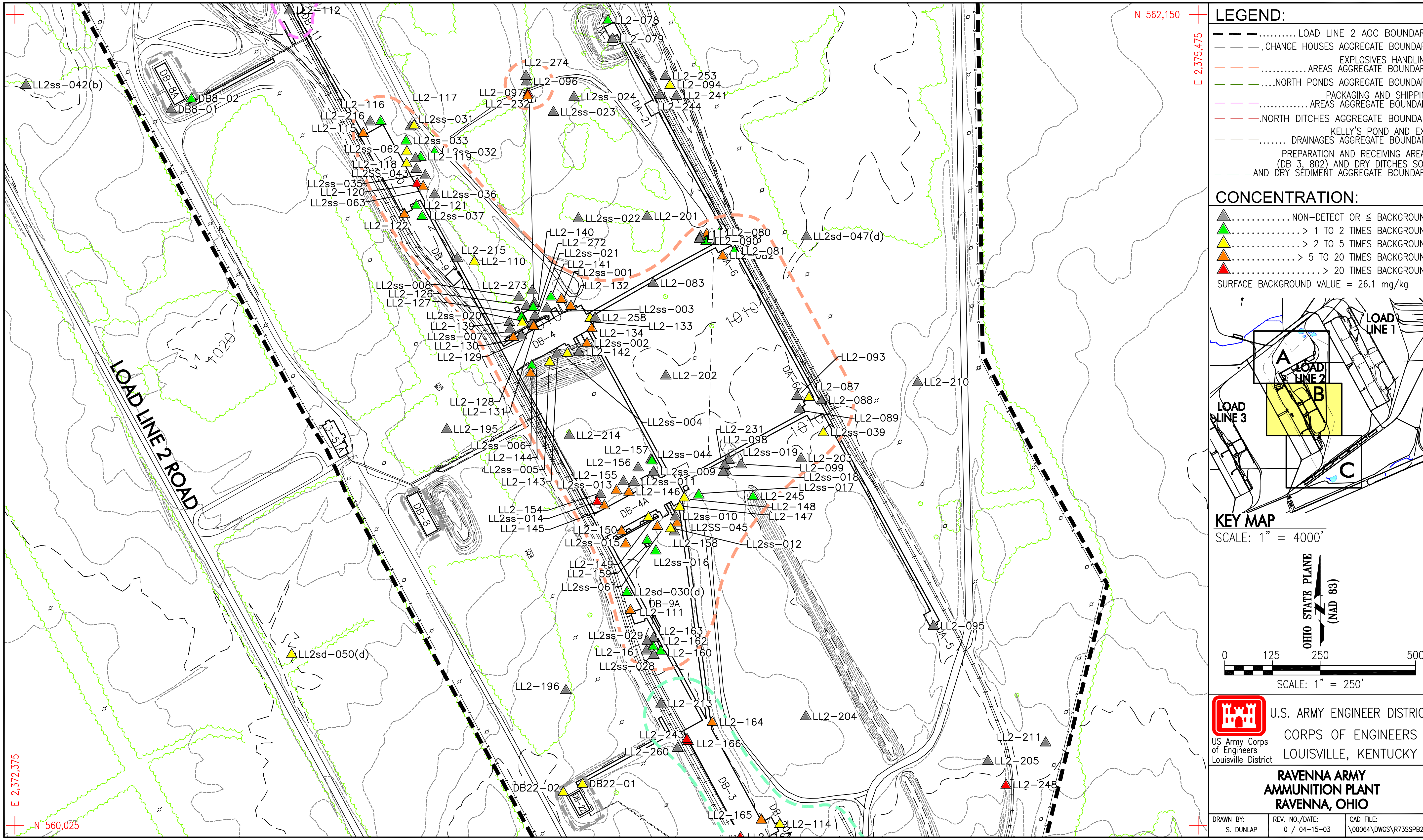
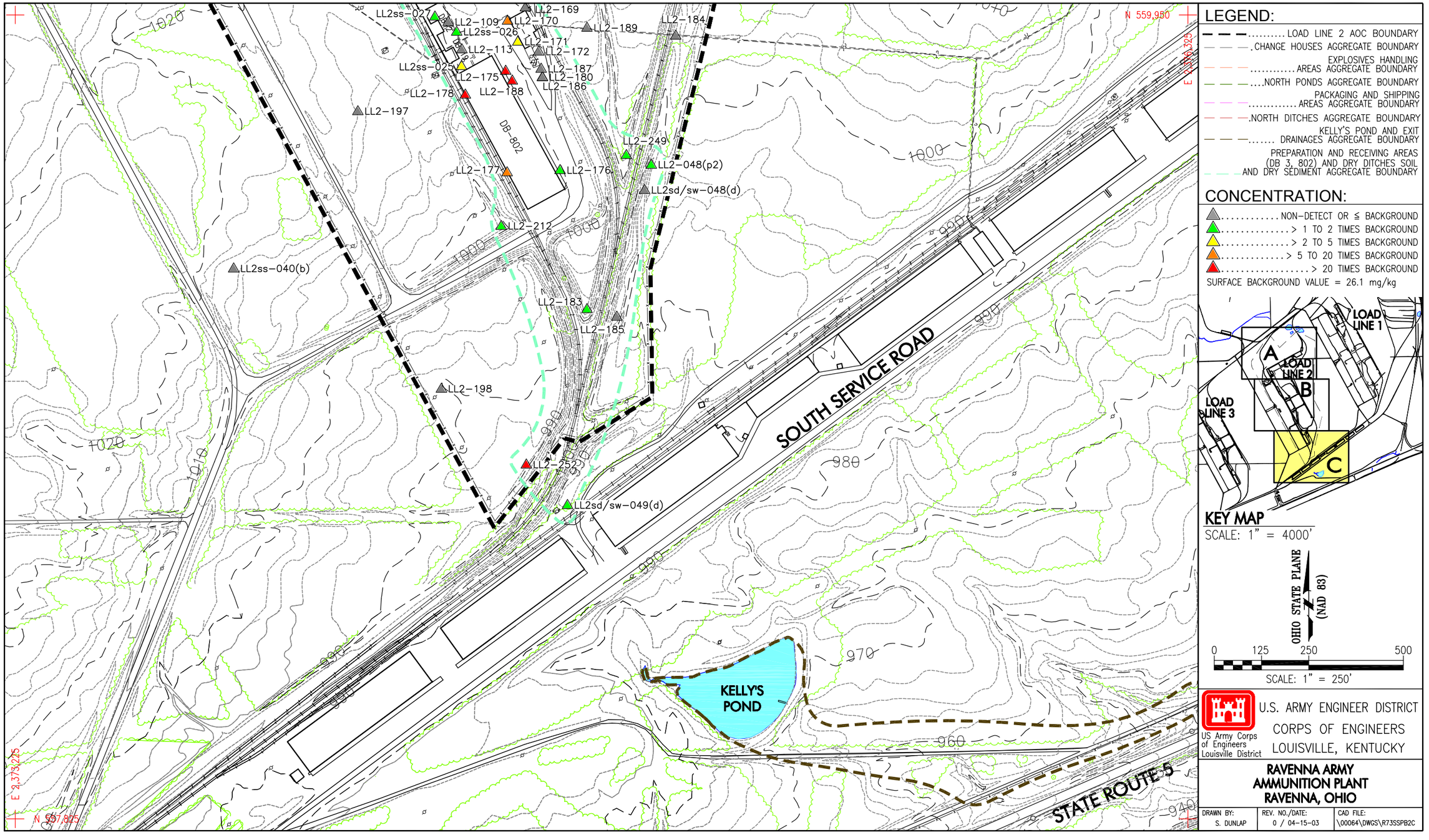


Figure 4-9. Distribution and Relative Concentration of Lead in Surface Soil at Load Line 2 - Central Section



LEGEND:

- LOAD LINE 2 AOC BOUNDARY
- CHANGE HOUSES AGGREGATE BOUNDARY
- EXPLOSIVES HANDLING AREAS AGGREGATE BOUNDARY
- NORTH PONDS AGGREGATE BOUNDARY
- PACKAGING AND SHIPPING AREAS AGGREGATE BOUNDARY
- NORTH DITCHES AGGREGATE BOUNDARY
- KELLY'S POND AND EXIT DRAINAGES AGGREGATE BOUNDARY
- PREPARATION AND RECEIVING AREAS (DB 3, 802) AND DRY DITCHES SOIL AND DRY SEDIMENT AGGREGATE BOUNDARY

CONCENTRATION:

- NON-DETECT OR ≤ BACKGROUND
- > 1 TO 2 TIMES BACKGROUND
- > 2 TO 5 TIMES BACKGROUND
- > 5 TO 20 TIMES BACKGROUND
- > 20 TIMES BACKGROUND

SURFACE BACKGROUND VALUE = 26.1 mg/kg

KEY MAP

SCALE: 1" = 4000'

OHIO STATE PLANE (NAD 83)

0 125 250 500

SCALE: 1" = 250'

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
S. DUNLAP	0 / 04-15-03	\00064\DWGS\R73SSPB2C

Figure 4-10. Distribution and Relative Concentration of Lead in Surface Soil at Load Line 2 - Southern Section

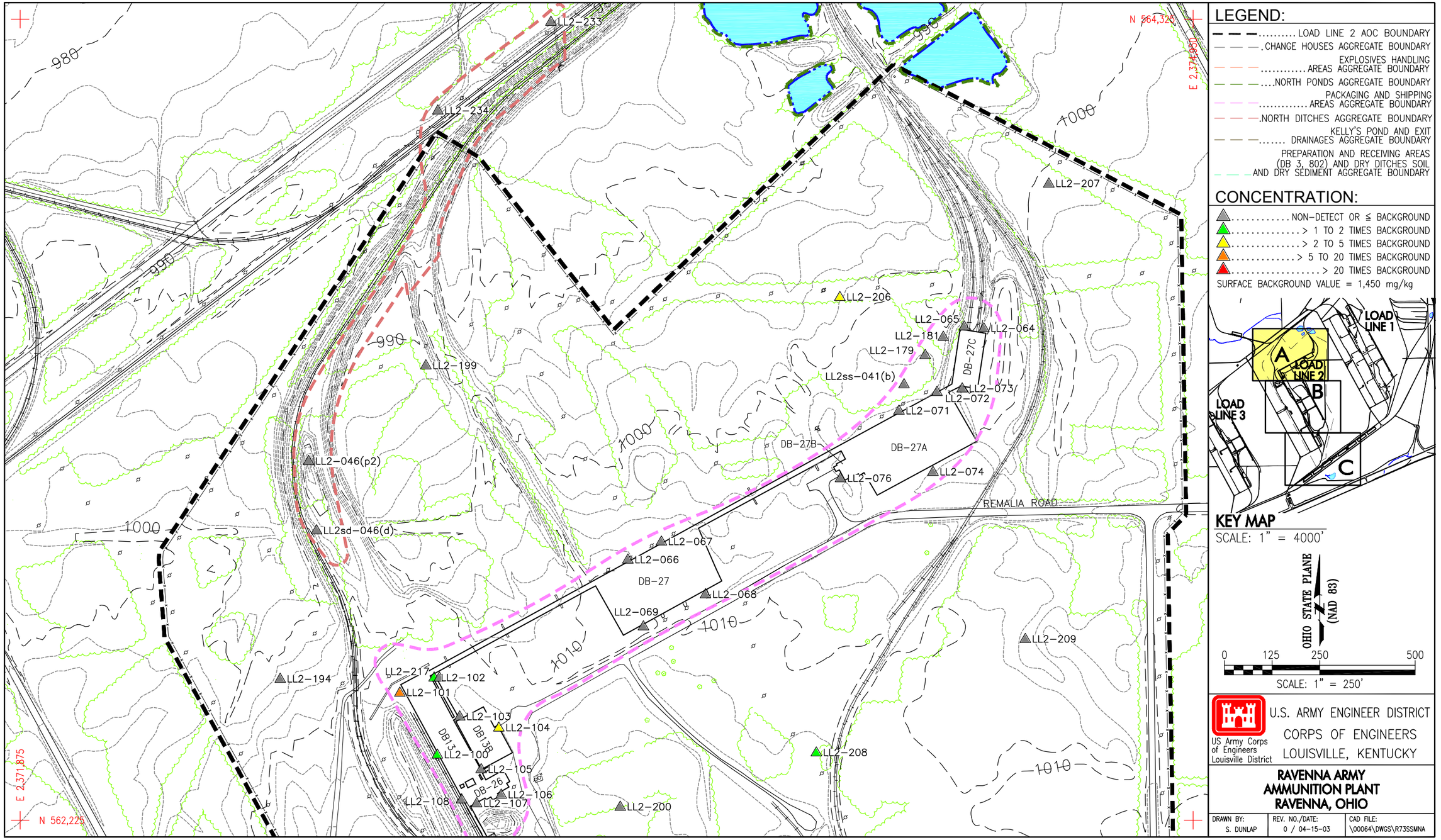


Figure 4-11. Distribution and Relative Concentration of Manganese in Surface Soil at Load Line 2 - Northern Section

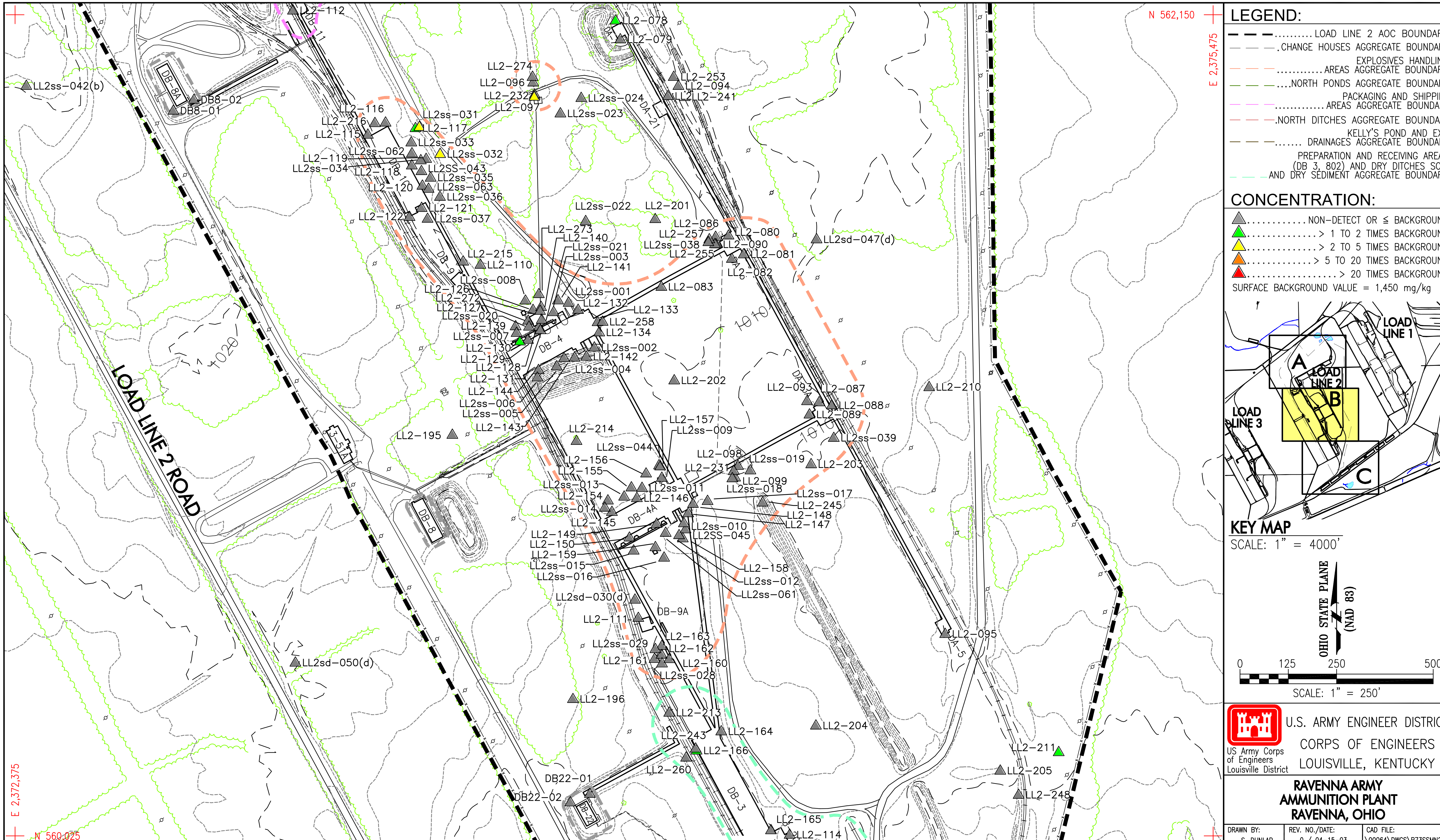
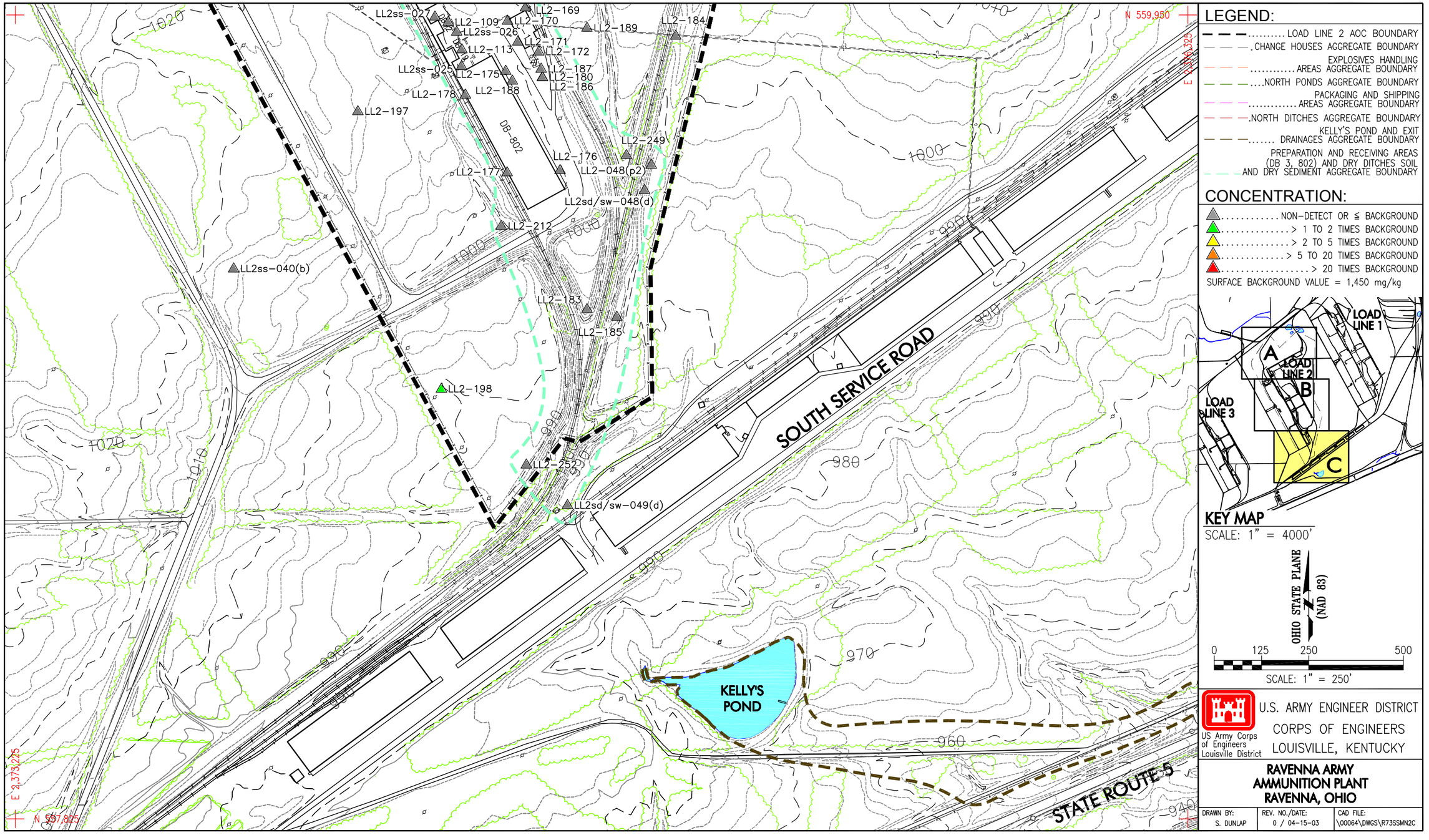


