

# U.S. Department of Energy

Oakland Operations Office, Oakland, California

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## SAMPLING AND ANALYSIS PLAN FOR WESTERN DOG PENS REMOVAL ACTION WASTE AND MATERIAL

at the:

LABORATORY FOR ENERGY-RELATED HEALTH RESEARCH  
UNIVERSITY OF CALIFORNIA, DAVIS

*Prepared for:*

**United States Department of Energy**  
Oakland Operations Office  
1301 Clay Street  
Oakland, California 94612-5208

*Prepared by:*

**Weiss Associates**  
5801 Christie Avenue, Suite 600  
Emeryville, California 94608-1827

November 13, 2001

Rev. 0

DOE Oakland Operations Contract DE-AC03-96SF20686

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Approvals Page

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Approved by: Robert O. Devany for Date: 11/13/01  
Dolores Loll  
Project Quality Assurance Manager  
Weiss Associates

Approved by: Robert O. Devany Date: 11/13/01  
Robert O. Devany, C.E.G., C.H.G.  
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## ATTACHMENT

- Attachment 1. Chain-of-Custody Form for Western Dog Pens Removal Action Waste/Material Sampling

## APPENDIX

- Appendix A. Soil Quality Control Blank Preparation Procedure

## ACRONYMS AND ABBREVIATIONS

AHA	Activity Hazard Analysis
ALARA	As Low As Reasonably Achievable
CCR	California Code of Regulations
Co-60	Cobalt-60
COC	Chain-of-Custody
CS	chemical suite
cu yd	cubic yard(s)
DS	disposal suite
EPA	United States Environmental Protection Agency
GEL	General Engineering Laboratories
HWP	Hazardous Work Permit
ID	identification (number)
L	liter
LEHR	Laboratory for Energy-Related Health Research
NTS	Nevada Test Site
PCBs	polychlorinated biphenyls
PPE	personal protective equipment
RA	Removal Action
RS	radiological suite
S.M.	standard methods
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
STLC	Soluble Threshold Limit Concentration
SVOC	semi-volatile organic compound
VOC	volatile organic compound
WA	Weiss Associates
WAC	waste acceptance criteria
WDPs	Western Dog Pens

## 1. SAMPLING AND ANALYSIS PLAN ADDENDUM

This Sampling and Analysis Plan (SAP) is prepared as an addendum to the *Dog Pens Removal Action Work Plan* (WA, 2001a) and addresses sampling requirements for the asphalt, concrete and gravel stockpiles generated during the Western Dog Pens Removal Action (WDPs RA). The data generated from these sampling events are designed to meet the data requirements specified in the waste acceptance criteria (WAC) of Envirocare of Utah (Envirocare) and the Nevada Test Site (NTS), and will form the basis for waste certification and future disposition evaluations. Additional sampling and analysis may be required if the data indicate:

- The waste and material are not acceptable by Envirocare or NTS;
- The waste and material contain total chemical constituent concentrations that are greater than or equal to 20 times the Code of Federal Regulations, Part 261, Toxicity Characteristics Leaching Procedure values;
- The waste and material contain total chemical constituent concentrations that are greater than or equal to 10 times the California Code of Regulations (CCR), Title 22, Soluble Threshold Limit Concentration (STLC) values. If the total chemical concentration is greater than or equal to the California Code of Regulations Title 22, Total Threshold Limit Concentration value, then STLC analysis will not be required;
- The waste and material may be suitable for recycle or re-use disposition; or,
- The waste and material may be suitable for disposition as waste with no added radioactivity.

A second-tier sampling plan will be developed depending on the results of the first-tier sampling events. The second-tier sampling event will be designed to meet specific data requirements for the selected disposition scenario. The LEHR data quality objectives and waste and material certification process are detailed in the following sections of the Radioactive Waste Management Plan (WA, 2001b):

- Chapter 8;
- Standard Operating Procedure (SOP) 35.1, Waste Certification for Off-Site Disposal; and,
- SOP 35.2, Waste Characterization for Off-Site Shipment.

## 1.1 Removal Action Waste Generation

### 1.1.1 Asphalt

During the WDPs RA approximately 650 cubic yards (cu yd) of asphalt were excavated from Aisles 1, 2, 4, 5, 6, 7, and 8 of the WDPs and transported to a lined stockpile in the former Cobalt-60 Field storage area (Table 1). The asphalt was crushed and homogenized as part of the removal and transportation process. In addition, residual asphalt stored in the former Cobalt-60 Field from previous decontamination and decommissioning activities (legacy) was processed and combined with this waste stream. Radioactive analysis of screening samples collected and analyzed in the LEHR on-site laboratory indicates that the material does not contain radioactivity at levels above site cleanup goals, so the material is currently being managed as non-radioactive, pending review of analytical results generated by this plan.

Asphalt from Aisle 3 of the WDPs was previously characterized and is known to contain chlordane contamination. This material was sampled, excavated and packaged prior to commencement of the WDPs RA and is not addressed in this SAP.

