

DMSA OS-15
Solid Waste Management Unit (SWMU) Assessment Report

SWMU/AOC NUMBER: 226

DATE OF ORIGINAL SAR: 12/01/00

DATE OF SAR REVISIONS: 01/15/11

REGULATORY STATUS: SWMU

LOCATION: North of the C-745-B Cylinder Yard.

APPROXIMATE DIMENSION OR CAPACITY: 10,170 ft²

FUNCTION: Temporary storage of materials.

BRIEF HISTORY: This area was used for the storage of equipment during the Process Equipment Modification program from 1976 to 1979. Uranium hexafluoride (UF₆) tails cylinders also were stored here until summer of 2000.

This area was declassified by the United States Enrichment Corporation to the U.S. Department of Energy (DOE) as a DOE Material Storage Area (DMSA) on December 31, 1996. From July 2003 to September 2004, DOE characterized the materials in this DMSA in accordance with the DMSA Characterization/Remediation Plan, which was incorporated as Appendix E of the 2003 Agreed Order. The *Final Inventory and Characterization Report (FI/CR)* was submitted September 24, 2004, to the Kentucky Division of Waste Management (KDWM). KDWM approved the FI/CR on July 28, 2005. This SWMU was used as a staging/storage area for DMSA materials until 2007.

Per the 2003 Agreed Order, Resource Conservation and Recovery Act (RCRA) closure was not required for this SWMU, because no hazardous wastes were stored in this unit.

PRESENT OPERATIONAL STATUS: Inactive

DATES OPERATED: 1976 to 2007

SITE/PROCESS DESCRIPTION: An outside DOE storage area located within the Paducah Gaseous Diffusion Plant fenced security area.

WASTE DESCRIPTION: This SWMU currently is empty. The low-level waste formerly stored included 15 recycle process gas coolers, one booster process gas cooler, 58 UF₆ cylinders, a gas cylinder, a cart, and several small items such as signposts, a sheet of plastic, and a hard hat. All of the UF₆ cylinders had assays of less than one weight percent uranium-235 and were also classified as Nuclear Criticality Safety exempt reusable material. A detailed description of the characterized waste can be found in the FI/CR.

WASTE QUANTITY: Currently 0 ft³; waste quantity removed 22,585 ft³.

SUMMARY OF ENVIRONMENTAL SAMPLING DATA: Radiological surveys of the surface soil in 1995 indicated soil contamination [180,000 disintegrations per minute (dpm) beta/gamma and 90,000 dpm beta/gamma]. In April 2000, during a routine inspection, two of the stored UF6 cylinders were observed to have missing plugs. Green oxide material was observed on the ground under one of these cylinders. This material was sampled and found to have 1,452,500 dpm beta/gamma. Material and surrounding soil were excavated in November 2000.

On June 4, 2003, prior to entry for the DMSA characterization program, radiological surveys were conducted on the ground and several items formerly stored in the area. The highest total alpha and beta/gamma readings on the ground were 485.52 dpm/100 cm² and 68,523 dpm/100 cm², respectively. An area characterization (gamma walk-over surveys) was conducted on October 28, 2005, by Radiological Control Technicians. Thirteen locations within the DMSA boundary were surveyed. The highest beta/gamma reading was 2,711,500 dpm/100 cm² near the center of the DMSA. Attachment 1 presents the 2003 and 2005 radiological survey results. Attachment 2 presents the survey locations in relation to the SWMU boundary.

DESCRIPTION OF RELEASE AND MEDIA AFFECTED:

GROUNDWATER:	None known
SURFACE WATER:	None known
SOIL:	Up to 2,711,500 dpm/100 cm ² beta/gamma contamination on surface soil.
ECOLOGY AFFECTED: (i.e., threatened/endangered species)	None known

DOCUMENTATION OF NO RELEASE: See description of release and media affected above.

IMPACT ON OR BY OTHER SWMU/AOC: There is no evidence that this SWMU impacts or is being impacted by other SWMUs.