Figure 4-12. Distribution and Relative Concentration of Manganese in Surface Soil at Load Line 2 - Central Section



LEGEND:

- LOAD LINE 2 AOC BOUNDARY
- CHANGE HOUSES AGGREGATE BOUNDARY
- EXPLOSIVES HANDLING AREAS AGGREGATE BOUNDARY
- NORTH PONDS AGGREGATE BOUNDARY
- PACKAGING AND SHIPPING AREAS AGGREGATE BOUNDARY
- NORTH DITCHES AGGREGATE BOUNDARY
- KELLY'S POND AND EXIT DRAINAGES AGGREGATE BOUNDARY
- PREPARATION AND RECEIVING AREAS (DB 3, 802) AND DRY DITCHES SOIL AND DRY SEDIMENT AGGREGATE BOUNDARY

CONCENTRATION:

- NON-DETECT OR ≤ BACKGROUND
- > 1 TO 2 TIMES BACKGROUND
- > 2 TO 5 TIMES BACKGROUND
- > 5 TO 20 TIMES BACKGROUND
- > 20 TIMES BACKGROUND

SURFACE BACKGROUND VALUE = 1,450 mg/kg

KEY MAP
SCALE: 1" = 4000'

OHIO STATE PLANE (NAD 83)

0 125 250 500
SCALE: 1" = 250'

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
S. DUNLAP	0 / 04-15-03	\00064\DWGS\R73SSMN2C

Figure 4-13. Distribution and Relative Concentration of Manganese in Surface Soil at Load Line 2 - Southern Section

Maximum concentrations ranged from less than twice background (aluminum, cobalt, nickel) to 187 times the site-related background criteria (antimony). Arsenic, barium, beryllium, chromium, copper, manganese, and selenium all had maximum concentrations between 2 and 10 times the respective site-related background value. The maximum concentration for lead was 33 times background and for mercury was 27 times background. Zinc exceeded the site background criteria by 14 times.

Stations with the most number of inorganic constituents above background and/or the highest chemical concentrations tend to be located around the process buildings (Figures 4-5 through 4-13).

Preparation and Receiving Areas

Nineteen inorganic SRCs were identified for surface soil in the Preparation and Receiving Areas Aggregate (Table 4-3). Aluminum, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, and zinc each exceeded the respective site-background value in at least one sample. Cyanide, cadmium, hexavalent chromium, silver, and thallium were detected above the background criteria of zero (since they were not detected in the background dataset) and do not have site-related background criteria; thus, were considered to be SRCs. Table 4-18 shows the detected analytical concentrations by station for all the SRCs in the Preparation and Receiving Areas Aggregate.

Metals contamination in surface soil is wide-spread across the aggregate. Of 35 surface soil samples, 33% (12 samples) have detected concentrations of all SRCs of less than 2 times their respective background criteria. Only four samples had either no SRCs detected or only SRCs without background criteria (usually cadmium and thallium) detected. The most common inorganic SRCs in the Preparation and Receiving Area Aggregate include aluminum, arsenic, barium, chromium, lead, manganese, and zinc, each with 35 detections out of 35 samples, and cobalt, copper, and nickel, with 34 detections out of 34 samples (Table 4-3). Least frequently detected SRCs include silver, with 7 of 35 detections; antimony, with 14 of 34 detections; selenium, with 15 of 35 detections; hexavalent chromium, with 1 of 13 detections; and cyanide, with 3 of 7 detections. Figures 4-5 through 4-13 show the distribution and concentrations of arsenic, lead, and manganese, respectively, as representative of the pattern and intensity of inorganic contamination in surface soils at Load Line 2. These chemicals were detected based on highest frequency of detection and/or magnitude of concentration above background.

Maximum concentrations of the 19 SRCs for this aggregate occurred in 8 stations. Two or more maximum concentrations were detected at the following stations: LL2-188 had maximum concentrations of hexavalent chromium (81.9J mg/kg), lead (6,930 J mg/kg), mercury (2.4 mg/kg), silver (3.1 mg/kg), and zinc (7,280 mg/kg). LL2-167 had maximum concentrations of arsenic (38.8 mg/kg), barium (810 mg/kg), cadmium (50.2 mg/kg), and manganese (2,289 mg/kg). LL2-166 showed maximum values for aluminum (22,400 mg/kg), beryllium (2.6 mg/kg), and nickel (143 mg/kg). The maximum concentrations for antimony and cobalt occurred in LL2-243, and maximum concentrations of chromium and copper were found in LL2-175. LL2ss-026 (cyanide), LL2-183 (selenium), and LL2sd/sw-048(d) (thallium) were the other three stations having maximum concentrations of at least one SRC. Maximum concentrations ranged from less than twice background (aluminum, manganese) to over 600 times background (antimony, 688 times background). The maximum concentration of arsenic, barium, beryllium, cobalt, nickel, and selenium was in the range of 2.5 to 10 times the background criteria. The maximum for chromium was 109 times background; for copper was 186 times background; for lead was 264 times background; for mercury was 66 times background; and, for zinc, the maximum concentration was 118 times the site-related background criteria.

Stations with the most number of inorganic constituents above background and/or the highest chemical concentrations tend to be located in the vicinity of Buildings BD-3 and DB-802 (Figures 4-5 through 4-13).

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a]

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-048(p2)**	**LL2-109**	**LL2-113**	**LL2-114**	**LL2-164**
Sample ID		**LL21120**	**LL20805**	**LL20817**	**LL20820**	**LL20950**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	1.7 R	NA	NA	NA	NA
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	0.57 U
Aluminum	mg/kg	7,970 =	10,000 =	8,510 =	8,590 =	9,090 =
Antimony	mg/kg	1.7 UJ	1.1 UJ	1.1 UJ	0.55 J	4.8 J *
Arsenic	mg/kg	15 =	8.3 =	6.4 =	8.8 =	12.2 =
Barium	mg/kg	71.3 =	64.1 =	66.3 =	84.5 =	64.5 =
Beryllium	mg/kg	0.77 U	0.71 U	0.84 =	0.84 =	0.56 U
Cadmium	mg/kg	0.14 J *	0.57 U	0.059 J *	1.2 = *	1.1 = *
Chromium	mg/kg	13.5 =	16.4 =	11.4 =	14.6 =	16.3 =
Cobalt	mg/kg	12.4 = *	15.4 = *	6.7 =	6.9 =	7.9 =
Copper	mg/kg	23.6 = *	15.5 =	13.4 =	25.1 = *	19 = *
Lead	mg/kg	35 = *	18.3 =	22.3 =	79.5 = *	165 = *
Manganese	mg/kg	697 J	685 =	978 =	857 =	313 J
Mercury	mg/kg	0.04 J *	0.034 J	0.017 J	0.62 = *	0.11 U
Nickel	mg/kg	20.6 =	20.2 =	14 =	18.1 =	19.5 =
Selenium	mg/kg	1 J	2.3 U	2.2 U	0.97 U	0.68 J
Silver	mg/kg	0.87 U	0.57 U	0.54 U	0.55 U	0.57 U
Thallium	mg/kg	1.1 = *	0.23 U	0.22 U	0.27 = *	0.41 = *
Zinc	mg/kg	252 = *	41 =	40.7 =	159 = *	199 = *

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-164**	**LL2-165**	**LL2-166**	**LL2-167**	**LL2-169**
Sample ID		**LL21167**	**LL20953**	**LL20956**	**LL20959**	**LL20963**
Date		**07/28/2001**	**07/28/2001**	**07/27/2001**	**07/27/2001**	**07/24/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	NA	NA	NA	NA	NA
Inorganics						
Cyanide	mg/kg	0.57 U	0.56 U	NA	NA	NA
Aluminum	mg/kg	10,000 =	8,790 =	22,400 = *	6,980 =	15,400 =
Antimony	mg/kg	2.6 J *	1.4 J *	2 J *	192 J *	1.1 UJ
Arsenic	mg/kg	11.8 =	3.6 =	18 = *	38.8 = *	10.6 =
Barium	mg/kg	70.2 =	196 = *	358 = *	810 = *	111 = *
Beryllium	mg/kg	0.56 U	1.4 = *	2.6 = *	1 = *	1.8 = *
Cadmium	mg/kg	0.89 = *	4.1 = *	39.6 = *	50.2 = *	0.56 U
Chromium	mg/kg	15.4 =	35 = *	139 = *	291 = *	9.8 J
Cobalt	mg/kg	7.7 =	3.8 =	19.1 = *	23.7 = *	6.6 J
Copper	mg/kg	18.9 = *	76.4 = *	304 = *	514 = *	14 =
Lead	mg/kg	39.9 = *	363 = *	2,510 = *	2,320 = *	10.4 =
Manganese	mg/kg	356 J	1,060 =	1,770 = *	2,280 = *	502 =
Mercury	mg/kg	0.018 J	0.16 = *	0.43 = *	2 = *	0.043 J *
Nickel	mg/kg	19.8 =	13.3 =	143 = *	105 = *	16.1 =
Selenium	mg/kg	0.54 J	2.3 U	1.5 J *	3.5 J *	0.58 J
Silver	mg/kg	0.57 U	0.25 U	1.4 = *	0.9 = *	0.56 U
Thallium	mg/kg	0.44 = *	0.24 = *	0.69 = *	0.28 = *	0.44 = *
Zinc	mg/kg	66.6 = *	343 = *	4,580 = *	1,550 = *	48.1 =

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-170**	**LL2-171**	**LL2-172**	**LL2-175**	**LL2-176**
Sample ID		**LL20966**	**LL20969**	**LL20972**	**LL20977**	**LL20980**
Date		**07/24/2001**	**07/24/2001**	**07/24/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	NA	NA	NA	1.2 R	1.1 UJ
Inorganics						
Cyanide	mg/kg	NA	NA	NA	0.58 U	NA
Aluminum	mg/kg	10,000 =	7,260 =	12,400 =	9,060 =	8,440 =
Antimony	mg/kg	0.61 J	1.1 UJ	1.1 UJ	9.5 J *	1.1 UJ
Arsenic	mg/kg	10.9 =	10.3 =	16.1 = *	10.9 =	3.8 =
Barium	mg/kg	438 = *	88.7 = *	64.1 =	193 = *	111 = *
Beryllium	mg/kg	2.1 = *	0.6 =	0.7 =	1.1 J *	1 = *
Cadmium	mg/kg	3.3 = *	0.27 J *	0.55 U	6.2 = *	0.38 J *
Chromium	mg/kg	41.3 J *	25.6 J *	16.4 J	1,890 = *	8.8 =
Cobalt	mg/kg	4.8 J	6 J	11 J *	5.6 =	3 =
Copper	mg/kg	98.2 = *	29.4 = *	19.7 = *	3,280 = *	17.3 =
Lead	mg/kg	296 = *	75.9 = *	19.8 =	654 = *	40.1 = *
Manganese	mg/kg	675 =	661 =	421 =	785 J	1,050 =
Mercury	mg/kg	0.017 J	0.25 = *	0.11 U	0.85 = *	0.027 J
Nickel	mg/kg	20.6 =	17.6 =	25.3 = *	42.7 = *	9.7 =
Selenium	mg/kg	0.89 J	1.3 J	2.2 U	2.3 U	2.3 U
Silver	mg/kg	0.28 J *	0.56 U	0.55 U	0.58 = *	0.57 U
Thallium	mg/kg	0.57 = *	0.49 = *	0.51 = *	0.85 = *	0.23 UJ
Zinc	mg/kg	408 = *	212 = *	73.3 = *	974 = *	63.6 = *

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-177**	**LL2-177**	**LL2-178**	**LL2-180**	**LL2-183**
Sample ID		**LL20983**	**LL21004**	**LL20986**	**LL20992**	**LL21001**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/25/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 0**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	1.2 UJ	1.1 UJ	1.2 UJ	NA	3.4 UJ
Inorganics						
Cyanide	mg/kg	NA	0.56 U	NA	NA	NA
Aluminum	mg/kg	10,300 =	12,900 =	8,900 =	11,700 =	12,300 =
Antimony	mg/kg	1.8 J *	3.1 J *	0.84 J	1.1 UJ	3.4 UJ
Arsenic	mg/kg	12.1 =	11.3 =	14.2 =	12.1 =	16.8 = *
Barium	mg/kg	115 = *	170 = *	122 = *	77.5 =	121 = *
Beryllium	mg/kg	0.84 J	1.4 = *	0.73 J	0.72 =	0.83 U
Cadmium	mg/kg	1.2 = *	4 = *	9.2 = *	0.56 U	1.1 J *
Chromium	mg/kg	33.1 = *	65.5 = *	41.9 = *	17 J	103 = *
Cobalt	mg/kg	9.4 =	9.4 =	12.1 = *	8.4 J	8.5 =
Copper	mg/kg	382 = *	839 = *	1,510 = *	9.8 =	380 = *
Lead	mg/kg	229 = *	597 = *	2,190 = *	17.9 =	46.7 = *
Manganese	mg/kg	678 =	1,310 =	635 =	1,290 =	442 =
Mercury	mg/kg	0.12 = *	0.12 = *	0.33 = *	0.034 J	0.17 J *
Nickel	mg/kg	26.3 = *	30.4 = *	32.7 = *	13.9 =	28.4 = *
Selenium	mg/kg	2.5 U	0.85 J	0.41 J	0.46 J	5.2 J *
Silver	mg/kg	0.26 J *	0.96 = *	0.2 J *	0.56 U	1.7 U
Thallium	mg/kg	0.46 U	0.4 = *	0.32 U	0.55 = *	0.41 J *
Zinc	mg/kg	392 = *	908 = *	1,880 = *	50.7 =	188 = *

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-183**	**LL2-185**	**LL2-186**	**LL2-187**	**LL2-188**
Sample ID		**LL21002**	**LL21007**	**LL21010**	**LL21013**	**LL21016**
Date		**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**
Depth (ft)		**1 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	1.4 UJ	1.2 UJ	1 U	1.1 U	81.9 J
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	11,900 =	7,620 =	2,470 =	7,980 =	4,290 =
Antimony	mg/kg	1.4 UJ	1.2 UJ	1 UJ	1.1 UJ	7.1 J *
Arsenic	mg/kg	10.9 =	10.2 =	8 J	8.3 J	30 = *
Barium	mg/kg	62.7 =	63.1 =	13.3 J	54.2 J	413 = *
Beryllium	mg/kg	0.63 J	0.65 =	0.17 U	0.67 =	0.54 J
Cadmium	mg/kg	0.72 U	0.38 J *	0.52 U	0.55 U	2.9 J *
Chromium	mg/kg	32.8 = *	91.1 = *	4.3 J	17.4 J	887 = *
Cobalt	mg/kg	8.7 =	11.8 = *	3.3 J	7.7 J	19.5 = *
Copper	mg/kg	41 = *	73.7 = *	11.3 J	19.2 J *	636 = *
Lead	mg/kg	16.7 =	20.2 =	7.3 J	16.9 J	6,930 J *
Manganese	mg/kg	174 =	337 =	233 J	464 =	1,400 =
Mercury	mg/kg	0.028 J	0.12 U	0.1 R	0.011 J	2.4 = *
Nickel	mg/kg	24.4 = *	34 = *	8.4 J	19.2 J	97.4 = *
Selenium	mg/kg	2.9 U	2.5 U	2.1 U	2.2 U	12.1 U
Silver	mg/kg	0.72 U	0.61 U	0.52 U	0.55 U	3.1 = *
Thallium	mg/kg	0.22 J *	0.27 = *	0.15 J *	0.32 = *	0.52 J *
Zinc	mg/kg	65.9 = *	710 = *	52.9 =	58.7 =	7,280 = *