### 1.1.2 Gravel

Prior to WDPs RA activities, a composite gravel sample was collected from each dog pen and analyzed on site for radium-226 (Ra-226) and off site for strontium-90 and gross alpha/beta. Results from this activity guided the removal and segregation of approximately 1,725 cu yd of dog pen gravel into three stockpiles. The three piles were mechanically sifted to segregate the 650 cu yd of clean soil that were over-excavated during the gravel removal. Radioactive analysis of gravel screening samples analyzed in the LEHR on-site laboratory indicates that the gravel material does not contain radioactivity at levels above site cleanup goals, so the material is currently being managed as non-radioactive pending review of analytical results generated by this plan.

### 1.1.3 Concrete

Approximately 635 cu yd of concrete were removed during the WDPs RA. The waste consists of dog pens interior curbing, perimeter curbing, fence post mounts and sidewalk slabs. In addition, residual concrete stored in the former Co-60 Field from previous decontamination and decommissioning activities (legacy) was processed and combined with this waste. Approximately 750 cu yd of concrete were placed into storage in the WDPs (Table 1). Radioactive analysis of screening samples collected and analyzed on site and off site indicates that the material contains added radioactivity, so the concrete is currently being managed as low-level radioactive waste pending review of analytical results generated by this plan.

#### *1.1.4 Other Miscellaneous Material/Waste*

Approximately 40 cu yd of debris (consisting of wood from a felled tree, metal, personal protective equipment [PPE] and high-density polyethylene sheeting) were generated during the WDPs RA (Items 6 to 11, Table 1). This material is currently being managed as low-level radioactive waste and will not be directly sampled. Process knowledge and analytic data generated from this SAP or associated WDPs RA will be used to certify this debris and determine disposition.

### **1.2 Sampling Strategy**

LEHR staff will collect samples from sample locations that were determined by random number generation. Samples will be shipped off site to General Engineering Laboratories (GEL) in Charleston, South Carolina for analysis. This strategy will provide representative samples based on the homogenization of the waste and material and the assignment of random sample locations. The stockpiles consist of waste and material segregated by type (asphalt, gravel and concrete) that were completely mixed during the excavation, crushing, sorting and transfer process. In addition, knowledge of the dog pen operational history indicates that the levels and types of contamination are consistent through the waste or material type.

A two-dimensional grid system was generated and superimposed on each stockpile (Figures 1 through 5). The stockpiles were divided into sections equal to or less than 200 cu yd. A grid system was established over each of the 200-cu yd sections. Each grid unit was assigned consecutive numbers and a random number generator was used to select four random grid units for composite sample collection. One four-point composite sample will be collected per 200 cu yd of waste and/or material. A minimum of two samples and a duplicate sample will be collected for each stockpile. Specific sample locations, sample frequency, sample volumes and sample suites are detailed in Table 1. All samples will be analyzed for radiological and chemical suites and 10% of the samples will be analyzed for the disposal suite as shown in Table 1.

## 2. SAMPLING PROCEDURES

### 2.1 Referenced Procedures and Documents

Sample collection, handling, packaging, storage and shipping will be conducted in accordance with the following documents and LEHR SOPs (WA, 2001c):

- Dog Pens RA Work Plan (WA, 2001a);
- Radiation Protection Plan (WA, 1999);
- Final Quality Assurance Project Plan (WA, 2000);
- SOP 1.1, Chain-of-Custody;
- SOP 2.1, Sample Handling, Packaging and Shipping;
- SOP 6.1, Sampling Equipment and Well Material Decontamination;
- SOP 17.1, Sample Labeling;
- SOP 17.2, Sample Numbering;
- SOP 18.1, Field QC Sampling;
- SOP 19.1, On-Site Sample Storage; and,
- SOP 20.1, Sample Containers, Preservation and Holding Times.

### 2.2 Stockpile-Specific Sample Instructions

Stockpile-specific sample instructions are detailed in Table 1 and Figures 1 through 5. The information shown in the table and figures include:

- stockpile numbers;
- stockpile storage locations;
- stockpile configurations;
- stockpile grid systems;
- sample frequencies;
- sample locations;
- duplicate sample locations;
- sample nomenclature;
- sample volumes;
- sample containers; and,
- requested analysis suites.

Samples will be collected from the specified grid section of the 200-cu yd stockpile segments and will be composited in the field in a stainless steel bowl. The composited sample will then be labeled and placed into appropriate sample containers as specified in Table 1. Because some of the

waste and material from the specified sample locations may be too large to fit into standard sample containers, rock hammers or other suitable hand tools may be used to break the waste matrix into acceptable pieces. Extra sample volume will be returned to the 200-cu yd stockpile section of origin. Sample equipment will be decontaminated between 200-cu yd stockpile sections. An example of the chain-of-custody (COC) that will be used is provided as Attachment 1. Required detection limits are provided in Table 2.

### **2.3 Volatile Organic Compound Specific Sample Instructions**

Volatile organic compound (VOC) composite samples will be collected using separate containers at each of the four composite points. The sample containers will be labeled and shipped to the laboratory under COC. The laboratory will composite the samples prior to analyzing them for VOC constituents following EPA analysis Method 8260/5030.

### **2.4 Quality Assurance/Quality Control Samples**

Duplicate (split) samples will be collected at a rate of 10%, with at least one duplicate sample collected per stockpile. Duplicate sample locations are listed in Table 1. Sample equipment will be decontaminated between sample locations (200-cu yd segments). One equipment rinseate sample will be collected to validate that the sample equipment is properly decontaminated and not cross-contaminating samples. One soil QC blank will be collected to validate whether the soil matrix is becoming contaminated during sample collection or shipment. The soil QC blank preparation procedure is described in Appendix A. Three trip blanks prepared by GEL will be sent with each sample cooler to ensure that VOCs are not introduced into the sample matrix during transportation and handling. Trip blanks will be assigned unique identification numbers. The trip blanks will be associated with each cooler and samples in the log book. Trip blanks will be listed on the COC and VOC analysis will be requested.

