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG00002	Grout Rinse Water	NH, IDW, 0ppm, 0cpm
D0009	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG00003	Grout Rinse Water	NH, IDW
D0012	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG00004	Grout Rinse Water	NH, IDW, pH 11.9, 0ppm, 0cpm
D0015	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG00005	Grout Rinse Water	NH, IDW, 0ppm, 0cpm
D0018	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG00006	Grout Rinse Water	NH, IDW, 0ppm, 0cpm
D0019	50	3/4	PPE/polysheeting, dry	outside rust, no holes, liner	DOE	BLG Borings	Decon Pad	NH, IDW
D0020	80	3/4	PPE/polysheeting, dry	outside rust, no holes, liner	DOE	BLG Borings	Decon Water	NH, IDW
D0021	80	3/4	PPE/polysheeting, dry	outside rust, no holes, liner	DOE	BLG Borings	Decon Water	NH, IDW
D0022	350	3/4	liquid (40 gal.)	outside rust, no holes, no liner	DOE	BLG Borings	Decon Water	NH, IDW
D0023	100	1/2	PPE/polysheeting, dry	outside rust, no holes, liner	DOE	CPT	Decon Water	NH, IDW, 0ppm
D0024	140	2/5	liquid (20 gal.)	outside rust, no holes, no liner	DOE	CPT	Decon Water	NH, IDW
D0032	540	3/4	liquid (40 gal)	outside rust, no holes, no liner	DOE	SBL00032	Decon Water 0-41.5 ft	decon water, NH, IDW
M9	350	Full	soil and liquid (40 gal.), wet, hard	outside rust, holes, liner	DOE	Mystery Drum	Not Available	NH
M10	80	3/4	trash and PPE/polysheeting, dry	outside rust, no holes, liner	DOE	Mystery Drum	Not Available	NH
M11	60	1/2	trash and PPE/polysheeting, dry	outside rust, no holes, liner	DOE	Mystery Drum	Not Available	NH
M12	80	3/4	trash and PPE/polysheeting, dry	outside rust, no holes, liner	DOE	Mystery Drum	Not Available	NH
M13	40	1/2	trash and PPE/polysheeting, dry	outside rust, no holes, liner	DOE	Mystery Drum	Not Available	NH
NN03	540	3/4	soil, moist, loose	outside rust, no holes, liner	Not Available	Not Available	Not Available	NH
T4	540	Full	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	T4	0-20 ft	NH
T5	540	Full	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	T5	0-20 ft	NH
2	540	3/4	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-01	Not Available	NH

**MISCELLANEOUS MATERIALS AND WASTE INVENTORY
CO-60 FIELD ROW "L"**

Drum No.	Weight of Drum Contents (lbs, approx.)	Percentage of Drum Filled to Capacity	Drum Contents, Moisture, Consistency	Drum Physical Condition	Project	Boring or Other Location	Boring Depth (feet below land surface) or Other Description	Markings (on outside of drum) NH = "Non hazardous" label IDW = Investigation Derived Waste ppm = parts per million cpm = counts per minute
3	540	3/4	soil and liquid (30 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-01	Not Available	NH
5	540	3/4	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-02	Not Available	NH
6	140	1/5	soil and liquid (2 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-01	Not Available	NH/Wahler
8	540	3/4	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	SB-03/ UCD-06	20-26.5 ft (SB-03) 0-50 ft (UCD-06)	NH/Wahler
9	350	1/2	soil and liquid (30 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-06	Not Available	NH-Wahler
11	540	3/4	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-06	0-20 ft	NH/Wahler
12	700	Full	soil and liquid (50 gal.), wet, loose	outside rust, no holes, liner	DOE I	SB-03	0-20 ft	NH/Wahler
18	350	1/2	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-04	30-55 ft	NH/Wahler
19	540	3/4	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-04	30-55 ft	NH
22	350	1/2	soil and liquid (20 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-05	40-50 ft	NH/Wahler
23	540	3/4	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-05	25-40 ft	NH
25	350	1/2	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-05	Not Available	NH/Wahler
26	540	3/4	soil, very moist, loose	outside rust, no holes, liner	DOE I	UCD-03	40-50 ft	NH/Wahler
28	540	3/4	soil and liquid (10 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-03	20-40 ft	NH/Wahler
30	540	3/4	soil, very moist, loose	outside rust, no holes, liner	DOE I	SB-50	0-20 ft	NH/Wahler
32	540	3/4	soil and liquid (5 gal.), wet, loose	outside rust, holes, liner	DOE I	SB-50	40-50 ft	Wahler
34	350	1/2	soil and liquid (10 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-02	2.5-60 ft	NH
36	175	1/4	soil and liquid (10 gal.), wet, loose	outside rust, holes, no liner	DOE I	Rinse Area	Auger Cuttings	NH

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44	540	3/4	soil and liquid (5 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-07	25-40 ft	NH/Wahler
46	350	1/2	soil and liquid (20 gal.), wet, loose	outside rust, no holes, liner	DOE I	UCD-07	Not Available	NH/Wahler
241	175	1/4	soil, very moist, loose	outside rust, no holes, liner	DOE II	SB-19	Not Available	NH
242	540	3/4	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE II	SB-19	0-10 ft	NH
243	350	1/2	soil and liquid (40 gal.), wet, loose	outside rust, no holes, liner	DOE II	SB-21	0-10 ft	NH
248	350	1/2	soil and PPE/polysheeting, dry	outside rust, no holes, liner	DOE II	SB-24	15-30 ft	NH
262	350	1/2	soil and PPE/polysheeting, moist	outside rust, no holes, liner	DOE II	SB-26	20-30 ft	NH
349	60	1/2	PPE/polysheeting, dry	outside rust, no holes, liner	DOE II	UCD-18	PPE	NH
404	60	1/2	PPE/polysheeting, dry	outside rust, no holes, liner	DOE II	UCD-21	PPE/Polysheeting	NH
483	175	1/4	soil and liquid (10 gal.), wet, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
485	350	1/2	soil and liquid (25 gal.), wet, loose	outside rust, holes, liner	DOE II	Decon Area	--	NH
488	120	1/5	soil and liquid (10 gal.), wet, loose	outside rust, holes, liner	DOE II	Decon Area	--	NH
491	350	1/2	soil, very moist, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
492	540	3/4	soil and liquid (25 gal.), wet, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
493	540	3/4	soil and liquid (25 gal.), wet, loose	outside rust, no holes, liner	DOE II	Decon Area	--	NH
504	80	3/4	PPE and polysheeting, dry	outside rust, no holes, liner	DOE II	SB-25, -26, -27, -28	¹ Morris Soil Boring	NH
505	115	1/10	soil, very moist, loose	outside rust, no holes, liner	DOE II	UCD-19, -22, -24	Not Available	NH
513	350	1/2	soil and gravel, dry, loose	outside rust, no holes, liner	DOE II	UCD-22	Ream	NH
801	700	Full	liquid (55 gal.)	drum contained in overpack	DOE	2 Blue Tank Trailer Drums	Not Available	Water from tank trailer

Total Number of Drums in Row "L" = 59