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-212**	**LL2-213**	**LL2-243**	**LL2-249**	**LL2-249**
Sample ID		**LL21052**	**LL21053**	**LL20834**	**LL21118**	**LL21170**
Date		**07/27/2001**	**07/27/2001**	**08/13/2001**	**07/30/2001**	**07/30/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	1.3 UJ	NA	NA	2.5 U	NA
Inorganics						
Cyanide	mg/kg	NA	NA	NA	NA	NA
Aluminum	mg/kg	7,040 =	8,680 =	8,080 =	7,620 =	11,600 =
Antimony	mg/kg	0.87 J	0.66 UJ	664 J *	2.5 UJ	2.3 UJ
Arsenic	mg/kg	16.4 = *	12.7 =	13.4 =	5.3 =	8.3 =
Barium	mg/kg	58.6 =	61 =	118 = *	67.6 =	101 = *
Beryllium	mg/kg	0.95 = *	0.7 =	0.75 J	0.47 U	0.75 J
Cadmium	mg/kg	0.63 U	0.58 U	3.4 J *	0.48 J *	0.77 J *
Chromium	mg/kg	20 = *	14.3 =	341 = *	10.7 =	16.4 =
Cobalt	mg/kg	13.1 = *	9.9 =	24.8 = *	7.8 =	12.8 = *
Copper	mg/kg	20 = *	15.3 =	56.1 = *	15 =	22.9 = *
Lead	mg/kg	50.4 = *	10.8 =	2,610 = *	46 = *	71 = *
Manganese	mg/kg	469 =	625 =	374 =	269 J	464 J
Mercury	mg/kg	0.028 J	0.12 U	0.094 J *	0.1 J *	0.11 J *
Nickel	mg/kg	34.6 = *	26.3 = *	23.2 = *	15.7 =	24.2 = *
Selenium	mg/kg	2.5 U	2.3 U	2.9 U	0.88 U	1.8 U
Silver	mg/kg	0.63 U	0.58 U	0.72 U	1.3 U	1.2 U
Thallium	mg/kg	0.38 = *	0.25 = *	0.76 = *	0.51 = *	0.65 = *
Zinc	mg/kg	71.3 = *	48.2 =	410 = *	100 = *	160 = *

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-252**	**LL2-260**	**LL2sd/sw-048(d)**	**LL2sd/sw-049(d)**	**LL2sd/sw-049(d)**
Sample ID		**LL21125**	**LL20954**	**LL2SD-048(D)-0142-SD**	**LL21123**	**LL21173**
Date		**07/30/2001**	**08/13/2001**	**08/20/1996**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 2**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab Composite**	**Grab**	**Field Duplicate**
Analyte	**Units**					
General Chemistry						
Chromium, hexavalent	mg/kg	1.4 U	NA	NA	1.2 UJ	NA
Inorganics						
Cyanide	mg/kg	NA	NA	0.11 U	NA	NA
Aluminum	mg/kg	8,160 =	4,280 =	10,000 =	6,260 =	7,360 =
Antimony	mg/kg	69.2 J *	1.2 UJ	0.33 U	4.5 J *	21.3 J *
Arsenic	mg/kg	11.8 =	4.5 =	14.3 =	8.6 =	28.8 = *
Barium	mg/kg	75.7 =	30.5 =	67.1 =	69 =	90.9 = *
Beryllium	mg/kg	0.61 J	0.31 J	1.2 = *	0.56 J	0.85 J
Cadmium	mg/kg	0.55 J *	0.15 J *	0.04 U	0.67 = *	1.6 J *
Chromium	mg/kg	137 = *	9.2 =	22.6 = *	17.3 =	99.3 = *
Cobalt	mg/kg	13.7 = *	3.7 =	12.2 = *	8.6 =	15.2 = *
Copper	mg/kg	76.8 = *	6.6 =	21.6 = *	29.1 = *	425 = *
Lead	mg/kg	656 = *	12.3 =	16 =	46.3 = *	150 = *
Manganese	mg/kg	701 J	343 =	493 =	904 =	1,860 J *
Mercury	mg/kg	0.22 = *	0.021 J	0.05 = *	0.025 J	0.019 J
Nickel	mg/kg	18 =	9.6 =	36 = *	22.9 = *	226 = *
Selenium	mg/kg	0.97 U	2.3 U	2.3 = *	2.4 U	12.7 U
Silver	mg/kg	0.72 U	0.59 U	0.21 U	0.59 U	0.63 U
Thallium	mg/kg	0.46 = *	0.47 = *	4.2 = *	0.93 J *	1 = *
Zinc	mg/kg	129 = *	30.2 =	59.4 =	222 = *	1,850 = *

Table 4-18. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2sd/sw-049(d)**	**LL2ss-025**	**LL2ss-026**	**LL2ss-027**
Sample ID		**LL2SD-049(D)-0144-SD**	**LL2SS-025-0116-SO**	**LL2SS-026-0117-SO**	**LL2SS-027-0118-SO**
Date		**08/20/1996**	**08/08/1996**	**08/08/1996**	**08/08/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**				
General Chemistry					
Chromium, hexavalent	mg/kg	NA	NA	NA	NA
Inorganics					
Cyanide	mg/kg	NA	0.19 J *	0.4 J *	0.14 J *
Aluminum	mg/kg	12,000 =	5,060 =	8,830 =	10,100 =
Antimony	mg/kg	NA	0.92 U	0.31 U	1.4 U
Arsenic	mg/kg	19.8 = *	8.2 J	8.2 J	11.5 J
Barium	mg/kg	90.9 = *	76.5 =	75.7 =	64 =
Beryllium	mg/kg	NA	0.42 U	0.8 U	0.57 U
Cadmium	mg/kg	0.25 U	1.2 U	0.33 U	0.93 U
Chromium	mg/kg	21.3 = *	18.2 = *	13.4 =	15.5 =
Cobalt	mg/kg	NA	6 J	8.4 J	7.8 J
Copper	mg/kg	NA	29.6 = *	15.2 =	17.3 =
Lead	mg/kg	25.7 =	125 = *	26.6 = *	42.6 = *
Manganese	mg/kg	380 J	638 J	684 J	567 J
Mercury	mg/kg	0.06 = *	0.04 = *	0.04 = *	0.05 = *
Nickel	mg/kg	NA	19.3 =	16.8 =	15.4 =
Selenium	mg/kg	1.7 = *	0.82 =	0.54 =	0.55 =
Silver	mg/kg	0.22 U	0.2 U	0.2 U	0.2 U
Thallium	mg/kg	NA	2.4 = *	2.4 = *	2.4 = *
Zinc	mg/kg	103 = *	126 = *	59.4 =	59.6 =

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
= - Detected result.
J - Estimated result.
U - Not detected.

Packaging and Shipping Areas

A total of 16 inorganic SRCs were identified in surface soils from the Packaging and Shipping Areas Aggregate (Table 4-3). Aluminum, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, lead, manganese, mercury, nickel, and zinc each exceeded the respective site-background value in at least one sample. Cadmium, silver, and thallium were detected above the background criteria of zero (since they were not detected in the background dataset) and, thus, were considered to be SRCs. Table 4-19 shows the detected analytical concentrations by station for all the SRCs in the Packaging and Shipping Areas Aggregate.

Metals contamination in surface soil is widespread across the aggregate. Of 25 surface soil samples, 60% (15 samples) have had detected concentrations of all SRCs of less than 2 times their respective background criteria, and five of these samples had either no SRCs detected or only SRCs without background criteria (usually cadmium and thallium) detected. The most common inorganic SRCs in the Packaging and Shipping Aggregate include aluminum, arsenic, barium, chromium, lead, manganese, and zinc, each with 25 detections out of 25 samples; and cobalt, copper, and nickel, with 24 detections out of 24 samples (Table 4-3). Least frequently detected SRCs include silver, with 9 of 25 detections; antimony, with 3 of 22 detections; cadmium, with 10 of 25 detections; and thallium, with 15 of 24 detections. Figures 4-5 through 4-13 show the distribution and concentrations of arsenic, lead, and manganese, respectively, as representative of the pattern and intensity of inorganic contamination in surface soils at the Packaging and Shipping Area Aggregate. These chemicals were selected based on highest frequency of detection and/or magnitude of concentration above background, as explained in Section 4.1.4.

Maximum concentrations of the 16 SRCs for this aggregate occurred in 5 stations. LL2-100 showed maximum concentrations for antimony, chromium, cobalt, copper, lead, nickel, and thallium. LL2-104 showed maximum detected values for aluminum, barium, beryllium, cadmium, mercury, and zinc. LL2-106 had the maximum concentration of silver, LL2-101 had the highest detected value for manganese, and LL2-071 showed the maximum for arsenic (49.1 mg/kg), although the field duplicate for station LL2-076 showed a higher concentration (74.4 mg/kg, see Table 4-19). Maximum concentrations ranged from less than twice background (aluminum, cobalt) to 62 times background (antimony). The maximum concentration of arsenic, barium, beryllium, copper, manganese, mercury, and nickel was in the range of 2.5 to 10 times the background criteria. The maximum for lead was 47 times background, and for zinc was 11 times greater than the site-related background criteria.

Stations LL2-100 and LL2-104, which contained the most number of inorganic constituents above background and/or the highest chemical concentrations, tend to be located in the vicinity of Buildings DB-13 and DB-13B in the Packaging and Shipping Areas Aggregate (Figures 4-5 through 4-13).

Change Houses Aggregate

Eight inorganic SRCs were identified in the four surface soil samples collected from the Change Houses Aggregate (Table 4-3). Antimony, chromium, cobalt, copper, lead, nickel, and zinc each exceeded the respective site-background value in at least one sample. Cadmium was detected above the background criteria of zero (since it was not detected in the background dataset) and, thus, is considered to be an SRC. Table 4-20 shows the detected analytical concentrations by station for all the SRCs in the Change Houses Aggregate.

Most inorganic SRCs were detected above their background criteria in all four samples, but with the exception of lead and zinc in two samples (DB22-01 and DB22-02), all concentrations were less than 2 times the background criteria (Table 4-20). The maximum concentration for these two metals was between 3 and 4 times the site-related background criteria. The maximum concentration for all SRCs, except, copper occurred in DB22-02, located to the west of the Preparation and Receiving Areas Aggregate. Figures 4-8 through 4-10 shows the distribution of lead in surface soils at the Change Houses Aggregate.

Table 4-19. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Inorganics – Site-Related Contaminants[a]

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-064**	**LL2-065**	**LL2-066**	**LL2-067**	**LL2-067**	**LL2-068**
Sample ID		**LL20684**	**LL20687**	**LL20690**	**LL20693**	**LL21182**	**LL20696**
Date		**07/24/2001**	**07/24/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	8,680 =	8,670 =	11,200 =	9,030 =	9,110 =	10,900 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	1.3 UJ	1.3 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	13.7 =	13.5 =	17.4 = *	24.7 = *	74.4 = *	11.3 =
Barium	mg/kg	49.5 =	51.7 =	88.7 = *	46.6 =	49.7 =	69.7 =
Beryllium	mg/kg	0.47 J	0.54 J	0.66 =	0.62 J	0.65 =	0.91 = *
Cadmium	mg/kg	0.6 U	0.55 U	0.15 U	0.63 U	0.61 U	0.3 J *
Chromium	mg/kg	20.1 J *	12.6 J	13.1 =	8.4 =	9.5 =	22.8 = *
Cobalt	mg/kg	9.2 J	8.8 J	10 J	8.1 J	5.5 J	6.3 J
Copper	mg/kg	29.4 = *	21.4 = *	30.4 = *	16.8 =	23.1 = *	16.7 =
Lead	mg/kg	19.1 =	18.4 =	40.9 = *	17.7 =	13.3 =	60.1 = *
Manganese	mg/kg	426 =	400 =	1,390 J	250 J	681 J	654 J
Mercury	mg/kg	0.027 J	0.0099 J	0.072 J *	0.011 J	0.025 J	0.044 J *
Nickel	mg/kg	20.4 =	21.6 = *	16 =	10.9 =	12.7 =	15 =
Silver	mg/kg	0.6 U	0.55 U	0.63 U	0.63 U	0.61 U	0.57 U
Thallium	mg/kg	0.47 = *	0.47 = *	0.49 U	0.4 U	0.48 U	0.45 = *
Zinc	mg/kg	73.2 = *	65.5 = *	92.7 = *	52.2 =	55.6 =	396 = *

Table 4-19. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-069**	**LL2-071**	**LL2-072**	**LL2-073**	**LL2-074**	**LL2-076**
Sample ID		**LL20699**	**LL20703**	**LL20706**	**LL20709**	**LL20712**	**LL20716**
Date		**07/26/2001**	**07/25/2001**	**07/25/2001**	**07/24/2001**	**07/24/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	12,200 =	5,670 =	7,520 =	11,300 =	6,370 =	9,970 =
Antimony	mg/kg	1.1 UJ	1.3 UJ	1.2 UJ	1.1 UJ	1.1 UJ	1.1 R
Arsenic	mg/kg	10 =	49.1 = *	12.3 =	16.8 = *	12.3 =	13.9 =
Barium	mg/kg	86.5 =	34.2 =	37.2 =	59.2 =	32.5 =	59.7 =
Beryllium	mg/kg	1.2 = *	0.45 U	0.49 J	0.7 =	0.35 J	0.62 =
Cadmium	mg/kg	0.56 U	0.65 U	0.6 U	0.55 U	0.53 U	0.55 U
Chromium	mg/kg	12.6 =	6.1 J	16.7 J	13.2 J	7.8 J	14.6 =
Cobalt	mg/kg	8.1 J	3.5 J	6.9 J	6.8 J	5.4 J	8.7 J
Copper	mg/kg	13.1 =	12.2 =	24.1 = *	19.6 = *	17.7 =	21.5 = *
Lead	mg/kg	26.7 = *	9.6 =	41.2 = *	16.7 =	12.7 =	22.2 =
Manganese	mg/kg	1,240 J	307 =	374 =	351 =	252 =	643 J
Mercury	mg/kg	0.038 J *	0.13 U	0.021 J	0.021 J	0.11 U	0.026 J
Nickel	mg/kg	10.9 =	8.3 =	14.4 =	16.5 =	12.5 =	13.7 =
Silver	mg/kg	0.56 U	0.65 U	0.6 U	0.55 U	0.53 U	0.55 U
Thallium	mg/kg	0.45 = *	0.37 U	0.47 = *	0.38 U	0.4 = *	0.72 = *
Zinc	mg/kg	56.5 =	42.6 =	57.1 =	53.8 =	54.2 =	107 = *

Table 4-19. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-100**	**LL2-101**	**LL2-102**	**LL2-103**	**LL2-104**	**LL2-105**
Sample ID		**LL20778**	**LL20781**	**LL20784**	**LL20787**	**LL20790**	**LL20793**
Date		**07/26/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/24/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	13,100 =	24,400 = *	15,700 =	3,850 =	25,500 = *	3,260 =
Antimony	mg/kg	59.5 J *	0.68 J	1.1 R	1 UJ	1.2 J *	1.1 UJ
Arsenic	mg/kg	19.7 = *	7.5 =	9.2 =	5.6 =	8.9 =	8 =
Barium	mg/kg	263 = *	300 = *	166 = *	55.6 =	901 = *	30.3 =
Beryllium	mg/kg	1.3 = *	2.8 = *	1.4 = *	0.38 U	4.2 = *	0.22 U
Cadmium	mg/kg	6.1 = *	0.39 J *	0.5 J *	0.18 J *	16.9 = *	0.67 = *
Chromium	mg/kg	222 = *	13.8 =	24 = *	5.3 J	68.1 J *	4.7 J
Cobalt	mg/kg	15 J *	5.1 J	7.2 J	2.6 J	8.5 J	3.6 J
Copper	mg/kg	140 = *	15.1 =	17.4 =	8.4 =	81.4 = *	16.6 =
Lead	mg/kg	1,220 = *	64.3 = *	90.1 = *	25.1 =	535 = *	28.2 = *
Manganese	mg/kg	1,730 J *	7,460 J *	1,560 J *	552 =	3,070 = *	349 =
Mercury	mg/kg	0.11 J *	0.011 J	0.054 J *	0.015 J	0.18 = *	0.017 J
Nickel	mg/kg	51.9 = *	16 =	15.6 =	6.7 =	22.3 = *	8.9 =
Silver	mg/kg	2 = *	0.24 J *	0.44 J *	0.17 J *	3.3 = *	11.8 = *
Thallium	mg/kg	0.99 = *	0.67 J *	0.8 = *	0.33 U	0.38 UJ	0.41 = *
Zinc	mg/kg	680 = *	94.5 = *	145 = *	60 =	695 = *	165 = *