## **3. WASTE MANAGEMENT**

### **3.1 Investigation-Derived Waste**

A small quantity of waste will be generated during this activity, consisting primarily of used PPE generated during concrete stockpile sampling. This waste will be bagged and added to waste packages containing WDPs RA-generated PPE. Sample equipment decontamination water will be distributed over the stockpile where the samples originated.

### **3.2 Waste and Material Tracking System**

Waste and Material Tracking System updates will be completed any time a waste/material package is sampled or altered in accordance with SOP 34.5, Waste and Material Tracking System. Alterations may include:

- addition of waste;
- change in storage area, or
- overpacking.

## 4. HEALTH AND SAFETY

All sampling and analysis activities will be conducted in accordance with the following LEHR documents:

- Dog Pens Removal Action Work Plan (WA, 2001a);
- LEHR Radiation Protection Plan (WA, 1999); and
- LEHR Project Health and Safety Plan (WA, 2001d).

Sampling activities will be conducted under the supervision of the Site Health and Safety Officer, the Radiation Safety Officer, the Radiation Control Technician and the Site Coordinator. A Hazardous Work Permit (HWP) was prepared for processing and sampling concrete generated during the WDPs RA and will be used by the sampling crew when collecting the concrete samples. The HWP will address all chemical, radiological and physical hazards. Based on analytical data, process knowledge and site monitoring data, the LEHR Project Health and Safety and Radiation Control Managers previously determined that no HWP is required for handling and sampling the asphalt and gravel waste/material.

## 5. REFERENCES

- Weiss Associates (WA), 1999, Radiological Protection Program for the Laboratory for Energy-Related Health Research, University of California, Davis, November, Rev. 3.
- WA, 2000, Final Quality Assurance Project Plan for the Laboratory for Energy-Related Health Research, University of California, Davis, June, Rev. 3
- WA, 2001a, Dog Pens Removal Action Work Plan for the Energy-Related Health Research, University of California, Davis, June, Rev. 0.
- WA, 2001b, Radioactive Waste Management Plan for the Energy-Related Health Research, University of California, Davis, June, Rev. 0.
- WA, 2001c, Final Standard Operating Procedures for the Environmental Restoration/Waste Management Laboratory for Energy-Related Health Research, University of California, Davis, September.
- WA, 2001d, Project Health and Safety Plan for the Laboratory for Energy-Related Health Research, University of California, Davis, September, Rev. 5.

## **TABLES**

Table 1. Western Dog Pens Removal Action Waste and Material Sampling and Analysis Protocols

Item	LEHR Package	Package Type	Description	Volume (cubic yards)	Storage Location	Sample ID	Sample Location	Sample Strategy	Containers	Required Analysis
1	LEHR1684	Stockpile	Concrete	743	WDPs Aisle 8	CWWDP003	See Figure 1	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP004	See Figure 1	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP005	See Figure 1	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP006 <sup>a</sup>	See Figure 1	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP007 <sup>a</sup>	See Figure 1	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
2	LEHR1658	Stockpile	Asphalt	646	Co-60 Field	CWWDP008	See Figure 2	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP009	See Figure 2	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP010	See Figure 2	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP011 <sup>a</sup>	See Figure 2	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP012 <sup>a</sup>	See Figure 2	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS

Table 1. Western Dog Pens Removal Action Waste and Material Sampling and Analysis Protocols (continued)

Item	LEHR Package	Package Type	Description	Volume (cubic yards)	Storage Location	Sample ID	Sample Location	Sample Strategy	Containers	Required Analysis
3	LEHR1686	Stockpile	Gravel	318	WDPs, Aisle 7	CWWDP013	See Figure 3	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP014 <sup>a</sup>	See Figure 3	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP015 <sup>a</sup>	See Figure 3	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP016	See Figure 3	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
4	LEHR1687	Stockpile	Gravel	300	WDPs, Aisle 7	CWWDP017	See Figure 4	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP018 <sup>a</sup>	See Figure 4	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP019 <sup>a</sup>	See Figure 4	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP020	See Figure 4	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
5	LEHR1688	Stockpile	Gravel	1,104	WDPs, Aisle 7	CWWDP021	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP022	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS

Table 1. Western Dog Pens Removal Action Waste and Material Sampling and Analysis Protocols (continued)