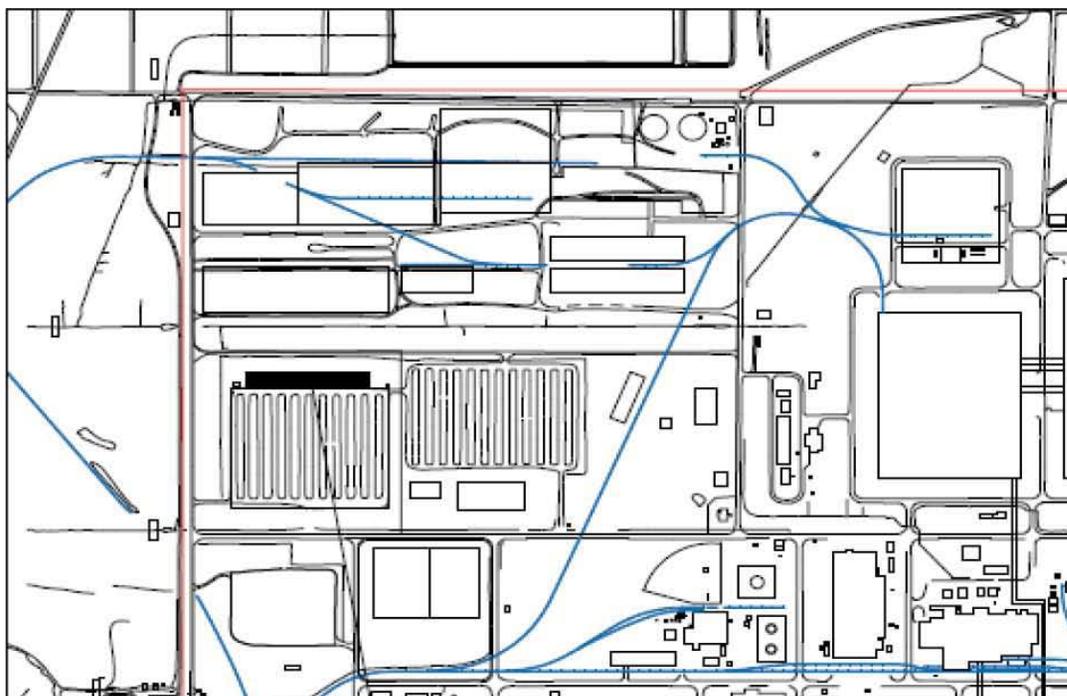
PRG COMPARISON: N/A

RFI NECESSARY: No. This unit is being proposed for no further action under RCRA because it no longer is active, has no evidence of releases of RCRA hazardous constituents to the environment, and is not believed to pose a risk to human health or the environment from RCRA hazardous constituents. Additionally, green oxide material observed on the ground under one of these cylinders likely was uranium salts (i.e., not RCRA hazardous) that were excavated in November 2000.

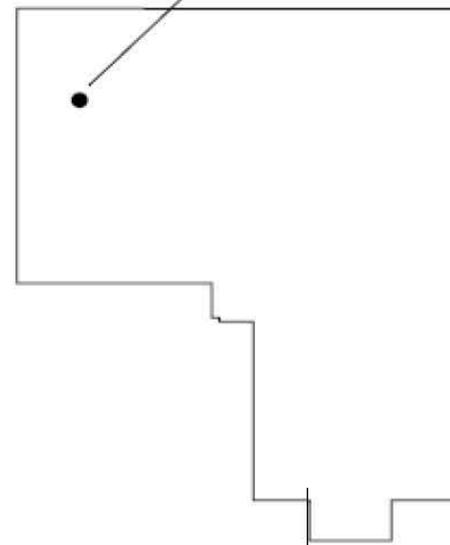
OPERABLE UNIT ASSIGNMENT: N/A



SWMU 226 (Looking East)
DMSA OS-15
August 26, 2008



SWMU 226



Paducah Gaseous Diffusion Plant

SWMU 226
Outside
DMSA-15

LEGEND

 OFFICIAL DOE DMSA'S PER 12/01/96
AGREEMENT BETWEEN DOE AND USEC



U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH/PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT

Outside Areas - SWMU 226



LATA Environmental Services
of Kentucky, LLC

ATTACHMENT 1
RADIOLOGICAL SURVEY RESULTS

Radiological Survey Form

Survey No.: 03-DM-0427-S Date: 6-4-03 Time: 1500 RWP NO: N/A

COPY

Location of Survey - General (Site/Bldg.)/Specific (Room/Area): DMSA o/s #15

Purpose of Survey: INITIAL ENTRY Material Description: SEE SAMPLE LOCATION.