Table 4-19. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-106**	**LL2-107**	**LL2-108**	**LL2-112**	**LL2-179**
Sample ID		**LL20796**	**LL20799**	**LL20802**	**LL20814**	**LL20989**
Date		**07/25/2001**	**07/25/2001**	**07/27/2001**	**07/27/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Aluminum	mg/kg	8,670 =	10,400 =	4,700 =	4,100 =	10,800 =
Antimony	mg/kg	1.1 UJ	1.1 UJ	1 UJ	1.1 UJ	1.2 UJ
Arsenic	mg/kg	8.3 =	6.1 =	4.9 =	3.1 =	11 =
Barium	mg/kg	76.2 =	102 = *	57.9 =	29.3 =	77.7 =
Beryllium	mg/kg	0.73 =	1.2 = *	0.46 J	0.32 U	0.62 =
Cadmium	mg/kg	0.35 J *	0.87 = *	0.4 U	0.54 U	0.6 U
Chromium	mg/kg	12.7 J	14.4 J	24.7 = *	11.7 =	11.9 J
Cobalt	mg/kg	5 J	3.4 J	4.8 =	3.6 =	7.9 J
Copper	mg/kg	14.9 =	20.9 = *	18.2 = *	7.2 =	9.3 =
Lead	mg/kg	92.6 = *	173 = *	125 = *	10.3 =	29 = *
Manganese	mg/kg	755 =	1,210 =	639 =	604 =	1,380 =
Mercury	mg/kg	0.034 J	0.064 J *	0.044 J *	0.11 U	0.074 J *
Nickel	mg/kg	11.7 =	9.4 =	11.8 =	11 =	10.6 =
Silver	mg/kg	18.3 = *	14.9 = *	1.5 = *	0.54 U	0.6 U
Thallium	mg/kg	0.42 = *	0.37 U	0.17 J *	0.22 U	0.57 = *
Zinc	mg/kg	104 = *	202 = *	73.4 = *	21.2 =	50.9 =

Table 4-19. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-181**	**LL2-217**	**LL2ss-041(b)**
Sample ID		**LL20995**	**LL21057**	**LL2SS-041(B)-0135-SO**
Date		**07/25/2001**	**07/27/2001**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 2**
Sample Type		**Grab**	**Grab**	**Grab Composite**
Analyte	**Units**			
Inorganics				
Aluminum	mg/kg	12,700 =	8,070 =	12,200 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	NA
Arsenic	mg/kg	15.6 = *	3.6 =	13.1 =
Barium	mg/kg	57.6 =	75 =	62.2 =
Beryllium	mg/kg	0.56 J	0.98 J *	NA
Cadmium	mg/kg	0.61 U	0.56 U	0.25 J *
Chromium	mg/kg	15 J	8.1 =	13.5 =
Cobalt	mg/kg	5.7 J	3.8 =	NA
Copper	mg/kg	16.2 =	8 =	NA
Lead	mg/kg	13.3 =	15.3 J	14.4 =
Manganese	mg/kg	490 =	1,220 =	258 =
Mercury	mg/kg	0.04 J *	0.01 J	0.05 = *
Nickel	mg/kg	12.7 =	9.9 =	NA
Silver	mg/kg	0.61 U	0.56 U	0.23 U
Thallium	mg/kg	0.5 = *	0.3 U	NA
Zinc	mg/kg	46.1 =	33.2 =	51.1 =

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-20. Load Line 2 Surface Soil Change Houses Aggregate – Inorganics – Site-Related Contaminants

Functional Area		Change Houses Aggregate	Change Houses Aggregate	Change Houses Aggregate	Change Houses Aggregate	Change Houses Aggregate
Station ID		**DB22-01**	**DB22-02**	**DB8-01**	**DB8-01**	**DB8-02**
Sample ID		**LL0739**	**LL0740**	**LL0737**	**LL0743**	**LL0738**
Date		**11/04/1999**	**11/04/1999**	**11/04/1999**	**11/04/1999**	**11/04/1999**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Inorganics						
Antimony	mg/kg	1.2 J *	0.61 J	1.2 UJ	1.2 UJ	0.56 J
Cadmium	mg/kg	0.68 = *	1.5 = *	0.59 U	0.59 U	0.51 J *
Chromium	mg/kg	11.9 =	19.9 = *	19.5 = *	16 =	8.1 =
Cobalt	mg/kg	5 =	11.2 = *	10.6 = *	9.3 =	4.2 U
Copper	mg/kg	17.1 J	18.7 J *	19.8 J *	26 J *	24.6 J *
Lead	mg/kg	73.8 = *	94.7 = *	17.3 =	12.7 =	44.5 = *
Nickel	mg/kg	13 =	27.3 = *	25.3 = *	22 = *	9 =
Zinc	mg/kg	136 = *	264 = *	68 = *	60.3 =	73.1 = *

* - Exceeds Ravenna Army Ammunition Plant background criteria.
ID = Identification.
= - Detected result.
J - Estimated result.
U - Not detected.

Few surface soil samples were collected from this aggregate, but the analytical data from the four samples collected indicates that metals occur at or only slightly above the background criteria, so contamination is less pervasive in this aggregate than in other Load Line 2 soil aggregates.

Perimeter Area Aggregate

A total of 16 inorganic SRCs was identified in surface soils from the Perimeter Area Aggregate (Table 4-3). Aluminum, antimony, arsenic, barium, beryllium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, and zinc each exceeded the respective site-background value in at least one sample. Cadmium and thallium were detected above the background criteria of zero (since they were not detected in the background dataset) and, thus, were considered to be SRCs. Table 4-21 shows the detected analytical concentrations by station for all the SRCs in the Perimeter Areas Aggregate.

Metals contamination in surface soil is highly sporadic within the aggregate. Of 34 surface soil samples, 75% (26 samples) have detected concentrations of all SRCs of less than 2 times their respective background criteria, and 10 of these samples had either no SRCs detected or only SRCs without background criteria (usually cadmium and thallium) detected. The most common inorganic SRCs in the Perimeter Areas Aggregate include aluminum, arsenic, barium, chromium, lead, manganese, and zinc, each with 34 detections out of 34 samples; and cobalt, copper, and nickel, with 27 detections out of 27 samples (Table 4-3). Least frequently detected SRCs include antimony; with 2 of 27 detections; cadmium, with 23 of 33 detections; and selenium, with 20 of 34 detections; and thallium, with 15 of 27 detections. Figures 4-5 through 4-13 show the distribution and concentrations of arsenic, lead, and manganese, respectively, as representative of the pattern and intensity of inorganic contamination in surface soils at the Perimeter Area Aggregate. These chemicals were selected based on frequency of detection and/or magnitude of concentration above background.

Table 4-21. Load Line 2 Surface Soil Perimeter Area Aggregate – Inorganics – Site-Related Contaminants[a]

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-078**	**LL2-078**	**LL2-079**	**LL2-094**	**LL2-095**	**LL2-184**
Sample ID		**LL20720**	**LL21171**	**LL20723**	**LL20760**	**LL20763**	**LL20833**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**08/13/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	20,900 = *	19,000 = *	10,500 =	12,700 =	2,810 =	7,620 =
Antimony	mg/kg	1.3 UJ	1.3 UJ	1.2 UJ	0.78 J	1.1 UJ	1.1 UJ
Arsenic	mg/kg	6.3 =	6.3 =	10.5 =	13.4 =	7.9 =	10.5 =
Barium	mg/kg	226 = *	212 = *	60.5 =	76.5 =	14.5 =	54.5 =
Beryllium	mg/kg	2.9 = *	2.5 = *	0.54 J	0.63 =	0.19 U	0.65 J
Cadmium	mg/kg	0.88 = *	0.37 J *	0.58 U	3.1 = *	0.54 U	0.28 J *
Chromium	mg/kg	13 =	12 =	12.4 =	17.6 = *	4 =	13.8 =
Cobalt	mg/kg	3.4 =	3.9 =	7.4 =	8.3 =	3.1 =	11.6 = *
Copper	mg/kg	98.1 = *	80.2 = *	14.3 =	45.1 = *	9.2 =	21.5 = *
Lead	mg/kg	36.8 = *	31 = *	21 =	65.1 = *	15.8 =	21.7 =
Manganese	mg/kg	2,180 = *	1,690 = *	619 =	287 =	366 =	912 =
Mercury	mg/kg	0.021 J	0.028 J	0.025 J	0.055 J *	0.11 U	0.03 J
Nickel	mg/kg	6.7 =	8.7 =	14 =	15.8 =	7.6 =	19.7 =
Selenium	mg/kg	0.96 J	0.77 J	0.64 J	0.51 J	0.37 J	2.2 U
Thallium	mg/kg	0.33 UJ	0.32 U	0.5 = *	0.51 = *	0.27 U	0.3 = *
Zinc	mg/kg	49.9 =	52.8 =	54.6 =	163 = *	37.6 =	55.8 =

Table 4-21. Load Line 2 Surface Soil Perimeter Area Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-189**	**LL2-194**	**LL2-195**	**LL2-196**	**LL2-197**	**LL2-198**
Sample ID		**LL21019**	**LL21034**	**LL21035**	**LL21036**	**LL21037**	**LL21038**
Date		**07/28/2001**	**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/31/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	7,950 =	10,200 =	11,400 =	9,200 =	12,200 J	12,200 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	1.2 UJ	1.1 UJ	1.1 UJ	1.2 UJ
Arsenic	mg/kg	8.1 J	8.8 =	8.1 =	8.4 =	15.9 = *	12.5 =
Barium	mg/kg	60.7 J	60.4 =	69.3 =	58 =	59.1 J	114 = *
Beryllium	mg/kg	0.54 J	0.4 J	0.32 J	0.36 J	0.65 J	0.92 = *
Cadmium	mg/kg	0.06 J *	0.28 J *	0.12 J *	0.24 J *	0.27 J *	0.3 J *
Chromium	mg/kg	11.9 J	11.1 =	10.5 =	10.6 =	16.6 =	14.3 =
Cobalt	mg/kg	9 J	8.8 J	3.2 J	8.5 J	13.2 J *	14.6 = *
Copper	mg/kg	17.1 J	7.5 =	4 =	8.1 =	22.8 = *	10.2 =
Lead	mg/kg	24.9 J	15.8 J	18.7 J	16.5 J	16.1 J	20.7 J
Manganese	mg/kg	789 J	690 J	206 J	731 J	245 J	2,100 J *
Mercury	mg/kg	0.032 J	0.06 J *	0.054 J *	0.054 J *	0.022 J	0.052 J *
Nickel	mg/kg	14.2 J	9.5 J	5.7 J	9.6 J	23.6 J *	18.7 =
Selenium	mg/kg	0.38 J	0.87 J	0.63 J	0.44 J	0.78 J	0.63 J
Thallium	mg/kg	0.35 = *	0.39 = *	0.44 = *	0.37 = *	0.34 = *	0.44 U
Zinc	mg/kg	57.9 =	41.8 J	34.6 J	38 J	59.6 J	133 J *

Table 4-21. Load Line 2 Surface Soil Perimeter Area Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-199**	**LL2-200**	**LL2-201**	**LL2-201**	**LL2-204**	**LL2-205**
Sample ID		**LL21039**	**LL21040**	**LL21041**	**LL21181**	**LL21044**	**LL21045**
Date		**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/30/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	11,700 =	14,200 =	9,020 J	7,790 J	9,260 =	5,530 J
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.1 UJ	1.1 UJ	1.1 UJ	1.1 UJ
Arsenic	mg/kg	11 =	10.9 =	5.5 =	5.6 =	10.3 =	16.2 = *
Barium	mg/kg	68.1 =	59.9 =	66.2 =	56.6 =	55.6 =	27.8 =
Beryllium	mg/kg	0.59 =	0.61 =	0.44 U	0.35 U	0.51 J	0.66 =
Cadmium	mg/kg	0.3 J *	0.077 J *	0.57 U	0.57 U	0.056 J *	0.54 U
Chromium	mg/kg	13.2 =	14.5 =	10.2 =	8.4 =	13.1 =	13.2 =
Cobalt	mg/kg	8.2 J	7.9 =	4 J	3.2 J	7.1 =	11.3 J *
Copper	mg/kg	7.7 =	11.2 =	8 =	5.1 =	11.6 =	14 =
Lead	mg/kg	17.8 J	21.4 J	20.4 =	11.7 =	16.1 J	20.5 =
Manganese	mg/kg	911 J	322 J	170 =	131 =	401 J	557 =
Mercury	mg/kg	0.048 J *	0.054 J *	0.047 J *	0.027 J	0.048 J *	0.017 J
Nickel	mg/kg	11.6 J	13.4 =	10.7 =	8.2 =	15.9 =	26.6 = *
Selenium	mg/kg	1.1 J	2.3 U	2.3 U	0.39 J	2.2 U	2.2 U
Thallium	mg/kg	0.41 = *	0.45 U	0.42 U	0.37 U	0.43 U	0.35 U
Zinc	mg/kg	55.3 J	57.4 J	44.4 =	32.6 =	45.3 J	46.5 =

Table 4-21. Load Line 2 Surface Soil Perimeter Area Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-206**	**LL2-207**	**LL2-208**	**LL2-209**	**LL2-210**	**LL2-211**
Sample ID		**LL21046**	**LL21047**	**LL21048**	**LL21049**	**LL21050**	**LL21051**
Date		**07/30/2001**	**07/30/2001**	**07/30/2001**	**07/30/2001**	**07/30/2001**	**07/31/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	16,600 J	9,950 J	12,300 J	9,860 J	9,240 J	10,800 =
Antimony	mg/kg	1.3 UJ	1.1 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	13.1 =	10.2 =	8.6 =	18.8 = *	5.5 =	11 =
Barium	mg/kg	111 = *	44 =	123 = *	71.1 =	77.6 =	81.5 =
Beryllium	mg/kg	1 = *	0.43 U	0.76 =	0.93 = *	0.51 J	0.72 =
Cadmium	mg/kg	0.63 U	0.56 U	0.11 U	0.62 U	0.099 U	0.11 J *
Chromium	mg/kg	15.3 =	11.6 =	10.8 =	13 =	8.9 =	12.6 =
Cobalt	mg/kg	27.7 J *	5.2 J	15.1 J *	10.6 J *	3.9 J	13.7 = *
Copper	mg/kg	11.3 =	9.2 =	5.2 =	8.2 =	9.1 =	8.7 =
Lead	mg/kg	27.6 = *	13.5 =	18 =	46.4 = *	14.8 =	20.7 J
Manganese	mg/kg	2,910 = *	339 =	2,760 = *	501 =	286 =	1,920 J *
Mercury	mg/kg	0.065 J *	0.035 J	0.042 J *	0.054 J *	0.035 J	0.029 J
Nickel	mg/kg	16.8 =	10.5 =	9.1 =	9.8 =	9.6 =	15.2 =
Selenium	mg/kg	0.86 J	0.43 J	2.3 U	2.5 U	2.3 U	2.2 U
Thallium	mg/kg	0.44 U	0.38 U	0.37 U	0.43 U	0.44 = *	0.35 U
Zinc	mg/kg	63.9 = *	36.9 =	65.4 = *	57.6 =	36.5 =	57.3 J

Table 4-21. Load Line 2 Surface Soil Perimeter Area Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-241**	**LL2-244**	**LL2-248**	**LL2-253**	**LL2sd-047(d)**	**LL2sd-050(d)**
Sample ID		**LL20839**	**LL20840**	**LL21117**	**LL20842**	**LL2SD-047(D)-0141-SD**	**LL21099**
Date		**08/13/2001**	**08/13/2001**	**07/29/2001**	**08/13/2001**	**08/20/1996**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 2**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab Composite**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	10,900 =	13,900 =	6,130 =	13,500 =	18,000 = *	9,150 =
Antimony	mg/kg	1.2 UJ	1.1 UJ	8,120 J *	1.1 UJ	NA	1.5 UJ
Arsenic	mg/kg	13.8 =	13.6 =	36.5 = *	14.4 =	6.5 =	8 =
Barium	mg/kg	111 = *	62.3 =	1,060 = *	74.6 =	83.9 =	86.6 =
Beryllium	mg/kg	0.75 J	0.74 J	0.97 U	0.59 J	NA	1.5 J *
Cadmium	mg/kg	0.32 J *	0.16 J *	4.8 = *	0.13 J *	0.09 U	1.3 = *
Chromium	mg/kg	14.1 =	16.7 =	4,000 = *	15.8 =	19.4 = *	10.3 =
Cobalt	mg/kg	10.4 =	11.7 = *	115 = *	6.6 =	NA	12.2 = *
Copper	mg/kg	19.2 = *	17.6 =	721 = *	15.8 =	NA	16.6 =
Lead	mg/kg	17 =	13.8 =	24,800 J *	14.1 =	14.9 =	52.6 = *
Manganese	mg/kg	320 =	236 =	473 J	136 =	129 J	566 J
Mercury	mg/kg	0.014 J	0.11 U	2.8 = *	0.027 J	0.08 = *	0.063 J *
Nickel	mg/kg	34.6 = *	22.6 = *	26 J *	14 =	NA	32.4 = *
Selenium	mg/kg	2.3 U	2.3 U	4 J *	2.3 U	1.5 = *	1.3 J
Thallium	mg/kg	0.34 = *	0.37 = *	0.93 = *	0.47 J *	NA	0.86 = *
Zinc	mg/kg	61.5 =	64.3 = *	904 J *	46 =	37.9 =	190 = *

Table 4-21. Load Line 2 Surface Soil Perimeter Area Aggregate – Inorganics – Site-Related Contaminants[a] (continued)

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2sd-050(d)**	**LL2ss-022**	**LL2ss-023**	**LL2ss-024**	**LL2ss-040(b)**	**LL2ss-042(b)**
Sample ID		**LL2SD-050(D)-0145-SD**	**LL2SS-022-0112-SO**	**LL2SS-023-0113-SO**	**LL2SS-024-0115-SO**	**LL2SS-040(B)-0133-SO**	**LL2SS-042(B)-0136-SO**
Date		**08/20/1996**	**08/12/1996**	**08/08/1996**	**08/08/1996**	**08/12/1996**	**08/09/1996**
Depth (ft)		**0 - 1**	**0 - 2**	**0 - 1**	**0 - 2**	**0 - 1**	**0 - 2**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	4,920 =	9,400 =	8,690 =	8,000 =	10,300 =	9,670 =
Antimony	mg/kg	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	6.2 =	12.3 =	13.1 =	9.7 =	16.3 = *	11 =
Barium	mg/kg	38.4 =	64.3 =	62.7 =	66.8 =	60.3 =	64.2 =
Beryllium	mg/kg	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	0.29 U	0.27 J *	0.4 J *	0.31 J *	0.29 J *	0.2 J *
Chromium	mg/kg	8.2 =	16 =	11.5 =	16.7 =	18.7 = *	11 =
Cobalt	mg/kg	NA	NA	NA	NA	NA	NA
Copper	mg/kg	NA	NA	NA	NA	NA	NA
Lead	mg/kg	8.8 =	17.5 =	16.4 =	16.7 =	17.8 =	15.6 =
Manganese	mg/kg	403 J	482 =	410 =	573 =	310 =	553 =
Mercury	mg/kg	0.04 U	0.04 U	0.04 U	0.04 U	0.04 J *	0.04 U
Nickel	mg/kg	NA	NA	NA	NA	NA	NA
Selenium	mg/kg	0.79 =	0.35 U	0.83 =	1.1 =	0.34 U	0.74 =
Thallium	mg/kg	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	35.1 =	59.5 =	62.6 = *	61.5 =	55.3 =	47.4 =

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
= - Detected result.
J - Estimated result.
U - Not detected.