Item	LEHR Package	Package Type	Description	Volume (cubic yards)	Storage Location	Sample ID	Sample Location	Sample Strategy	Containers	Required Analysis
5	LEHR1688 (continued)	Stockpile	Gravel	1,104	WDPs, Aisle 7	CWWDP023	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP024	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP025	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS
						CWWDP026 <sup>a</sup>	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
						CWWDP027 <sup>a</sup>	See Figure 5	4-pt composite	2 x 1-L poly 4 x 8-oz glass jar 4 x 4-oz glass jars	RS, CS, DS
6	LEHR1685	Stockpile	Metal/Wood	50	WDPs, Aisle 8	N/A	N/A	Process Knowledge	N/A	N/A
7	LEHR1656	B-25 Box	PPE	3	Co-60 Field	N/A	N/A	Process Knowledge	N/A	N/A
8	LEHR1657	B-25 Box	PPE	3	Co-60 Field	N/A	N/A	Process Knowledge	N/A	N/A
9	LEHR1681	B-25 Box	HDPE	3	Co-60 Field	N/A	N/A	Process Knowledge	N/A	N/A
10	LEHR1682	B-25 Box	HDPE	3	Co-60 Field	N/A	N/A	Process Knowledge	N/A	N/A
11	LEHR1683	B-25 Box	HDPE	3	Co-60 Field	N/A	N/A	Process Knowledge	N/A	N/A
12	N/A	N/A	Sampling Equipment Rinseate	N/A	N/A	WSWDPC01	N/A	1-pt	3 x VOA vial	VOC
13	N/A	N/A	Soil QC Blank	N/A	N/A	CWWDP028	N/A	1-pt	2 x 4-oz glass jar	VOC

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Table 1. Western Dog Pens Removal Action Waste and Material Sampling and Analysis Protocols (continued)

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**Note**

\* duplicate samples

**Abbreviations**

Co-60	Former Cobalt-60	L	liter	RS	radiological suite
CS	chemical disposal suite	N/A	Not Applicable	VOC	volatile organic constituents
DS	disposal suite	oz	ounce	WDPs	Western Dog Pens
HDPE	High-density polyethylene	PPE	Personal protective equipment		
ID	identification (number)	pt	point		

Table 2. Analytical Methods and Detection Limits for Western Dog Pens Removal Action/Waste Material

Sample Suite	Analysis	Required Detection Limit (pCi/g for radionuclides, mg/kg for Metals/General Chemistry, µg/kg for Organics)
Radiological	Gross Alpha/Beta (EPA 900.0)	1
	Gamma Emitters (Lab SOP)	
	Actinium-228 (Lab SOP)	0.1
	Bismuth-212 (Lab SOP)	0.1
	Bismuth-214 (Lab SOP)	0.1
	Cesium-137 (Lab SOP)	0.01
	Cobalt-60 (Lab SOP)	0.005
	Lead-210 (Lab SOP)	0.5
	Lead-212 (Lab SOP)	0.1
	Lead-214 (Lab SOP)	0.1
	Potassium-40 (Lab SOP)	1
	Radium-223 (Lab SOP)	2
	Radium-228 (Lab SOP)	0.1
	Thalium-208 (Lab SOP)	0.05
	Thorium-234 (Lab SOP)	0.5
	Radium-226 (Lab SOP)	0.1
	Strontium-90 (EPA 905.0)	0.05
	Americium-241 (Lab SOP)	0.01
	Plutonium-241 (Lab SOP)	0.5
	Uranium-233/234, 235, 238 (Lab SOP)	0.025, 0.01, 0.025, respectively
Thorium-228, 230, 232 (Lab SOP)	0.1, 0.05, 0.05, respectively	
Tritium (EPA 906.0)	1	
Carbon-14 (Lab SOP)	0.1	
Chemical	VOCs (SW-846 8260)	As specified in method
	SVOCs (SW-846 8270)	As specified in method
	Pest/PCBs (SW-846 8081)	As specified in method
	Title 22 Metals (SW-846 6010/7471)	
	Antimony	0.5
	Arsenic	2
	Barium	40
	Beryllium	1
	Cadmium	0.25
	Chromium (Total)	1
	Cobalt	10
	Copper	0.25
	Iron	20
	Lead	0.3
	Manganese	3
	Mercury	0.1
	Molybdenum	0.1

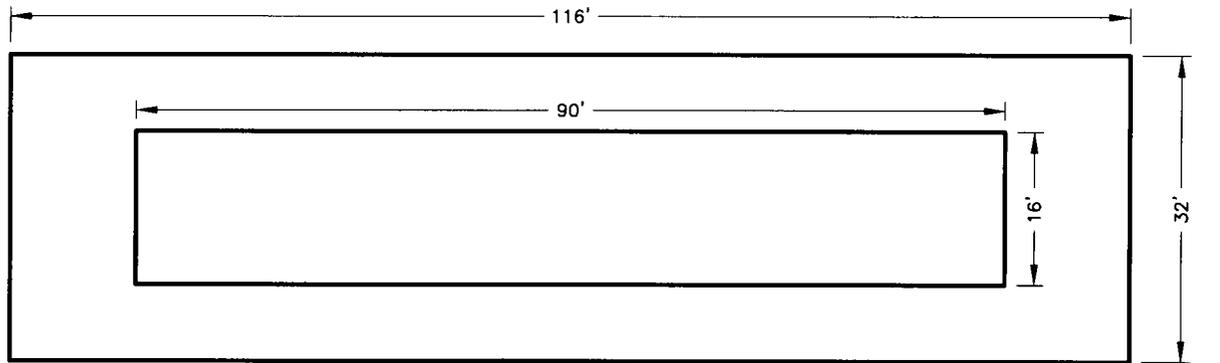
Table 2. Analytical Methods and Detection Limits for Western Dog Pens Removal Action/Waste Material (continued)