Technician: <u>SAMUEL WATSON</u> Badge: <u>705300</u>		Technician: <u>RD PAYNE</u> Badge: <u>703117</u>	
Model #: <u>LUD 3</u> Serial #: <u>139271</u> Cal. due date: <u>10-29-03</u>	Probe Model #: <u>44-9</u> CF PL: <u>5.06</u> CF Plane: <u>32.63</u>	Model #: <u>LUD 12</u> Serial #: <u>94167</u> Cal. due date: <u>8-16-03</u>	Probe Model #: <u>43-5</u> CF PL: <u>7.14</u> CF Plane: <u>14.28</u>
Model #: N Serial #: N Cal. due date: N	Probe Model #: N CF PL: N CF Plane: N	Model #: A Serial #: A Cal. due date: A	Probe Model #: A CF PL: A CF Plane: A
Model #: <u>R020</u> Serial #: <u>0294</u> Cal. due date: <u>2-7-04</u>	α CF: <u>N/A</u> βγ CF: <u>N/A</u> LLD: <u>0.2 mR</u>	Model #: N Serial #: N Cal. due date: N	α CF: <u>N/A</u> βγ CF: <u>3.5</u> LLD: <u>0.2 mR</u>
<input type="checkbox"/> Tennelec Series 2 <input type="checkbox"/> Tennelec Series 5 <input type="checkbox"/> Berthold LB 770 <input type="checkbox"/> Protean Model IPC-9025: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If yes, see attached results)			

Smear or Item No.	Sample Location	BKGD α	Removable α dpm/100cm ²	BKGD α	Total α dpm/100cm ²	BKGD βγ	Removable βγ dpm/100cm ²	BKGD βγ	Total βγ dpm/100cm ²	Remarks
		Lc		Lc		Lc		Lc		
1	GROUND			0.4 21.04	42.84			115 815.19	13,998.27	 N A WESTERN MOST CYLINDER 0.6 mrem/hr on contact Y 40.2 mrem/hr @ 30 cm X EASTERN MOST CYLINDER all D on contact @ 30 cm X & B on contact DOSE: CLL on contact @ 30 cm X 1.75 mRAD/hr B on contact
2	GROUND				199.92				29,236.48	
3	GROUND				42.84				6,950.19	
4	CYLINDER				357.00				12,334.14	
5	CYLINDER	N			628.32	N			17,554.94	
6	TOP CYLINDER	A			299.88	A			242,179.86	
7	GROUND				<Lc				16,934.97	
8	GROUND				485.52				9,854.26	
9	"000" RECYCLE COOLER (EXTERIOR)				285.60				<Lc	
10	GROUND			0.4 21.04	71.40			115 815.19	10,735.27	

COMMENTS: ITEMS NOT SURVEYED 100%. AREA IS NOW POSTED AS A CONTAMINATION AREA. AREA IS INSIDE A USEC RADIATION AREA AND CONTAMINATED DEBRIS AREA.

Released to: N/A
PAD/RCO-081 (Page 1 of 3) Rev. 2 (5/03)