Most of the higher contamination levels within the Perimeter Area Aggregate occur in just a few sample locations, but some of the highest inorganic concentrations of any sample within Load Line 2 were detected from these samples. Maximum concentrations of the 12 of the 16 SRCs for this aggregate occurred in station LL2-248, which was originally collected as a dry sediment sample and is located along the railroad tracks near the AOC boundary east of the Preparation and Receiving Areas Aggregate (Table 4-21 and Figures 4-5 through 4-13). Station LL2-078, located adjacent to Building DA-7 between the Explosives Handling Areas Aggregate and the Packaging and Shipping Areas Aggregate, contained the maximum concentrations of aluminum, beryllium, and manganese. Station LL2-094 had three metals at concentrations more than twice their site-related background criteria (copper, lead, and zinc), and station LL2sd-050(d) showed lead and zinc at concentrations more than twice background criteria.

Maximum concentrations ranged from less than twice background (aluminum, manganese, nickel) to over 8,000 times background (antimony, 8458 times the background criteria of 0.96 mg/kg). The maximum concentration of arsenic, beryllium, and selenium was in the range of 2.5 to 10 times the background criteria. The maximum for barium, cobalt, and zinc ranged from 10 to 20 times background, and the MDCs for chromium (230 times background), copper (40 times background), lead (950 times background), and mercury (77 times background) indicate that these few samples from the Perimeter Areas Aggregate are among the most highly contaminated with metals in Load Line 2.

North Ditches Aggregate

Four surface soil samples were analyzed from the North Ditches Aggregate, yielding six inorganic SRCs (Table 4-3). Antimony, mercury, nickel, and zinc were each detected in at least one sample at a concentration exceeding the site-related background criteria. Cadmium and thallium were detected above the background criteria of zero (since they were not detected in the background dataset) and, thus, are considered to be SRCs. Table 4-22 shows the detected analytical concentrations by station for all the SRCs in the North Ditches Aggregate.

The metal SRCs were detected frequently, but usually at concentrations at or only slightly above the site-related background level. The only inorganic constituent detected at a concentration more than twice the background criteria was antimony, detected at an estimated concentration of 4.8 mg/kg in station LL2-046(p2). (Table 4-22). Cadmium and thallium, which do not have background criteria, were detected at concentrations less than 1 mg/kg in all samples. Based on the data from the limited number of samples collected from the North Ditch Aggregate, it does not appear that off-AOC migration of inorganic contamination is occurring.

4.2.5 SVOCs, VOCs, and PCBs

Explosives Handling Areas Aggregate

Nine Pesticides/PCBs, 19 SVOCs, and 2 VOCs were detected in surface soils in the Explosives Handling Areas Aggregate, and are considered to be SRCs (Table 4-3). For the most part, detected concentrations were low (less than 1 mg/kg) and often were estimated values.

Of the nine pesticides/PCBs, by far the most commonly detected constituent was PCB-1254, detected in 40 of 70 samples. Only PCB-1254 and PCB-1260 were detected at concentrations greater than 1 mg/kg, and, as might be expected, these higher concentrations occurred immediately adjacent to the process

Table 4-22. Load Line 2 Surface Soil North Ditches Aggregate – Inorganics – Site-Related Contaminants[a]

Functional Area		North Ditches Aggregate	North Ditches Aggregate	North Ditches Aggregate	North Ditches Aggregate
Station ID		**LL2-046(p2)**	**LL2-233**	**LL2-234**	**LL2sd-046(d)**
Sample ID		**LL21098**	**LL21096**	**LL21097**	**LL2SD-046(D)-0140-SD**
Date		**07/29/2001**	**07/27/2001**	**07/27/2001**	**08/20/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 2**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab Composite**
Analyte	**Units**				
Inorganics					
Antimony	mg/kg	4.8 J *	1.4 UJ	1.3 UJ	NA
Cadmium	mg/kg	0.48 J *	0.72 U	0.095 J *	0.05 U
Mercury	mg/kg	0.058 J *	0.024 J	0.016 J	0.04 U
Nickel	mg/kg	20.7 J	16.3 =	22.1 = *	NA
Thallium	mg/kg	0.34 = *	0.27 J *	0.26 J *	NA
Zinc	mg/kg	84.9 J *	83.7 = *	96.3 = *	81 = *

[a]Table presents both Phase I (1996) and Phase II (2001) data.
= - Detected result.
NA = Not analyzed.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
J - Estimated result.
U - Not detected.

buildings in the Explosives Handling Areas Aggregate. The maximum concentrations of PCB-1254 and -1260 occurred in the vicinity of Buildings DB-4 and DB-10, respectively. Table 4-23 shows the concentration and stations where each pesticide/PCB SRC was detected. The extent of pesticide/PCB contamination in surface soils in Load Line 2 is shown on Figures 4-14 through 4-16. PCBs are shown with colored triangles representing the summed total of detected concentrations, and pesticides are listed in table format on these figures. 4,4'DDE was detected in 9 of 20 samples, or almost half of the samples analyzed for that chemical. Table 4-3 gives the frequency of detection and other statistical analysis for the pesticides/PCBs detected.

SVOCs were fairly widespread, although 9 of 23 samples analyzed for SVOCs had no detections. The most frequently detected SVOCs were chrysene, fluoranthene, and pyrene, with 13 detections out of 23 samples each. Polycyclic aromatic hydrocarbon (PAH) compounds comprised most of the SVOCs detected. Except for station LL2-008 and LL2-133 (in the vicinity of Building DB-4), all detected SVOC concentrations were less than 1 mg/kg. Table 4-24 gives the station and concentration for each SVOC detected in surface soil in the Explosive Handling Areas Aggregate. Figures 4-17 through 4-19 show the extent and concentration of SVOCs detected in surface soil in Load Line 2.

Two VOCs, chloroform and toluene, were detected in surface soil in the Explosives Handling Areas Aggregate (Table 4-3). The only detected concentration above 1 mg/kg was 3.7 mg/kg for toluene, at station LL2-232. Table 4-25 gives the station by station detected concentrations for VOCs.

Preparation and Receiving Areas Aggregate

Nine pesticides/PCBs, 23 SVOCs, and 4 VOCs were detected in surface soils in the Preparation and Receiving Areas Aggregate (Table 4-3). This aggregate contains the most varied and highest frequency of detection organic contamination of any Load Line 2 aggregate.

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a]

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-080**	**LL2-080**	**LL2-081**	**LL2-082**	**LL2-083**
Sample ID		**LL20726**	**LL21176**	**LL20729**	**LL20732**	**LL20735**
Date		**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA
Aldrin	mg/kg	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA
PCB-1254	mg/kg	0.16 J	0.036 U	0.39 U	0.53 =	0.037 U
PCB-1260	mg/kg	0.037 U	0.18 J	1.2 =	0.38 U	0.037 U
beta-BHC	mg/kg	NA	NA	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-086**	**LL2-086**	**LL2-087**	**LL2-087**	**LL2-088**
Sample ID		**LL20740**	**LL21168**	**LL20743**	**LL21177**	**LL20746**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA
Aldrin	mg/kg	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA
PCB-1254	mg/kg	1.9 U	1.9 U	2.6 =	0.83 J	0.036 U
PCB-1260	mg/kg	1.9 U	1.9 U	0.41 U	0.4 U	0.042 J
beta-BHC	mg/kg	NA	NA	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-089**	**LL2-090**	**LL2-093**	**LL2-096**	**LL2-096**
Sample ID		**LL20749**	**LL20752**	**LL20757**	**LL20766**	**LL21169**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA
Aldrin	mg/kg	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA
PCB-1254	mg/kg	0.093 =	0.86 =	0.038 U	0.041 U	0.039 U
PCB-1260	mg/kg	0.039 U	0.36 U	0.038 U	0.041 U	0.039 U
beta-BHC	mg/kg	NA	NA	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-097**	**LL2-098**	**LL2-098**	**LL2-099**	**LL2-110**
Sample ID		**LL20769**	**LL20772**	**LL21164**	**LL20775**	**LL20808**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	0.0079 J	0.016 J	NA	NA
4,4'-DDT	mg/kg	NA	0.002 UJ	0.002 UJ	NA	NA
Aldrin	mg/kg	NA	0.002 U	0.002 U	NA	NA
Dieldrin	mg/kg	NA	0.002 U	0.002 U	NA	NA
Endrin Aldehyde	mg/kg	NA	0.0046 J	0.002 U	NA	NA
PCB-1254	mg/kg	0.041 U	0.24 =	0.56 =	0.39 =	0.088 =
PCB-1260	mg/kg	0.041 U	0.039 U	0.038 U	0.037 U	0.036 U
beta-BHC	mg/kg	NA	0.002 U	0.002 U	NA	NA
gamma-Chlordane	mg/kg	NA	0.0024 J	0.0041 J	NA	NA

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-111**	**LL2-115**	**LL2-116**	**LL2-117**	**LL2-118**
Sample ID		**LL20811**	**LL20823**	**LL20826**	**LL20829**	**LL20832**
Date		**07/28/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	0.031 J	NA	NA	NA
4,4'-DDT	mg/kg	NA	0.0036 UJ	NA	NA	NA
Aldrin	mg/kg	NA	0.0036 U	NA	NA	NA
Dieldrin	mg/kg	NA	0.0036 U	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	0.0036 U	NA	NA	NA
PCB-1254	mg/kg	0.18 U	0.72 J	0.083 =	0.035 U	1.3 =
PCB-1260	mg/kg	0.79 =	0.35 U	0.035 U	0.035 U	0.69 U
beta-BHC	mg/kg	NA	0.0036 U	NA	NA	NA
gamma-Chlordane	mg/kg	NA	0.0036 U	NA	NA	NA

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-119**	**LL2-120**	**LL2-121**	**LL2-122**	**LL2-126**
Sample ID		**LL20835**	**LL20838**	**LL20841**	**LL20844**	**LL20850**
Date		**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	NA	0.004 U
4,4'-DDT	mg/kg	NA	NA	NA	NA	0.004 UJ
Aldrin	mg/kg	NA	NA	NA	NA	0.004 U
Dieldrin	mg/kg	NA	NA	NA	NA	0.004 U
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	0.004 U
PCB-1254	mg/kg	0.037 =	0.14 =	0.064 =	0.16 J	0.057 =
PCB-1260	mg/kg	0.035 U	0.035 U	0.034 U	0.034 U	0.039 U
beta-BHC	mg/kg	NA	NA	NA	NA	0.004 U
gamma-Chlordane	mg/kg	NA	NA	NA	NA	0.004 U

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-126**	**LL2-127**	**LL2-128**	**LL2-129**	**LL2-129**
Sample ID		**LL21166**	**LL20853**	**LL20856**	**LL20859**	**LL21165**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	0.004 U	NA	NA	0.002 U	0.004 U
4,4'-DDT	mg/kg	0.004 UJ	NA	NA	0.0064 =	0.024 J
Aldrin	mg/kg	0.004 U	NA	NA	0.002 U	0.004 U
Dieldrin	mg/kg	0.004 U	NA	NA	0.002 U	0.004 U
Endrin Aldehyde	mg/kg	0.004 U	NA	NA	0.002 U	0.0084 =
PCB-1254	mg/kg	0.066 =	1.2 =	0.049 =	0.056 =	0.13 =
PCB-1260	mg/kg	0.038 U	0.38 U	0.037 U	0.039 U	0.039 U
beta-BHC	mg/kg	0.004 U	NA	NA	0.002 U	0.004 U
gamma-Chlordane	mg/kg	0.004 U	NA	NA	0.002 U	0.004 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-130**	**LL2-131**	**LL2-132**	**LL2-133**	**LL2-134**
Sample ID		**LL20862**	**LL20865**	**LL20868**	**LL20871**	**LL20874**
Date		**07/27/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	2 U	NA
4,4'-DDT	mg/kg	NA	NA	NA	2 U	NA
Aldrin	mg/kg	NA	NA	NA	2 U	NA
Dieldrin	mg/kg	NA	NA	NA	2 U	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	2 U	NA
PCB-1254	mg/kg	2.5 J	5 J	5.2 J	0.77 =	4.4 =
PCB-1260	mg/kg	0.73 U	1.9 U	0.39 U	0.038 U	0.39 U
beta-BHC	mg/kg	NA	NA	NA	2 U	NA
gamma-Chlordane	mg/kg	NA	NA	NA	2 U	NA

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-139**	**LL2-140**	**LL2-141**	**LL2-141**	**LL2-142**
Sample ID		**LL20881**	**LL20884**	**LL20887**	**LL21172**	**LL20890**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA
Aldrin	mg/kg	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA
PCB-1254	mg/kg	0.083 J	0.15 =	0.59 =	0.6 =	0.037 U
PCB-1260	mg/kg	0.037 U	0.037 U	0.38 U	0.04 U	0.037 U
beta-BHC	mg/kg	NA	NA	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-143**	**LL2-144**	**LL2-144**	**LL2-145**	**LL2-146**
Sample ID		**LL20893**	**LL20896**	**LL21178**	**LL20899**	**LL20902**
Date		**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	0.0039 U	NA
4,4'-DDT	mg/kg	NA	NA	NA	0.0039 U	NA
Aldrin	mg/kg	NA	NA	NA	0.0039 U	NA
Dieldrin	mg/kg	NA	NA	NA	0.013 J	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	0.087 J	NA
PCB-1254	mg/kg	0.038 U	0.039 U	0.043 =	0.38 U	0.35 U
PCB-1260	mg/kg	0.038 U	0.039 U	0.039 U	0.92 =	2.8 =
beta-BHC	mg/kg	NA	NA	NA	0.0047 J	NA
gamma-Chlordane	mg/kg	NA	NA	NA	0.088 J	NA

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-147**	**LL2-147**	**LL2-148**	**LL2-149**	**LL2-150**
Sample ID		**LL20905**	**LL21179**	**LL20908**	**LL20911**	**LL20914**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	0.011 J	NA
4,4'-DDT	mg/kg	NA	NA	NA	0.0019 UJ	NA
Aldrin	mg/kg	NA	NA	NA	0.0019 U	NA
Dieldrin	mg/kg	NA	NA	NA	0.0019 U	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	0.0067 J	NA
PCB-1254	mg/kg	0.039 U	0.039 U	1.8 J	0.59 =	0.18 U
PCB-1260	mg/kg	0.3 J	0.22 =	0.7 U	0.18 U	0.64 J
beta-BHC	mg/kg	NA	NA	NA	0.0021 J	NA
gamma-Chlordane	mg/kg	NA	NA	NA	0.0019 U	NA

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-154**	**LL2-155**	**LL2-156**	**LL2-157**	**LL2-158**
Sample ID		**LL20920**	**LL20923**	**LL20926**	**LL20929**	**LL20932**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA
Aldrin	mg/kg	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA
PCB-1254	mg/kg	0.038 U	0.4 U	0.1 =	0.039 =	0.19 U
PCB-1260	mg/kg	0.038 U	0.4 U	0.036 U	0.038 U	0.24 =
beta-BHC	mg/kg	NA	NA	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-158**	**LL2-159**	**LL2-160**	**LL2-161**	**LL2-162**
Sample ID		**LL21180**	**LL20935**	**LL20938**	**LL20941**	**LL20944**
Date		**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/27/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	0.0096 U	NA	NA
4,4'-DDT	mg/kg	NA	NA	0.0096 U	NA	NA
Aldrin	mg/kg	NA	NA	0.0096 U	NA	NA
Dieldrin	mg/kg	NA	NA	0.0096 U	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	0.0096 U	NA	NA
PCB-1254	mg/kg	0.037 U	0.038 U	0.25 J	0.037 U	0.12 J
PCB-1260	mg/kg	0.13 =	0.038 U	0.037 U	0.037 U	0.037 U
beta-BHC	mg/kg	NA	NA	0.0096 U	NA	NA
gamma-Chlordane	mg/kg	NA	NA	0.0096 U	NA	NA

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-163**	**LL2-202**	**LL2-203**	**LL2-231**	**LL2-232**
Sample ID		**LL20947**	**LL21042**	**LL21043**	**LL21092**	**LL21094**
Date		**07/28/2001**	**07/31/2001**	**07/31/2001**	**07/29/2001**	**07/29/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	NA	NA	NA	0.038 U	0.019 U
4,4'-DDT	mg/kg	NA	NA	NA	0.038 U	0.019 U
Aldrin	mg/kg	NA	NA	NA	0.038 U	0.019 U
Dieldrin	mg/kg	NA	NA	NA	0.038 U	0.019 U
Endrin Aldehyde	mg/kg	NA	NA	NA	0.038 U	0.019 U
PCB-1254	mg/kg	0.089 =	0.037 U	0.037 U	0.74 U	0.065 =
PCB-1260	mg/kg	0.037 U	0.037 U	0.037 U	0.74 U	0.036 U
beta-BHC	mg/kg	NA	NA	NA	0.038 U	0.019 U
gamma-Chlordane	mg/kg	NA	NA	NA	0.038 U	0.019 U