Sample Suite	Analysis	Required Detection Limit (pCi/g for radionuclides, mg/kg for Metals/General Chemistry, µg/kg for Organics)
Chemicals (continued)	Nickel	1
	Selenium	1
	Silver	0.1
	Thallium	0.5
	Vanadium	1
	Zinc	4
	Chromium (VI) (SW-846 3060A/7196)	0.05
	Nitrate (SW-846 300.0)	1
	Chromium and Nickel (SW-846 6010/1311)	10
	Chromium and Nickel (SW-846 6010/CA STLC)	10
Disposal	Reactive Cyanide (SW-846 7.3.3.2)	0.02
	Reactive Sulfide (SW-846 7.3.4.2)	0.02
	Paint Filter Test (SW-846 9095)	Not applicable
	pH (SW-846 9045)	0.01 (pH unit)
	Herbicides (SW-846 8151)	2.0
	Ignitability (SW-846 1020A or 1010)	Not applicable

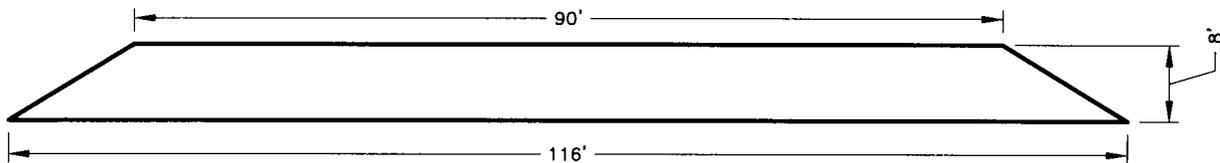
**Abbreviations**

CA	California
Ed.	Edition
EPA	United States Environmental Protection Agency
mg/kg	milligrams per kilogram
PCBs	polychlorinated biphenyls
pCi/g	picoCuries per gram
SOP	standard operating procedure
SVOC	semi-volatile organic compound
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity characteristic leaching procedure
VOC	volatile organic compound
µg/kg	micrograms per kilogram

## **FIGURES**



PLAN VIEW



FRONT VIEW

ESTIMATED STOCKPILE VOLUME = 743 CUBIC YARDS

A					B					C					D												
1	16	17	32	33	48	49	1	16	17	32	33	48	49	1	16	17	32	33	48	49	64	1	17	32	33	48	
2	15	31	34	47	50	2	15	18	31	34	47	50	2	15	31	34	47	50	63	2	15	18	31	34	47	50	
3	14	19	30	46	51	3	14	19	30	35	46	51	3	14	19	30	35	46	51	62	3	14	19	30	35	46	51
4	13	20	29	36	45	52	4	13	20	36	45	52	4	13	20	29	36	45	52	61	4	20	29	36	45	52	
5	12	21	28	37	44	53	5	12	21	28	37	44	53	5	12	21	28	37	44	53	5	21	28	37	44	53	
6	11	27	38	43	54	6	11	27	38	43	54	6	11	27	38	43	54	59	6	11	22	27	38	43	54		
7	10	23	26	39	42	55	7	10	23	26	39	42	7	10	23	26	39	42	55	58	7	10	23	26	39	42	55
8	9	24	25	40	41	56	8	9	24	25	40	41	56	8	9	24	40	41	56	57	8	9	24	25	40	41	56