HP Supervisor Review: Walt [Signature] 6/5/03
Signature/ Date

Radiological Survey Continuation Form

Survey No: 03-DM-0437-5

COPY

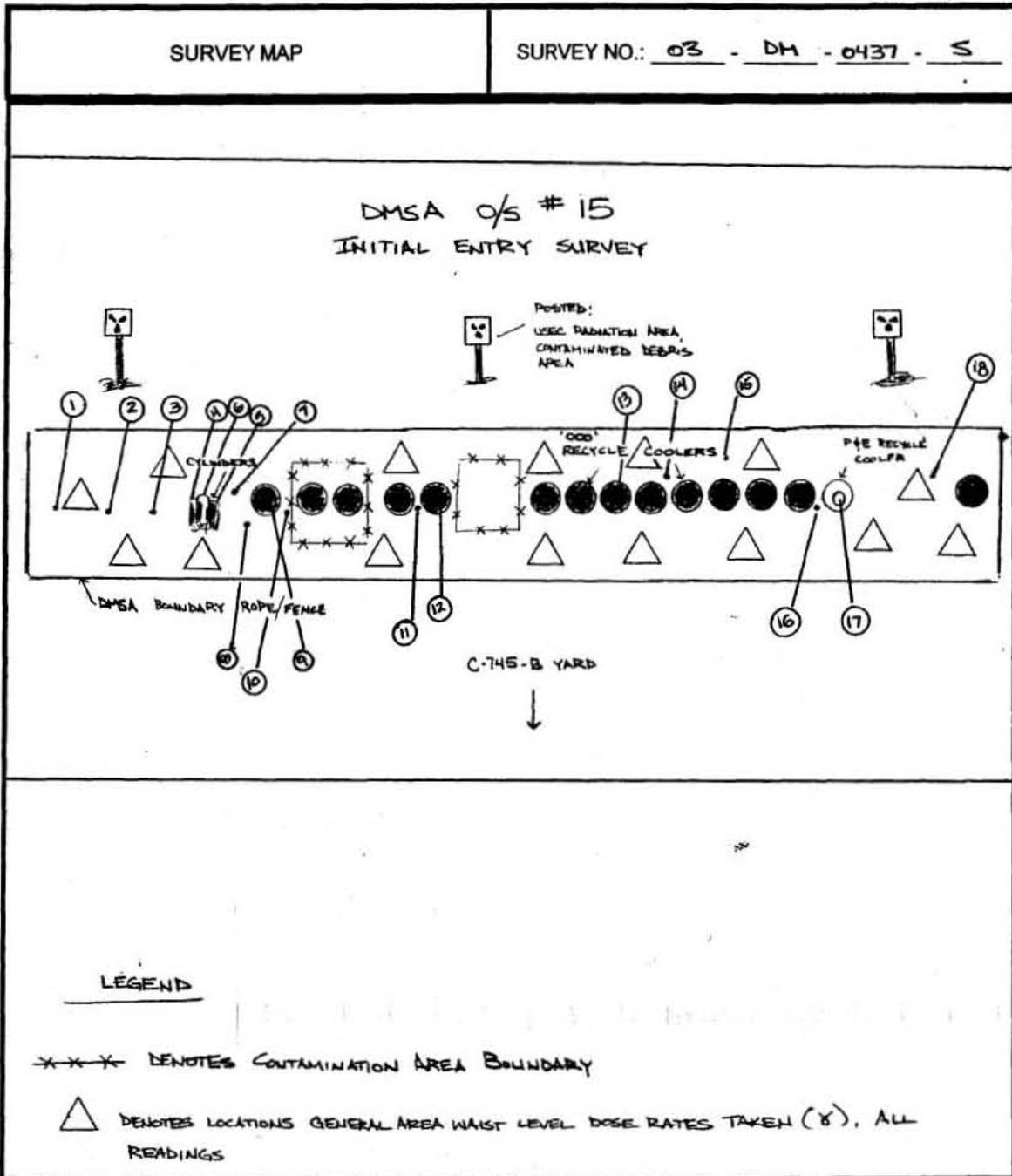
Smear or Item No.	Sample Location	BKGD	Removable	BKGD	Total	BKGD	Removable	BKGD	Total	Remarks
		α		α		β/γ		β/γ		
		L_c	α dpm/100cm ²	L_c	α dpm/100cm ²	L_c	β/γ dpm/100cm ²	L_c	β/γ dpm/100cm ²	
11	GROUND			0.4 21.04	42.84			115 85.19	6,428.11	
12	"000" RECYCLE COOLER (EXTERIOR)				228.48				<L _c	
13	GROUND				<L _c				9,292.55	N A
14	GROUND	N			128.52	N			24,048.31	
15	GROUND		A		85.68		A		12,268.88	
16	YELLOW SOLID MATERIAL				1,228.08				2,175,507.40	<0.2 mrem/hr T contact @ 30cm 41.3 mRAD/hr B contact
17	P&E RECYCLE COOLER (INTERIOR)				428.40				5,392,557.75	COULD NOT TAKE DOSE RATE DUE TO LOCATION OF LEVELS INSIDE COOLER
18	GROUND			0.4 21.04	<L _c			115 85.19	68,523.00	N A
						N				
						A				

COMMENTS/NOTES:
SEE ATTACHED MAP FOR APPROXIMATE SURVEY LOCATIONS.