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-245**	**LL2-273**	**LL2SS-043**	**LL2sd-030(d)**	**LL2ss-008**
Sample ID		**LL21113**	**LL20692**	**LL2SS-043-0137-SO**	**LL2SD-030(D)-0122-SD**	**LL2SS-008-0095-SO**
Date		**07/30/2001**	**08/26/2001**	**08/10/1996**	**08/10/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 0**	**0 - 2**
Sample Type		**Grab**	**Grab**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	0.043 J	NA	0.0028 U	0.0027 U	0.055 J
4,4'-DDT	mg/kg	0.022 U	NA	0.0028 UJ	0.0027 UJ	0.033 J
Aldrin	mg/kg	0.022 U	NA	0.0014 U	0.0014 U	0.0015 U
Dieldrin	mg/kg	0.022 U	NA	0.0028 U	0.0027 U	0.0029 U
Endrin Aldehyde	mg/kg	0.022 U	NA	0.0028 U	0.0027 U	0.12 J
PCB-1254	mg/kg	0.47 =	0.15 =	0.074 U	0.073 U	1.9 =
PCB-1260	mg/kg	0.043 U	0.037 U	0.074 U	0.073 U	0.078 U
beta-BHC	mg/kg	0.022 U	NA	0.0014 U	0.0014 U	0.0015 U
gamma-Chlordane	mg/kg	0.022 U	NA	0.0014 U	0.0014 U	0.0075 J

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-013**	**LL2ss-019**	**LL2ss-019**	**LL2ss-031**	**LL2ss-061**
Sample ID		**LL2SS-013-0100-SO**	**LL2SS-019-0108-SO**	**LL2SS-019-0109-FD**	**LL2SS-031-0123-SO**	**LL2SS-061-0675-SO**
Date		**08/12/1996**	**08/10/1996**	**08/10/1996**	**08/09/1996**	**08/14/1996**
Depth (ft)		**0 - 1**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Pesticides and PCBs						
4,4'-DDE	mg/kg	0.0039 J	0.0027 U	0.0027 U	0.0026 U	0.036 J
4,4'-DDT	mg/kg	0.013 J	0.0027 U	0.0027 U	0.0026 U	0.041 J
Aldrin	mg/kg	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.0014 U
Dieldrin	mg/kg	0.0027 U	0.0027 U	0.0027 U	0.0026 U	0.027 J
Endrin Aldehyde	mg/kg	0.0027 U	0.0027 U	0.0027 U	0.0026 U	0.015 J
PCB-1254	mg/kg	0.65 J	0.074 U	0.074 U	0.07 U	2.5 =
PCB-1260	mg/kg	0.073 U	0.074 U	0.074 U	0.07 U	0.07 U
beta-BHC	mg/kg	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.0014 U
gamma-Chlordane	mg/kg	0.0014 U	0.0014 U	0.0014 U	0.0014 U	0.0056 J

Table 4-23. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-062**	**LL2ss-063**
Sample ID		**LL2SS-062-0681-SO**	**LL2SS-063-0683-SO**
Date		**08/20/1996**	**08/21/1996**
Depth (ft)		**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**
Analyte	**Units**		
Pesticides and PCBs			
4,4'-DDE	mg/kg	0.081 J	0.01 J
4,4'-DDT	mg/kg	0.17 J	0.066 =
Aldrin	mg/kg	0.024 J	0.0022 J
Dieldrin	mg/kg	0.0029 U	0.0031 J
Endrin Aldehyde	mg/kg	0.0029 U	0.003 U
PCB-1254	mg/kg	0.078 U	0.08 U
PCB-1260	mg/kg	6 J	0.24 J
beta-BHC	mg/kg	0.0015 U	0.0015 U
gamma-Chlordane	mg/kg	0.0015 =	0.0015 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
PCB = Polychlorinated biphenyl.
= - Detected result.
J - Estimated result.
U - Not detected.

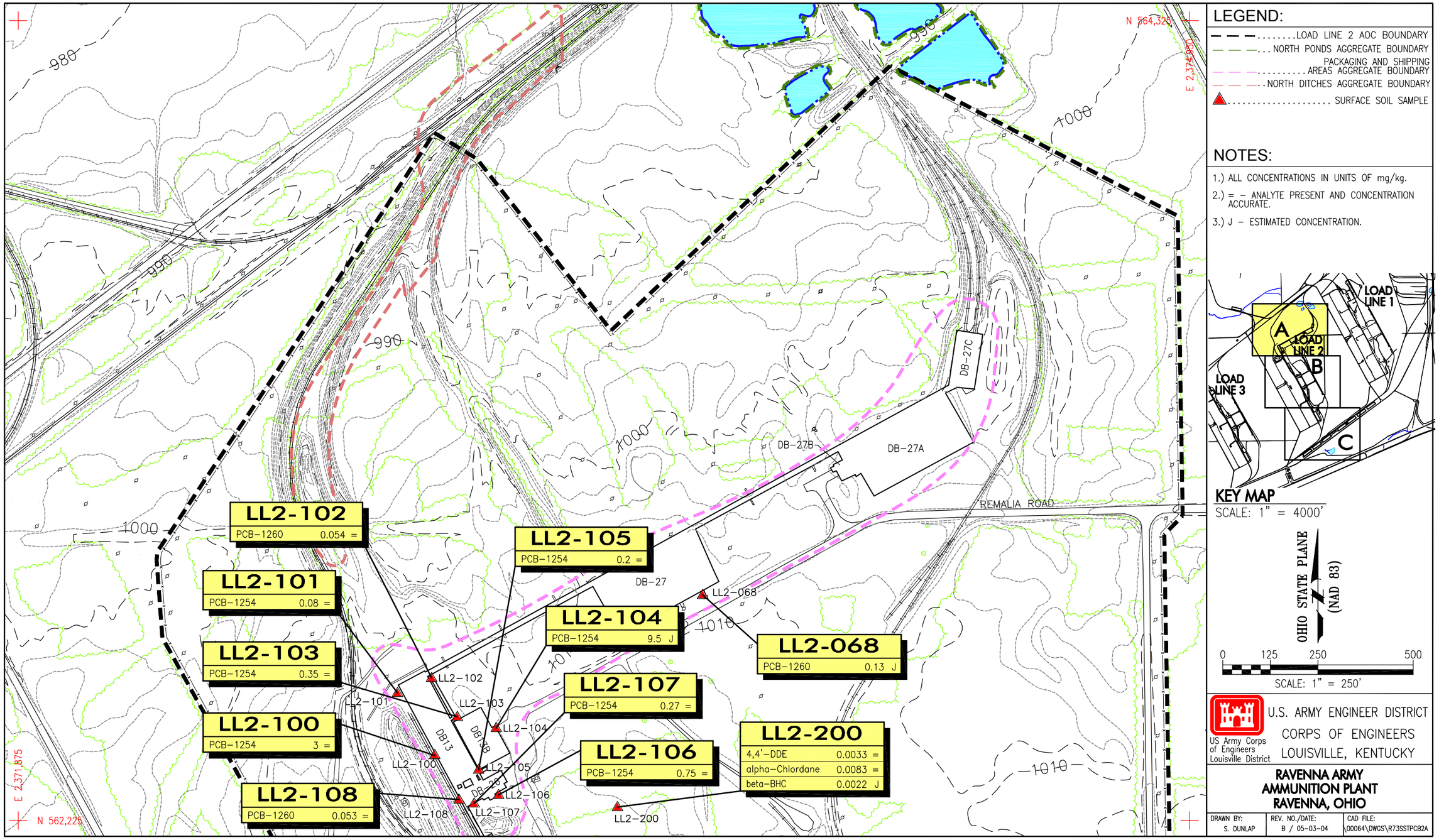
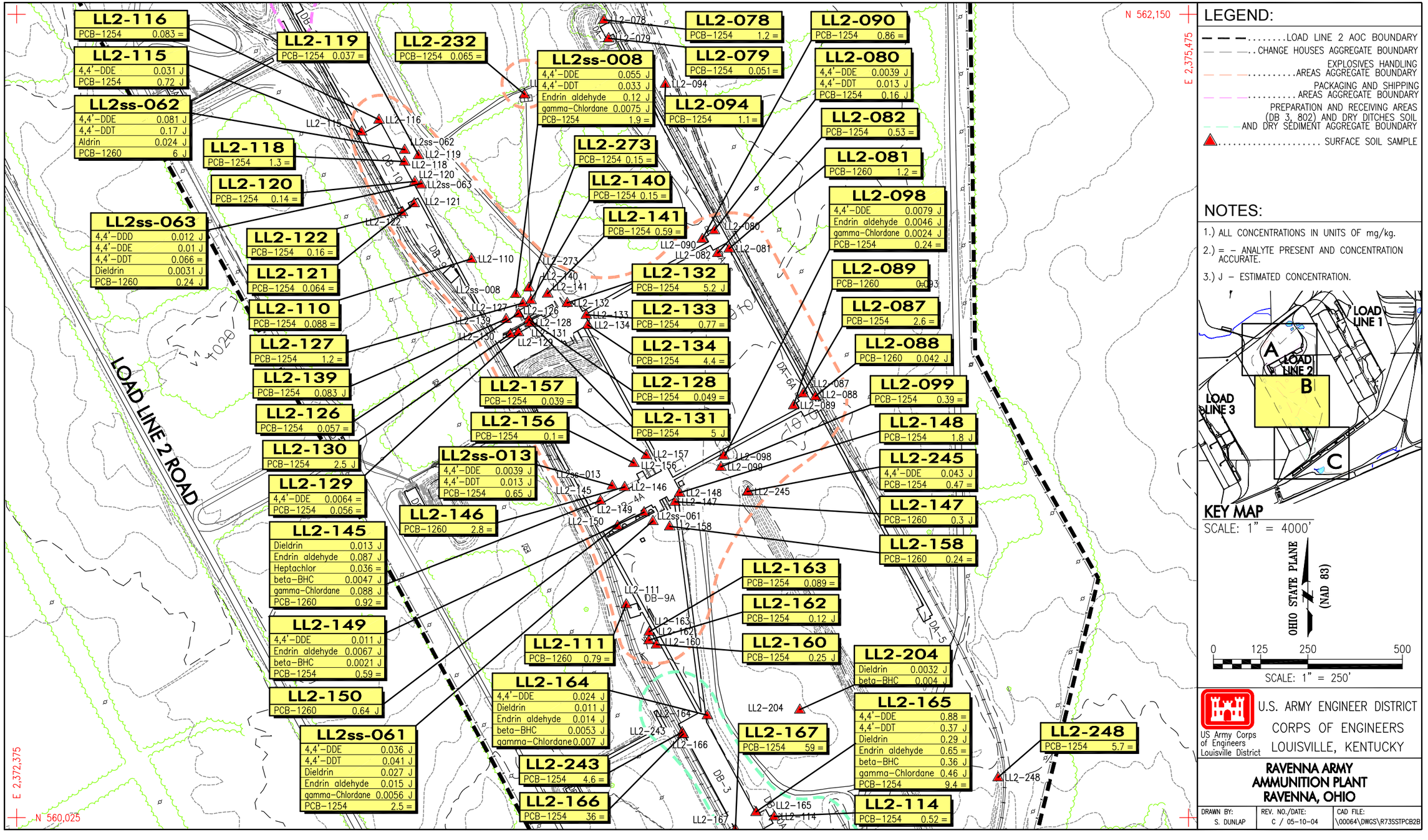


Figure 4-14. Distribution of Pesticides and Total PCBs in Surface Soil at Load Line 2 - Northern Section



LEGEND:

- LOAD LINE 2 AOC BOUNDARY
- CHANGE HOUSES AGGREGATE BOUNDARY
- EXPLOSIVES HANDLING AREAS AGGREGATE BOUNDARY
- PACKAGING AND SHIPPING AREAS AGGREGATE BOUNDARY
- PREPARATION AND RECEIVING AREAS (DB 3, 802) AND DRY DITCHES SOIL AND DRY SEDIMENT AGGREGATE BOUNDARY
- SURFACE SOIL SAMPLE

NOTES:

1.) ALL CONCENTRATIONS IN UNITS OF mg/kg.

2.) = – ANALYTE PRESENT AND CONCENTRATION ACCURATE.

3.) J – ESTIMATED CONCENTRATION.

KEY MAP

SCALE: 1" = 4000'

OHIO STATE PLANE (NAD 83)

0 125 250 500

SCALE: 1" = 250'

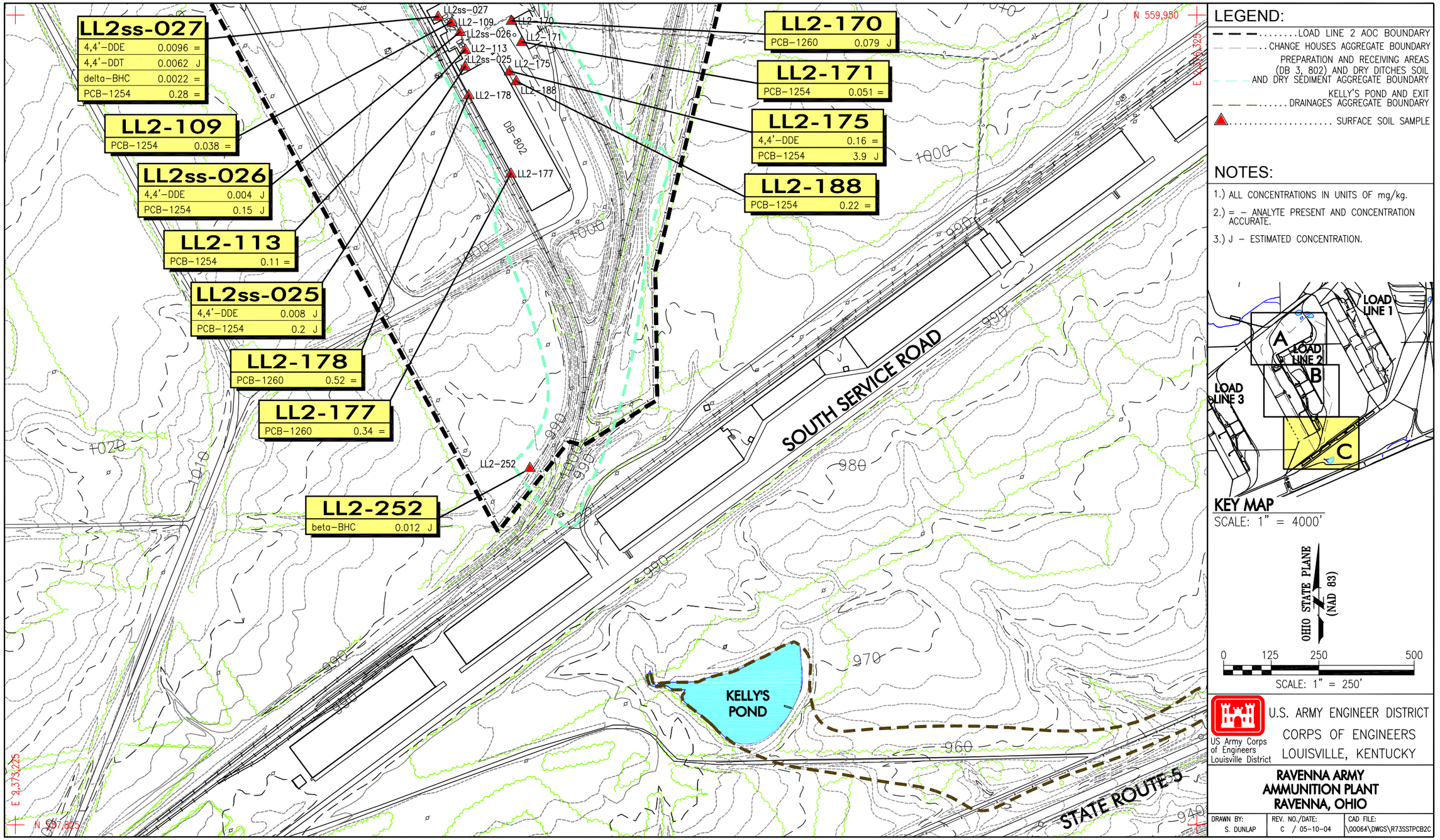
US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
S. DUNLAP	C / 05-10-04	\00064\DWGS\R73SSTPCB2B

Figure 4-15. Distribution of Pesticides and Total PCBs in Surface Soil at Load Line 2 - Central Section



LEGEND:

- LOAD LINE 2 AOC BOUNDARY
- CHANGE HOUSES AGGREGATE BOUNDARY
- PREPARATION AND RECEIVING AREAS (DB 3, 802) AND DRY DITCHES SOIL AND DRY SEDIMENT AGGREGATE BOUNDARY
- KELLY'S POND AND EXIT DRAINAGES AGGREGATE BOUNDARY
- SURFACE SOIL SAMPLE

NOTES:

1.) ALL CONCENTRATIONS IN UNITS OF mg/kg.

2.) = – ANALYTE PRESENT AND CONCENTRATION ACCURATE.

3.) J – ESTIMATED CONCENTRATION.