PLAN VIEW WITH GRID

CWWDP003

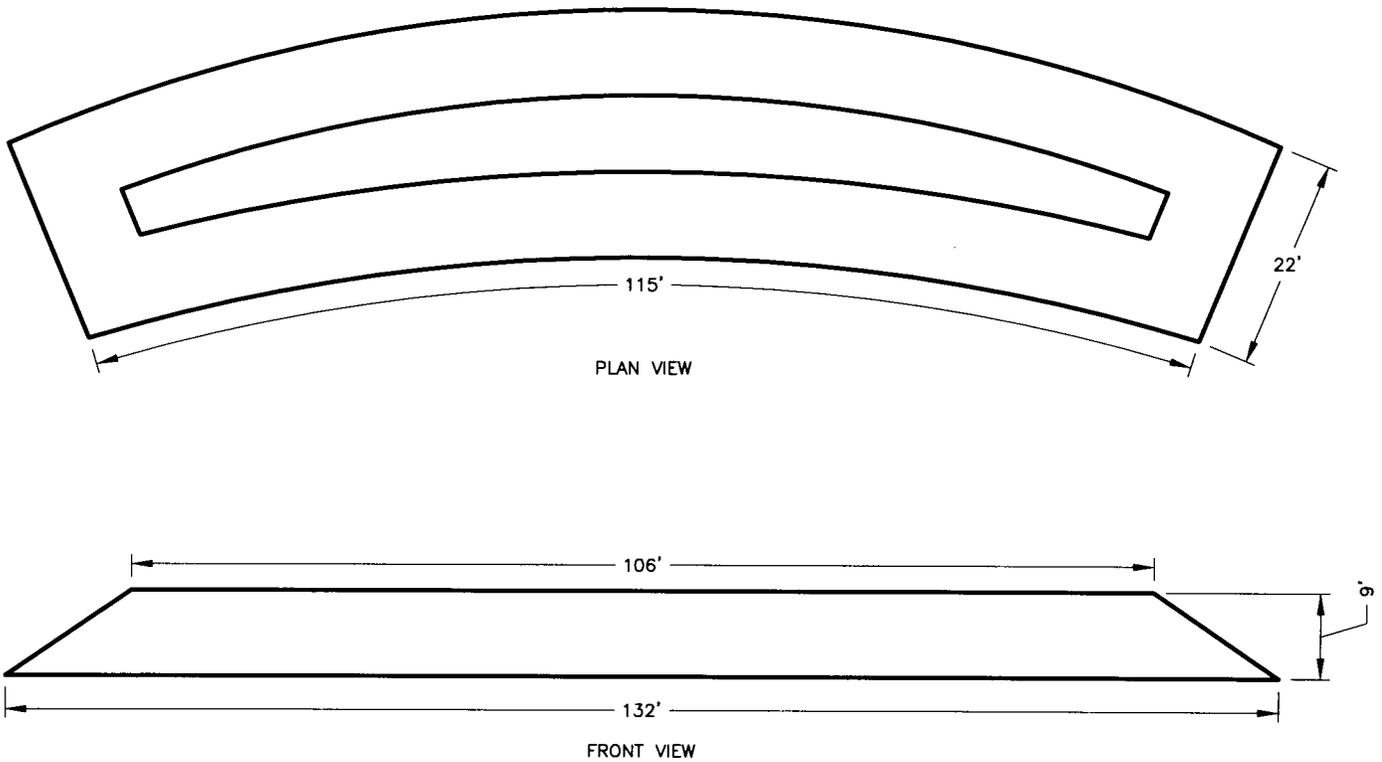
CWWDP004

CWWDP005

CWWDP006  
CWWDP007

A		B		C		D	
LEGEND							
	ORIGINAL SAMPLE COLLECTED FROM SHADED GRID LOCATION		ORIGINAL AND DUPLICATE SAMPLE COLLECTED FROM THE SAME SHADED GRID LOCATION				
	TWO ORIGINAL SAMPLES COLLECTED FROM THE SAME SHADED GRID LOCATION						

Figure 1. Western Dog Pens Removal Action Concrete Stockpile, LEHR 1684, Configuration and Sample Locations



ESTIMATED STOCKPILE VOLUME = 646 CUBIC YARDS

A								B								C								D								
1	12	13	24	25	36	37	48	1	12	13	24	25	36	37	48	1	12	13	24	25	36	37	48	49	1	12	13	24	25	36	37	48
2	11	14	23	26	35	38	47	2	11	14	23	26	35	38	47	2	11	14	23	26	35	38	47	50	2	11	14	23	26	35	38	47
3	10	15	22	27	34	39	46	3	10	15	22	27	34	39	46	3	10	15	22	27	34	39	46	51	3	10	15	22	27	34	39	46
4	9	16	21	28	33	40	45	4	9	16	21	28	33	40	45	4	9	16	21	28	33	40	45	52	4	9	16	21	28	33	40	45
5	8	17	20	29	32	41	44	5	8	17	20	29	32	41	44	5	8	17	20	29	32	41	44	53	5	8	17	20	29	32	41	44
6	7	18	31	30	43	42	43	6	7	18	19	30	31	42	43	6	7	18	19	30	31	42	43	54	6	7	18	19	30	31	42	43

PLAN VIEW WITH GRID

CWWDPO08

CWWDPO09

CWWDPO10

CWWDPO11  
CWWDPO12

A

B

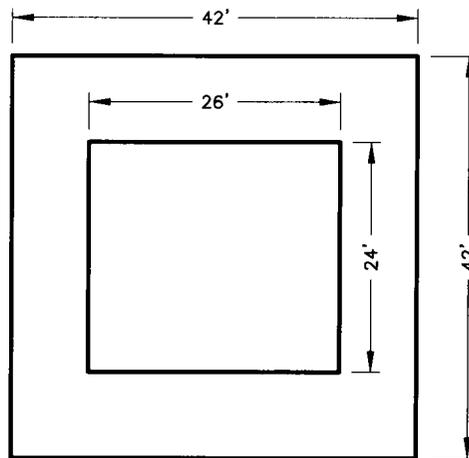
C

D

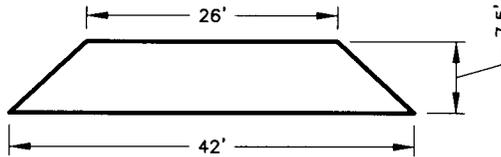
LEGEND	
	ORIGINAL SAMPLE COLLECTED FROM SHADED GRID LOCATION
	ORIGINAL AND DUPLICATE SAMPLE COLLECTED FROM THE SAME SHADED GRID LOCATION
	TWO ORIGINAL SAMPLES COLLECTED FROM THE SAME SHADED GRID LOCATION

Figure 2. Western Dog Pens Removal Action Asphalt Stockpile, LEHR 1658, Configuration and Sample Locations