RADIOLOGICAL SURVEY MAP FORM

COPY

SEC RADCON



RADIOLOGICAL SURVEY MAP FORM

COPY
SEC RADCON

SURVEY MAP	SURVEY NO.: <u>03 - DM - 0437 - S</u>
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DMSA 0/s # 15
POST-INITIAL ENTRY SURVEY

The diagram shows a rectangular area enclosed by a boundary of 'X' marks, labeled 'DMSA BOUNDARY ROPE/FENCE'. Inside this area, there are several items: 'COLUMNS' (represented by two vertical rectangles), a group of 'RECYCLE COOLERS' (represented by a row of black circles), and a 'PIE RECYCLE COOLER' (represented by a circle with a dot in the center). Three 'POSTED' signs are positioned around the perimeter. A label 'C-745-B YARD' with a downward arrow points to the area below the boundary. A legend at the bottom states: '*** DENOTES DMSA/CONTAMINATION AREA BOUNDARY.'

COPY

Radiological Survey Form

Page 1 of 2

Survey No.: 05-Dm-1370-S Date: 10-28-05 Time: 0900 RWP NO.: PAD-Dm-26052-Rec 0
 Location of Survey-General (Site/Bldg.): 0/S-15 Specific (Room/Area/Item): 0/S 15
 Purpose of Survey: Routine Special Off-Site Release Radioactive Shipment Receipt Radioactive Pre-Shipment Radioactive Shipment

Material Description: AREA CHARACTERIZATION

Technician: B Wheeler / Donald Badge: 635437 Technician: PA Badge:
 Technician: Donald Badge: 707715 Technician: Badge:
 Model# L-12 Serial# 126582 Cal Due Date: 8-10-06 Probe Model# 447 Bkgd (cpm): 100 CFPT: 5.53 CF Plane: 28.09
 Model# L-12 Serial# 130835 Cal Due Date: 1-7-06 Probe Model# 447 Bkgd (cpm): 100 CFPT: 5.57 CF Plane: 21.09
 Model# Serial# Cal Due Date: Probe Model# Bkgd (cpm): CFPT: CF Plane:
 Model# Serial# Cal Due Date: α Bkgd (cpm): B/γ Bkgd (cpm): αCF: B/γCF:
 Model# Serial# Cal Due Date: α Bkgd (cpm): B/γ Bkgd (cpm): αCF: B/γCF:

Laboratory Results Attached? Yes No (If yes, see attached results)

Item No.	Removable α dpm/100cm ²	Total α dpm/100cm ²	Removable B/γ dpm/100cm ²	Total B/γ dpm/100cm ²	LAW α dpm/wipe	LAW β dpm/wipe	Sample Location and/or Remarks	RCT Initials
L _c	NA	NA	NA	743.25	NA	NA	L _c	KSL
1				83,200			(see MAP)	ADG TD
2				450,269				
3				350,900				
4				158,354				
5				97,678				
6	NA			71,541		NA		
7				55,857				
8				35,983				
9				34,324				
10				33,336				
11				31,326				
12				27,753				
13				2,711,500				

Comments: L_c based on most restrictive meter used. The highest 13 readings showing all other significant lower.

Note: Any response to the instrument that is above the critical detection level(L_c) is considered to be above background.

Released to: NA
 PAD/RCO-081A Rev. 6 (5/05)