KEY MAP

SCALE: 1" = 4000'

OHIO STATE PLANE ZONE (NAD 83)

0 125 250 500

SCALE: 1" = 250'

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
S. DUNLAP	C / 05-10-04	\00064\DWGS\R73SSTPCB2C

Figure 4-16. Distribution of Pesticides and Total PCBs in Surface Soil at Load Line 2 - Southern Section

Table 4-24. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a]

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-086**	**LL2-086**	**LL2-093**	**LL2-096**	**LL2-096**	**LL2-098**
Sample ID		**LL20740**	**LL21168**	**LL20757**	**LL20766**	**LL21169**	**LL20772**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	19 U	13 J	0.38 U	0.41 U	0.39 U	0.39 U
2-Methylnaphthalene	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.17 J
Anthracene	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.39 U
Benz(*a*)anthracene	mg/kg	19 U	19 U	0.17 J	0.41 U	0.39 U	0.39 U
Benzo(*a*)pyrene	mg/kg	19 U	19 U	0.21 J	0.41 U	0.39 U	0.39 U
Benzo(*b*)fluoranthene	mg/kg	19 U	19 U	0.22 J	0.41 U	0.39 U	0.39 U
Benzo(*g,h,i*)perylene	mg/kg	19 U	19 U	0.1 J	0.41 U	0.39 U	0.39 U
Benzo(*k*)fluoranthene	mg/kg	19 U	19 U	0.14 J	0.41 U	0.39 U	0.39 U
Benzoic Acid	mg/kg	92 U	90 U	1.8 U	2 U	1.9 U	1.9 U
Bis(2-ethylhexyl)phthalate	mg/kg	19 U	19 U	0.17 U	0.41 U	0.39 U	0.39 U
Butyl benzyl phthalate	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.39 U
Chrysene	mg/kg	19 U	19 U	0.17 J	0.41 U	0.39 U	0.39 U
Di-n-butyl phthalate	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.39 U
Dibenz(*a,h*)anthracene	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.39 U
Fluoranthene	mg/kg	19 U	19 U	0.22 J	0.41 U	0.39 U	0.39 U
Indeno(1,2,3-*cd*)pyrene	mg/kg	19 U	19 U	0.1 J	0.41 U	0.39 U	0.39 U
Naphthalene	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.13 J
Phenanthrene	mg/kg	19 U	19 U	0.38 U	0.41 U	0.39 U	0.078 J
Pyrene	mg/kg	19 U	19 U	0.22 J	0.41 U	0.39 U	0.39 U

Table 4-24. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-098**	**LL2-115**	**LL2-126**	**LL2-126**	**LL2-129**	**LL2-129**
Sample ID		**LL21164**	**LL20823**	**LL20850**	**LL21166**	**LL20859**	**LL21165**
Date		**07/26/2001**	**07/25/2001**	**07/26/2001**	**07/26/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Field Duplicate**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
2-Methylnaphthalene	mg/kg	0.3 J	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Anthracene	mg/kg	0.38 U	0.35 U	0.078 J	0.38 U	0.39 U	0.39 U
Benz(*a*)anthracene	mg/kg	0.38 U	0.35 U	0.13 J	0.38 U	0.39 U	0.39 U
Benzo(*a*)pyrene	mg/kg	0.38 U	0.35 U	0.13 J	0.38 U	0.39 U	0.39 U
Benzo(*b*)fluoranthene	mg/kg	0.38 U	0.068 J	0.16 J	0.38 U	0.39 U	0.39 U
Benzo(*g,h,i*)perylene	mg/kg	0.38 U	0.35 U	0.068 J	0.38 U	0.39 U	0.39 U
Benzo(*k*)fluoranthene	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Benzoic Acid	mg/kg	1.8 U	1.7 U	1.9 U	1.9 U	1.9 U	1.9 U
Bis(2-ethylhexyl)phthalate	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Butyl benzyl phthalate	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Chrysene	mg/kg	0.38 U	0.071 J	0.15 J	0.06 J	0.39 U	0.39 U
Di-n-butyl phthalate	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Dibenz(*a,h*)anthracene	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Fluoranthene	mg/kg	0.079 J	0.11 J	0.33 J	0.14 J	0.39 U	0.39 U
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.38 U	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Naphthalene	mg/kg	0.21 J	0.35 U	0.39 U	0.38 U	0.39 U	0.39 U
Phenanthrene	mg/kg	0.14 J	0.058 J	0.28 J	0.099 J	0.39 U	0.39 U
Pyrene	mg/kg	0.076 J	0.098 J	0.27 J	0.11 J	0.39 U	0.39 U

Table 4-24. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-133**	**LL2-145**	**LL2-149**	**LL2-160**	**LL2-231**	**LL2-232**
Sample ID		**LL20871**	**LL20899**	**LL20911**	**LL20938**	**LL21092**	**LL21094**
Date		**07/28/2001**	**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/29/2001**	**07/29/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	1.4 J	0.38 U	0.36 U	0.37 U	0.37 U	0.36 U
2-Methylnaphthalene	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.069 J
Anthracene	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.36 U
Benz(*a*)anthracene	mg/kg	0.39 J	0.38 U	0.36 U	0.37 U	0.37 U	0.13 J
Benzo(*a*)pyrene	mg/kg	0.5 J	0.38 U	0.36 U	0.37 U	0.37 U	0.25 J
Benzo(*b*)fluoranthene	mg/kg	0.66 J	0.38 U	0.36 U	0.37 U	0.37 U	0.41 =
Benzo(*g,h,i*)perylene	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.19 J
Benzo(*k*)fluoranthene	mg/kg	0.33 J	0.38 U	0.36 U	0.37 U	0.37 U	0.35 J
Benzoic Acid	mg/kg	9.3 UJ	1.8 U	1.8 U	1.8 U	1.8 U	0.24 J
Bis(2-ethylhexyl)phthalate	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.081 J
Butyl benzyl phthalate	mg/kg	1.9 U	0.38 U	0.36 U	0.37 U	0.37 U	0.087 J
Chrysene	mg/kg	0.57 J	0.38 U	0.36 U	0.37 U	0.37 U	0.34 J
Di-n-butyl phthalate	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.36 U
Dibenz(*a,h*)anthracene	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.36 U
Fluoranthene	mg/kg	0.74 J	0.38 U	0.36 U	0.37 U	0.37 U	0.44 =
Indeno(1,2,3-*cd*)pyrene	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.15 J
Naphthalene	mg/kg	1.9 UJ	0.38 U	0.36 U	0.37 U	0.37 U	0.06 J
Phenanthrene	mg/kg	0.39 J	0.38 U	0.36 U	0.37 U	0.37 U	0.28 J
Pyrene	mg/kg	0.83 J	0.38 U	0.36 U	0.37 U	0.37 U	0.39 =

Table 4-24. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-245**	**LL2SS-043**	**LL2sd-030(d)**	**LL2ss-008**	**LL2ss-013**	**LL2ss-019**
Sample ID		**LL21113**	**LL2SS-043-0137-SO**	**LL2SD-030(D)-0122-SD**	**LL2SS-008-0095-SO**	**LL2SS-013-0100-SO**	**LL2SS-019-0108-SO**
Date		**07/30/2001**	**08/10/1996**	**08/10/1996**	**08/10/1996**	**08/12/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 0**	**0 - 2**	**0 - 1**	**0 - 2**
Sample Type		**Grab**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	0.43 U	NA	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	0.43 U	0.73 U	0.72 U	0.12 J	0.72 U	0.72 U
Anthracene	mg/kg	0.072 J	0.73 U	0.72 U	1.9 =	0.72 U	0.72 U
Benz(*a*)anthracene	mg/kg	0.19 J	0.73 U	0.076 J	2.9 =	0.088 J	0.72 U
Benzo(*a*)pyrene	mg/kg	0.18 J	0.73 U	0.72 U	2.3 =	0.12 J	0.72 U
Benzo(*b*)fluoranthene	mg/kg	0.21 J	0.73 U	0.13 J	0.77 U	0.17 J	0.72 U
Benzo(*g,h,i*)perylene	mg/kg	0.11 J	0.73 U	0.72 U	1.1 =	0.11 J	0.72 U
Benzo(*k*)fluoranthene	mg/kg	0.12 J	0.73 U	0.088 J	3.2 =	0.13 J	0.72 U
Benzoic Acid	mg/kg	2.1 U	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	mg/kg	0.43 U	0.73 U	0.72 U	0.77 U	0.72 U	0.72 U
Butyl benzyl phthalate	mg/kg	0.43 U	0.73 U	0.72 U	0.81 =	0.72 U	0.72 U
Chrysene	mg/kg	0.27 J	0.73 U	0.11 J	2.7 =	0.17 J	0.72 U
Di-n-butyl phthalate	mg/kg	0.43 U	0.73 U	0.11 J	0.77 U	0.72 U	0.72 U
Dibenz(*a,h*)anthracene	mg/kg	0.43 U	0.73 U	0.72 U	0.72 J	0.72 U	0.72 U
Fluoranthene	mg/kg	0.53 =	0.73 U	0.13 J	7.7 =	0.18 J	0.72 U
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.096 J	0.73 U	0.72 U	1.3 =	0.097 J	0.72 U
Naphthalene	mg/kg	0.43 U	0.73 U	0.72 U	0.27 J	0.72 U	0.72 U
Phenanthrene	mg/kg	0.38 J	0.73 U	0.72 U	6.4 =	0.1 J	0.72 U
Pyrene	mg/kg	0.46 =	0.73 U	0.082 J	5 =	0.17 J	0.72 U

Table 4-24. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-019**	**LL2ss-031**	**LL2ss-061**	**LL2ss-062**	**LL2ss-063**
Sample ID		**LL2SS-019-0109-FD**	**LL2SS-031-0123-SO**	**LL2SS-061-0675-SO**	**LL2SS-062-0681-SO**	**LL2SS-063-0683-SO**
Date		**08/10/1996**	**08/09/1996**	**08/14/1996**	**08/20/1996**	**08/21/1996**
Depth (ft)		**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**					
Semivolatile Organics						
2,4-Dinitrotoluene	mg/kg	NA	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	0.72 U	0.35 U	0.69 U	0.38 U	0.39 U
Anthracene	mg/kg	0.72 U	0.35 U	0.69 U	0.38 U	0.39 U
Benz(*a*)anthracene	mg/kg	0.72 U	0.075 J	0.69 U	0.16 J	0.07 J
Benzo(*a*)pyrene	mg/kg	0.72 U	0.073 J	0.69 U	0.13 J	0.063 J
Benzo(*b*)fluoranthene	mg/kg	0.72 U	0.068 J	0.083 J	0.1 J	0.39 U
Benzo(*g,h,i*)perylene	mg/kg	0.72 U	0.038 J	0.69 U	0.1 J	0.39 U
Benzo(*k*)fluoranthene	mg/kg	0.72 U	0.061 J	0.69 U	0.12 J	0.099 J
Benzoic Acid	mg/kg	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	mg/kg	0.72 U	0.35 U	0.69 U	0.086 J	0.19 J
Butyl benzyl phthalate	mg/kg	0.72 U	0.35 U	0.084 J	0.38 U	0.39 U
Chrysene	mg/kg	0.72 U	0.082 J	0.11 J	0.15 J	0.092 J
Di-n-butyl phthalate	mg/kg	0.72 U	0.35 U	0.69 U	0.07 J	0.068 J
Dibenz(*a,h*)anthracene	mg/kg	0.72 U	0.35 U	0.69 U	0.048 J	0.39 U
Fluoranthene	mg/kg	0.72 U	0.15 J	0.11 J	0.23 J	0.1 J
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.72 U	0.35 U	0.69 U	0.099 J	0.39 U
Naphthalene	mg/kg	0.72 U	0.35 U	0.69 U	0.38 U	0.39 U
Phenanthrene	mg/kg	0.72 U	0.11 J	0.69 U	0.11 J	0.057 J
Pyrene	mg/kg	0.72 U	0.11 J	0.086 J	0.28 J	0.12 J

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
= - Detected result.
J - Estimated result.
U - Not detected.

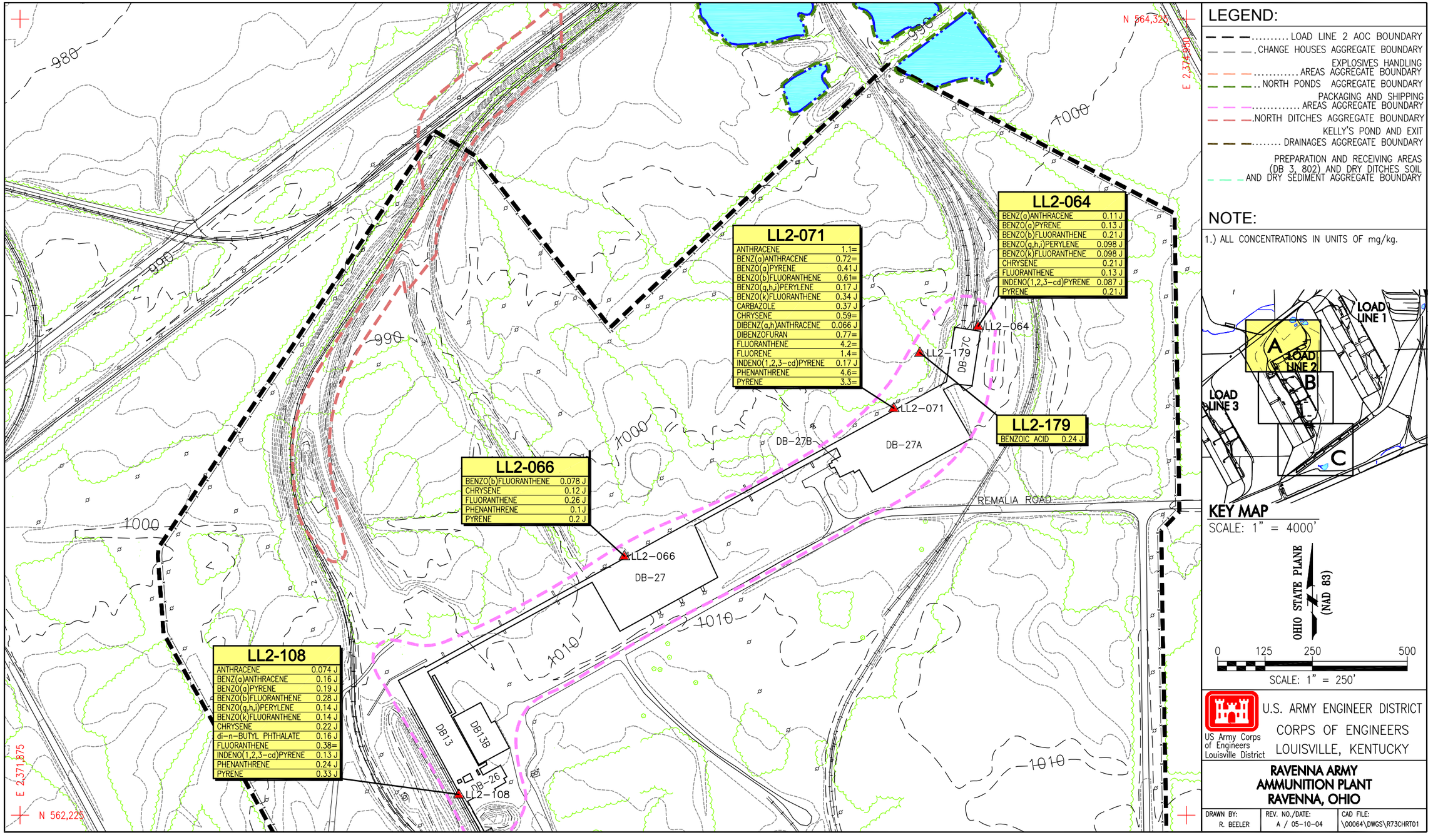


Figure 4-17. Distribution of Total SVOCs in Surface Soil at Load Line 2 - Northern Section

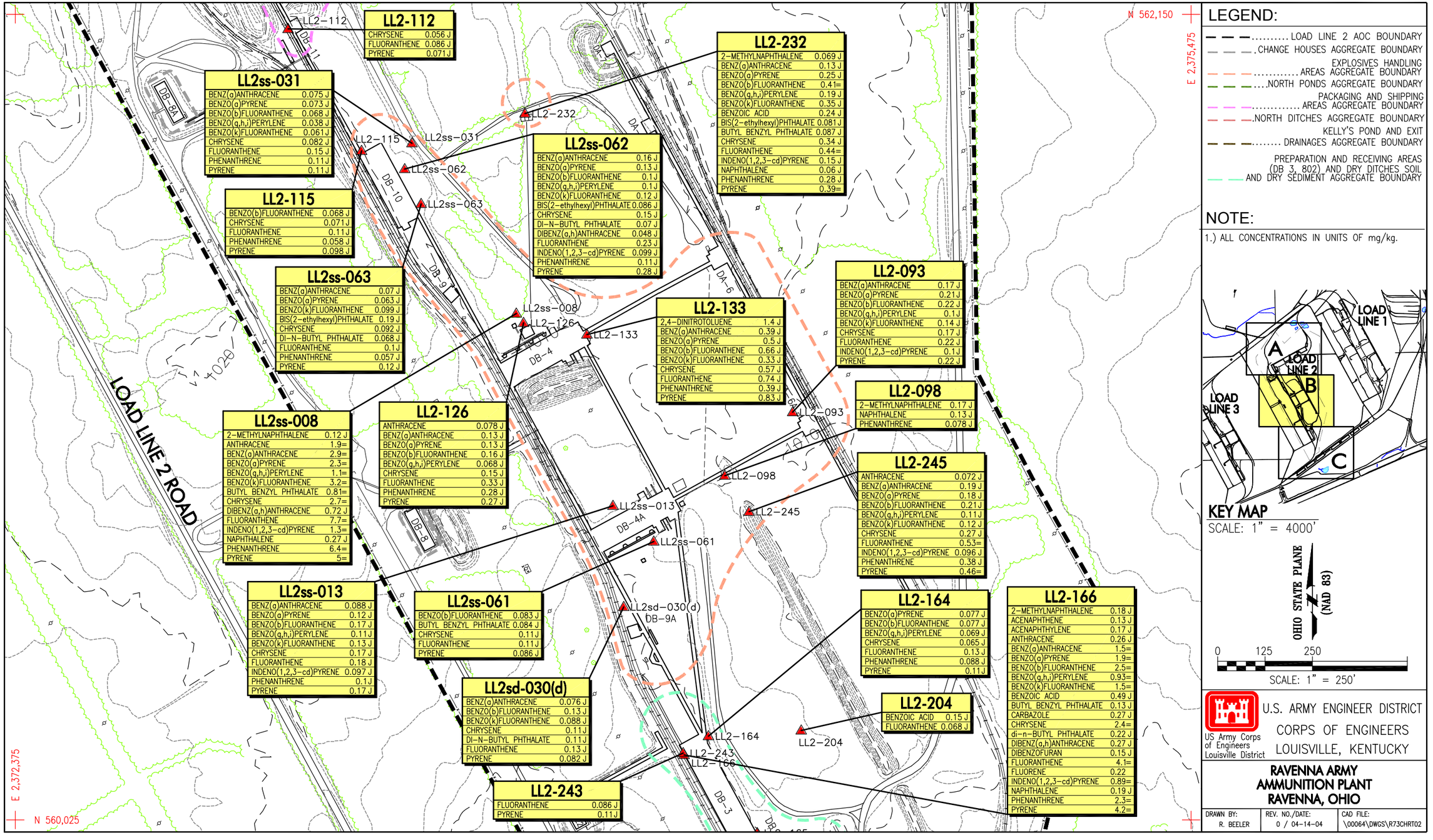


Figure 4-18. Distribution of Total SVOCs in Surface Soil at Load Line 2 - Central Section