WEISS ASSOCIATES



PLAN VIEW



FRONT VIEW

ESTIMATED STOCKPILE VOLUME = 318 CUBIC YARDS

A					B					C				
1	28	29	56	57	1	28	29	56	1	28	29	56	57	
2	27	30	55	58	2	27	30	55	2	27	30	55	58	
3	26	31	54	59	3	26	31	54	3	26	31	54	59	
4	32	53	60	4	25	32	4	25	32	53	60	5	24	
5	24	33	52	61	5	24	33	52	5	24	33	52	61	
6	23	34	62	6	23	34	51	6	23	34	51	62	7	
7	22	35	50	63	7	22	35	50	7	22	35	50	63	
8	21	36	49	64	8	21	36	49	8	21	36	49	64	
9	20	37	48	65	9	20	37	48	9	20	37	48	65	
10	19	38	47	66	10	19	38	47	10	19	38	47	66	
11	18	39	46	67	11	18	39	46	11	18	39	46	67	
12	17	40	45	68	12	17	45	12	17	40	45	68	13	
13	16	41	44	69	13	16	41	44	13	16	41	44	69	
14	15	42	43	70	14	15	42	43	14	15	42	43	70	

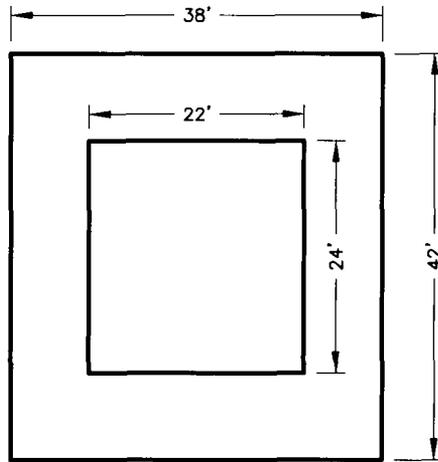
PLAN VIEW WITH GRID

CWWDPO13 CWWDPO14 CWWDPO16  
 CWWDPO15

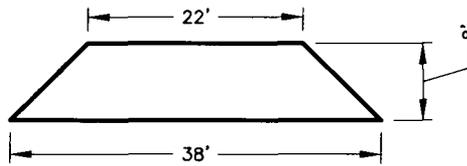
A B C

LEGEND	
	ORIGINAL SAMPLE COLLECTED FROM SHADED GRID LOCATION
	ORIGINAL AND DUPLICATE SAMPLE COLLECTED FROM THE SAME SHADED GRID LOCATION
	TWO ORIGINAL SAMPLES COLLECTED FROM THE SAME SHADED GRID LOCATION

Figure 3. Western Dog Pens Removal Action Gravel Stockpile, LEHR 1686, Configuration and Sample Locations