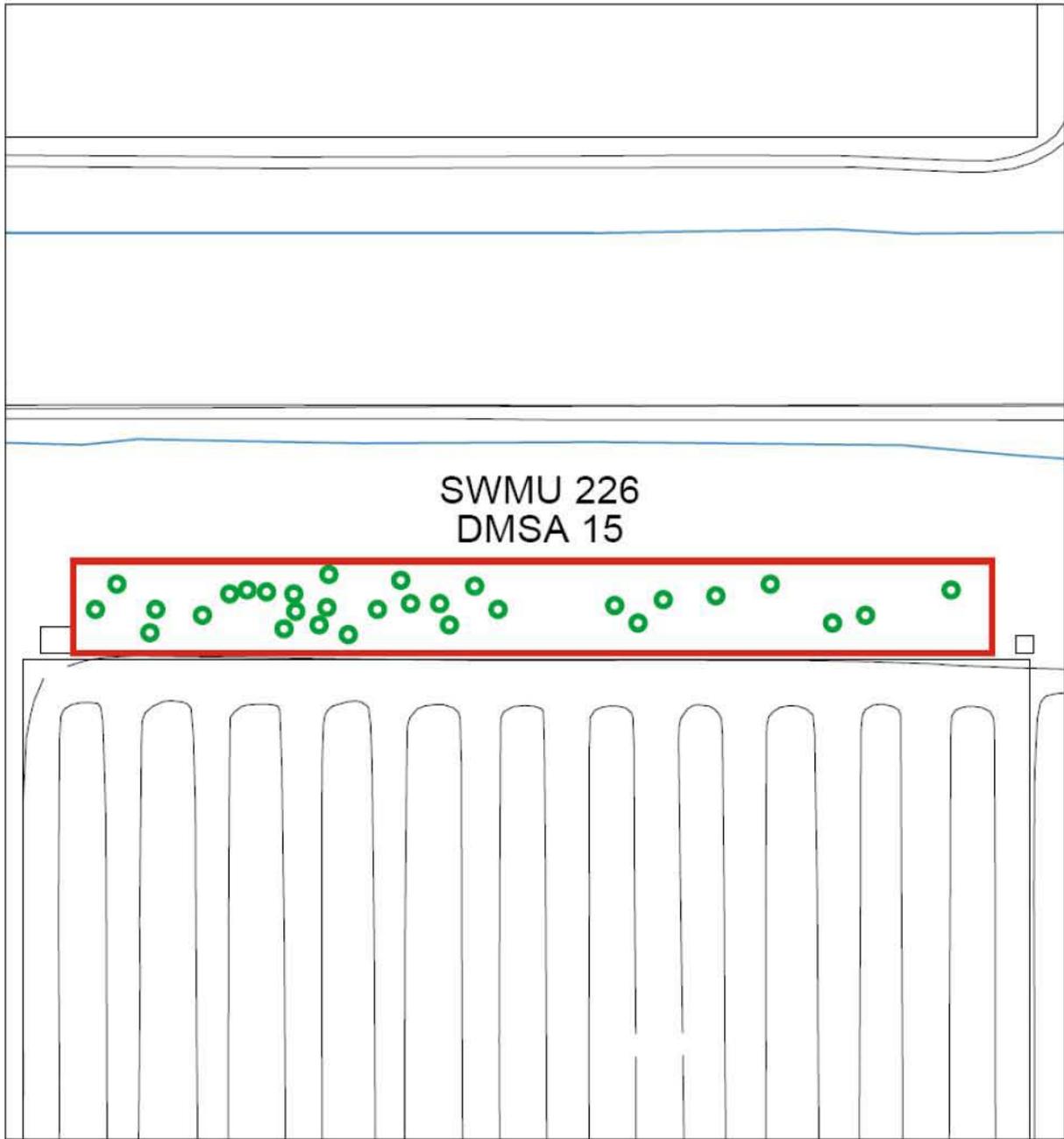
HP Supervisor Review: West 10/31/05
 Signature/Date

RADIOLOGICAL SURVEY MAP FORM

COPY

SURVEY MAP	SURVEY NO.: <u>05-Dm-1890-S</u>
Legend: A Air Sample Location ○ Smear □ Beta or Gamma Dose Rate △ Neutron Dose Rate ○ ~~~~~> LAW	
<p style="text-align: center;">0/5-15</p> <p style="text-align: center;">DNCA 1990 CA Boundary</p>	

ATTACHMENT 2
MAP ILLUSTRATING RAD SURVEY LOCATIONS
FOR SWMU 226



LEGEND

● Rad Survey Locations



U.S. DEPARTMENT OF ENERGY
DOE PORTSMOUTH/PADUCAH PROJECT OFFICE
PADUCAH GASEOUS DIFFUSION PLANT



LATA Environmental Services
of Kentucky, LLC

RAD Survey Locations for SWMU 226