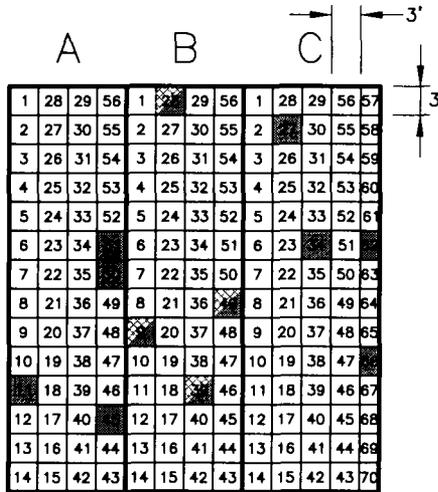


PLAN VIEW



FRONT VIEW

ESTIMATED STOCKPILE VOLUME = 300 CUBIC YARDS



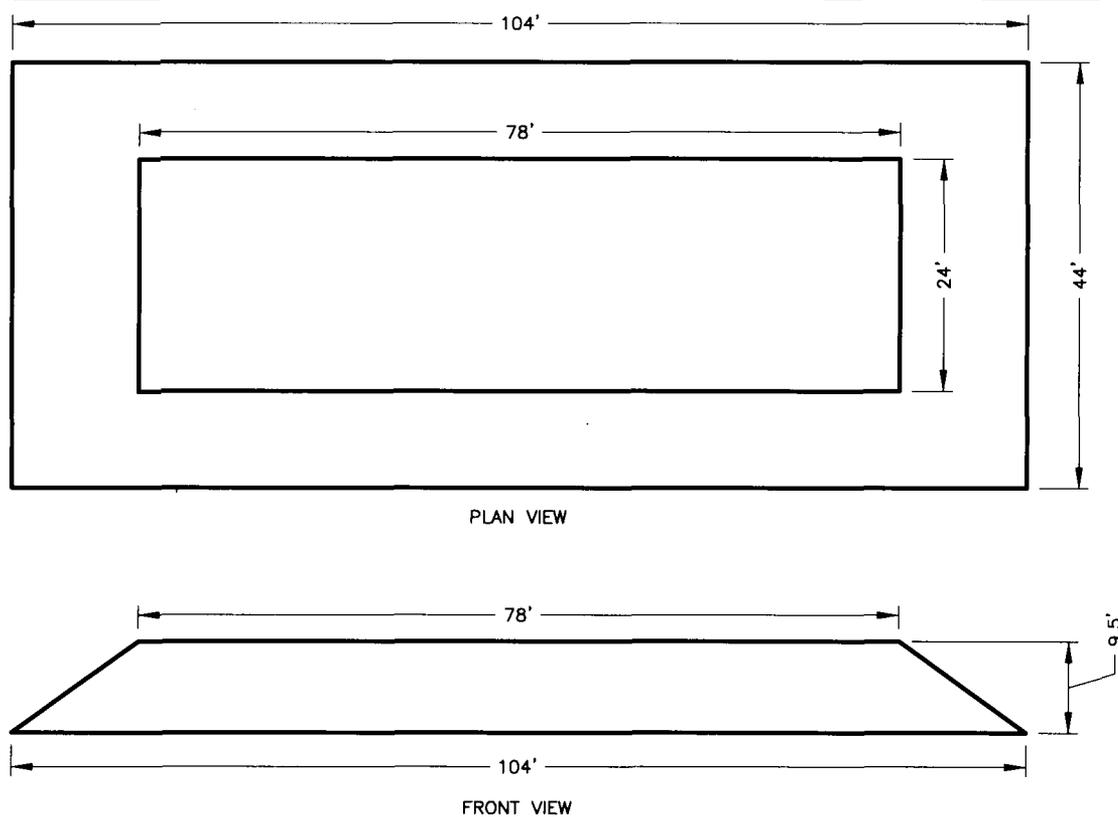
PLAN VIEW WITH GRID

CWWDPO17 CWWDPO18 CWWDPO20  
 CWWDPO19

A B C

LEGEND	
	ORIGINAL SAMPLE COLLECTED FROM SHADED GRID LOCATION
	ORIGINAL AND DUPLICATE SAMPLE COLLECTED FROM THE SAME SHADED GRID LOCATION
	TWO ORIGINAL SAMPLES COLLECTED FROM THE SAME SHADED GRID LOCATION

Figure 4. Western Dog Pens Removal Action Gravel Stockpile, LEHR 1687, Configuration and Sample Locations



ESTIMATED STOCKPILE VOLUME = 1104 CUBIC YARDS

A		B		C		D		E		F											
1	22	44	1	22	23	44	1	22	23	44	45	1	23	45	22	23	44				
2	21	24	43	2	21	24	43	2	21	24	43	46	2	21	24	43	46	2	21	24	43
3	20	25	42	3	20	25	42	3	20	25	42	47	3	20	25	42	47	3	20	25	42
4	19	26	41	4	19	26	41	4	19	26	41	48	4	19	26	41	48	4	19	26	41
5	18	27	40	5	18	27	40	5	18	27	40	49	5	18	27	40	49	5	18	27	40
6	17	28	39	6	17	28	39	6	17	28	39	50	6	17	28	39	50	6	17	28	39
7	16	29	38	7	16	29	38	7	16	29	38	51	7	16	29	38	51	7	16	29	38
8	15	30	37	8	15	30	37	8	15	30	37	52	8	15	30	37	52	8	15	30	37
9	14	31	36	9	14	31	36	9	14	31	36	53	9	14	31	36	53	9	14	31	36
10	13	32	35	10	13	32	35	10	13	32	35	54	10	13	32	35	54	10	13	32	35
11	12	33	34	11	12	33	34	11	12	33	34	55	11	12	33	34	55	11	12	33	34

PLAN VIEW WITH GRID

CWWDPO21      CWWDPO22      CWWDPO23      CWWDPO24      CWWDPO25      CWWDPO26  
 CWWDPO27

A      B      C      D      E      F

LEGEND	
ORIGINAL SAMPLE COLLECTED FROM SHADED GRID LOCATION	ORIGINAL AND DUPLICATE SAMPLE COLLECTED FROM THE SAME SHADED GRID LOCATION
TWO ORIGINAL SAMPLES COLLECTED FROM THE SAME SHADED GRID LOCATION	

Figure 5. Western Dog Pens Removal Action Gravel Stockpile, LEHR 1688, Configuration and Sample Locations

## **ATTACHMENT 1**

### **CHAIN-OF-CUSTODY FORM FOR WESTERN DOG PENS REMOVAL ACTION WASTE/MATERIAL SAMPLING**



## A. SOIL QUALITY CONTROL BLANK PREPARATION PROCEDURE

### Materials Needed:

- Quality Control (QC) Blank Soil,
- trowel,
- aluminum foil,
- bench or table top,
- heat lamps on common switch,
- digital thermometer,
- field notebook, and
- two, four-ounce (oz) glass sample containers with Teflon-lined lids.

### Preparation Steps:

- 1) Collect approximately eight oz of soil from the container labeled "QC blank soil" located on the table in the onsite lab.
- 2) Lay the soil evenly over a 1 ft x 1 ft square of aluminum foil and place it under the heat lamps.
- 3) Adjust the lamps so that the soil temperature stabilizes at approximately 115 degrees (°) Celsius (C),  $\pm 15^\circ$  (240° Fahrenheit [F],  $\pm 30^\circ$ ).
- 4) Shut the lamps off and measure the temperature of the soil with the digital thermometer after temperature stabilization. Record the temperature in a field notebook and turn the lamps back on.
- 5) Heat the soil for one hour.
- 6) After the one-hour period shut the lamps off and measure the temperature again. If the second temperature measurement is above 100° C (212° F), then record the temperatures in a field notebook and proceed to Step 7. If the second measurement is below 100° C (212° F), then adjust the lamps to achieve greater than 100° C for one hour and measure the beginning and ending temperatures. Record the temperatures in a field notebook.
- 7) Immediately transfer the soil into two 4-oz glass jars (from the same stock to be used for actual samples) and seal them with the Teflon-lined lids.
- 8) Give the sample an identification number that's not distinguishable from the rest of the soil samples to be collected. This is done so the blank will be blind for the laboratory.
- 9) Ship the Soil QC Blank with other soil samples on the same chain-of-custody form.