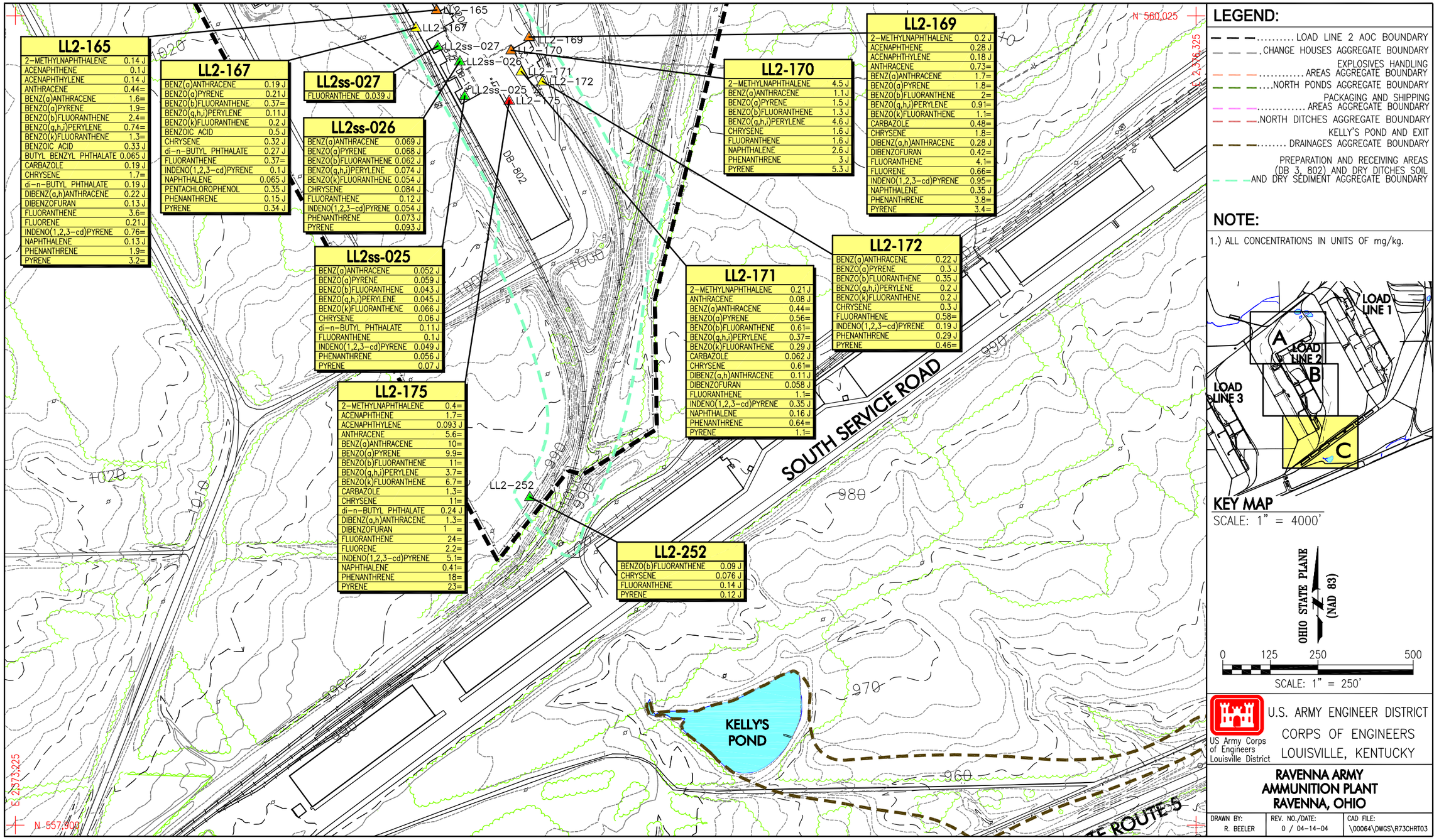


Figure 4-19. Distribution of Total SVOCs in Surface Soil at Load Line 2 - Southern Section

Table 4-25. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Volatiles – Site-Related Contaminants[a]

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-086**	**LL2-086**	**LL2-093**	**LL2-096**	**LL2-096**	**LL2-098**
Sample ID		**LL20740**	**LL21168**	**LL20757**	**LL20766**	**LL21169**	**LL20772**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**						
Volatile Organics							
Chloroform	mg/kg	0.0058 U	0.0056 U	0.0057 U	0.0062 U	0.006 U	0.0059 U
Toluene	mg/kg	0.0084 =	0.0023 J	0.0057 U	0.0062 U	0.006 U	0.0059 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-098**	**LL2-115**	**LL2-119**	**LL2-126**	**LL2-126**	**LL2-129**
Sample ID		**LL21164**	**LL20823**	**LL20835**	**LL20850**	**LL21166**	**LL20859**
Date		**07/26/2001**	**07/25/2001**	**07/25/2001**	**07/26/2001**	**07/26/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**						
Volatile Organics							
Chloroform	mg/kg	0.0058 U	0.0054 U	0.0052 U	0.0059 U	0.0058 U	0.0059 U
Toluene	mg/kg	0.0058 U	0.0054 U	0.0052 U	0.0059 U	0.0011 J	0.016 =

Table 4-25. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Volatiles – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-129**	**LL2-145**	**LL2-149**	**LL2-154**	**LL2-160**	**LL2-162**
Sample ID		**LL21165**	**LL20899**	**LL20911**	**LL20920**	**LL20938**	**LL20944**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Volatile Organics							
Chloroform	mg/kg	0.0059 U	0.0057 U	0.0055 U	0.0058 U	0.0057 U	0.0055 U
Toluene	mg/kg	0.0064 =	0.0057 U	0.0056 =	0.067 =	0.0087 =	0.0066 =

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-231**	**LL2-232**	**LL2-245**	**LL2SS-043**	**LL2sd-030(d)**	**LL2ss-008**
Sample ID		**LL21092**	**LL21094**	**LL21113**	**LL2SS-043-0137-SO**	**LL2SD-030(D)-0122-SD**	**LL2SS-008-0095-SO**
Date		**07/29/2001**	**07/29/2001**	**07/30/2001**	**08/10/1996**	**08/10/1996**	**08/10/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 0**	**0 - 2**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**						
Volatile Organics							
Chloroform	mg/kg	0.0056 U	0.69 U	0.0065 U	0.003 J	0.003 J	0.002 UJ
Toluene	mg/kg	0.018 =	3.7 =	0.0065 U	0.005 U	0.005 U	0.005 UJ

Table 4-25. Load Line 2 Surface Soil Explosives Handling Areas Aggregate – Organics Volatiles – Site-Related Contaminants[a] (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2ss-013**	**LL2ss-019**	**LL2ss-019**	**LL2ss-031**	**LL2ss-062**	**LL2ss-063**
Sample ID		**LL2SS-013-0100-SO**	**LL2SS-019-0108-SO**	**LL2SS-019-0109-FD**	**LL2SS-031-0123-SO**	**LL2SS-062-0681-SO**	**LL2SS-063-0683-SO**
Date		**08/12/1996**	**08/10/1996**	**08/10/1996**	**08/09/1996**	**08/20/1996**	**08/21/1996**
Depth (ft)		**0 - 1**	**0 - 2**	**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**						
Volatile Organics							
Chloroform	mg/kg	0.003 J	0.003 J	0.003 J	0.002 J	0.006 U	0.006 U
Toluene	mg/kg	0.005 UJ	0.005 U	0.005 UJ	0.005 U	0.006 U	0.006 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
= - Detected result.
J - Estimated result.
U - Not detected.

PCBs and pesticides were detected at low (less than 1 mg/kg) estimated concentrations for the most part. PCBs were the most pervasive with 13 of 32 detections for PCB-1254. PCB-1260 was much less frequently detected (3 of 32 detections). Pesticides were detected in from one to six of nine samples from this aggregate analyzed for pesticides (Table 4-3). The distribution and concentration of pesticides/PCBs are shown on Figures 4-14 through 4-16. PCBs are shown with colored triangles representing the summed total of detected concentrations, and pesticides are listed in table format on these figures. The highest concentrations of pesticides occurred in sample LL2-165, located on the eastern side of Building DB-3. The highest concentrations of PCB-1254 occurred in the same area, in samples LL2-165 (9.4 mg/kg), -166 (36 mg/kg), and -167 (59 mg/kg). The detected concentrations are shown by station in Table 4-26.

Many PAH and other SVOC compounds were detected in surface soils from this aggregate. Concentrations of benz(*a*)anthracene, benzo(*a*)pyrene, benzo(*b*)fluoranthene, benzo(*k*)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene were detected in concentrations exceeding 1 mg/kg in 5 of 17 samples (LL2-165, -166, -169, -170, and -175). These are also among the most frequently detected SVOCs (Table 4-3). Refer to Table 4-27 for the presentation of detected SVOCs by sampling station. These stations are located in the immediate vicinity of Process Buildings DB-3, C-1, and DB-803 (Figures 4-17 to 4-19).

A total of four VOCs were detected in 15 surface soil samples in the Preparation and Receiving Areas Aggregate; however, 2-butanone, acetone, and carbon disulfide were each only detected one time at low (less than 0.01 mg/kg) estimated concentrations. Table 4-28 shows the detected VOCs by station.

Packaging and Shipping Areas Aggregate

Two PCBs, 18 SVOCs, and 1 VOC were detected in surface soils in the Packaging and Shipping Areas Aggregate (Table 4-3). Organic compounds were detected with fairly low frequency (mostly less than 50%, although exceptions occur). As seen previously, high concentrations (over 1 mg/kg) were seen in a selected few samples within the aggregate.

PCB-1254 was the most frequently detected PCB, with 7 of 23 detections. PCB01260 was detected in three samples. Concentrations over 1 mg/kg were found in samples LL2-100 (near Building DB-13) and LL2-104 (near Building DB-13B). The distribution of total PCBs is shown on Figures 4-14 through 4-16. Concentrations by station are presented in Table 4-29.

Of the 18 SVOCs detected, benzo(*b*)fluoranthene, chrysene, fluoranthene, and pyrene were the most commonly detected (Table 4-3). Only one station, LL2-071 located on the north side Building DB-27A, had concentrations exceeding 1 mg/kg (Table 4-30). The distribution of SVOCs in surface soil is shown on Figures 4-17 through 4-19.

The only VOC detected in surface soil in the Packaging and Shipping Areas Aggregate is toluene. There were two detections out of eight samples, with low (less than 0.01 mg/kg) estimated concentrations (Table 4-31).

Change Houses Aggregate

Organic compounds were not detected in surface soil samples from the Change Houses Aggregate.

Table 4-26. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Pesticides – Site-Related Contaminants [a]

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-048(p2)**	**LL2-109**	**LL2-113**	**LL2-114**	**LL2-164**	**LL2-164**	**LL2-165**
Sample ID		**LL21120**	**LL20805**	**LL20817**	**LL20820**	**LL20950**	**LL21167**	**LL20953**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	NA	NA	NA	NA	0.024 J	0.02 J	0.88 =
4,4'-DDT	mg/kg	NA	NA	NA	NA	0.0039 U	0.0039 U	0.37 J
Dieldrin	mg/kg	NA	NA	NA	NA	0.011 J	0.0067 J	0.29 J
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	0.014 J	0.006 J	0.65 =
PCB-1254	mg/kg	0.057 U	0.038 =	0.11 =	0.52 =	19 U	3.8 U	9.4 =
PCB-1260	mg/kg	0.057 U	0.037 U	0.036 U	0.036 U	19 U	3.8 U	0.75 U
beta-BHC	mg/kg	NA	NA	NA	NA	0.0053 J	0.007 J	0.36 J
delta-BHC	mg/kg	NA	NA	NA	NA	0.0039 U	0.0039 U	0.096 U
gamma-Chlordane	mg/kg	NA	NA	NA	NA	0.007 J	0.0046 J	0.46 J

Table 4-26. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-166**	**LL2-167**	**LL2-169**	**LL2-170**	**LL2-171**	**LL2-172**	**LL2-175**
Sample ID		**LL20956**	**LL20959**	**LL20963**	**LL20966**	**LL20969**	**LL20972**	**LL20977**
Date		**07/27/2001**	**07/27/2001**	**07/24/2001**	**07/24/2001**	**07/24/2001**	**07/24/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA	0.16 =
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA	0.04 UJ
Dieldrin	mg/kg	NA	NA	NA	NA	NA	NA	0.04 U
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA	NA	0.04 U
PCB-1254	mg/kg	36 =	59 =	0.037 U	0.034 U	0.051 =	0.036 U	3.9 J
PCB-1260	mg/kg	4.8 U	7.4 U	0.037 U	0.079 J	0.037 U	0.036 U	0.38 U
beta-BHC	mg/kg	NA	NA	NA	NA	NA	NA	0.04 U
delta-BHC	mg/kg	NA	NA	NA	NA	NA	NA	0.04 U
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA	NA	0.04 U

Table 4-26. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-176**	**LL2-177**	**LL2-178**	**LL2-180**	**LL2-183**	**LL2-183**	**LL2-185**
Sample ID		**LL20980**	**LL20983**	**LL20986**	**LL20992**	**LL21001**	**LL21002**	**LL21007**
Date		**07/27/2001**	**07/27/2001**	**07/27/2001**	**07/25/2001**	**07/27/2001**	**07/27/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**1 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	NA	NA	NA	NA
PCB-1254	mg/kg	0.037 UJ	0.041 U	0.041 U	0.037 U	0.11 U	0.048 U	0.041 U
PCB-1260	mg/kg	0.037 UJ	0.34 =	0.52 J	0.037 U	0.11 U	0.048 U	0.041 U
beta-BHC	mg/kg	NA	NA	NA	NA	NA	NA	NA
delta-BHC	mg/kg	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	NA	NA	NA	NA

Table 4-26. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-186**	**LL2-187**	**LL2-188**	**LL2-212**	**LL2-243**	**LL2-249**	**LL2-249**
Sample ID		**LL21010**	**LL21013**	**LL21016**	**LL21052**	**LL20834**	**LL21118**	**LL21170**
Date		**07/28/2001**	**07/28/2001**	**07/27/2001**	**07/27/2001**	**08/13/2001**	**07/30/2001**	**07/30/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Field Duplicate**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA
4,4'-DDT	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA
Endrin Aldehyde	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA
PCB-1254	mg/kg	0.034 U	0.037 U	0.22 =	0.042 U	4.6 =	0.083 U	0.077 U
PCB-1260	mg/kg	0.034 U	0.037 U	0.12 U	0.042 U	0.48 U	0.083 U	0.077 UJ
beta-BHC	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA
delta-BHC	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA
gamma-Chlordane	mg/kg	NA	NA	NA	0.0021 U	NA	NA	NA

Table 4-26. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Pesticides – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-252**	**LL2sd/sw-048(d)**	**LL2sd/sw-049(d)**	**LL2sd/sw-049(d)**	**LL2ss-025**	**LL2ss-026**	**LL2ss-027**
Sample ID		**LL21125**	**LL2SD-048(D)-0142-SD**	**LL21123**	**LL21173**	**LL2SS-025-0116-SO**	**LL2SS-026-0117-SO**	**LL2SS-027-0118-SO**
Date		**07/30/2001**	**08/20/1996**	**07/27/2001**	**07/27/2001**	**08/08/1996**	**08/08/1996**	**08/08/1996**
Depth (ft)		**0 - 1**	**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab Composite**	**Grab**	**Field Duplicate**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	0.0049 U	0.0028 UJ	NA	NA	0.008 J	0.004 J	0.0096 =
4,4'-DDT	mg/kg	0.0049 U	0.0028 UJ	NA	NA	0.0026 UJ	0.0026 UJ	0.0062 J
Dieldrin	mg/kg	0.0049 U	0.0028 UJ	NA	NA	0.0026 U	0.0026 U	0.0026 U
Endrin Aldehyde	mg/kg	0.0049 U	0.0028 UJ	NA	NA	0.0026 U	0.0026 U	0.0026 U
PCB-1254	mg/kg	0.048 U	0.074 UJ	0.039 U	0.042 U	0.2 J	0.15 J	0.28 =
PCB-1260	mg/kg	0.048 U	0.074 UJ	0.039 U	0.042 U	0.069 U	0.07 U	0.07 U
beta-BHC	mg/kg	0.012 J	0.0014 UJ	NA	NA	0.0013 U	0.0014 U	0.0014 U
delta-BHC	mg/kg	0.0049 U	0.0014 UJ	NA	NA	0.0013 U	0.0014 U	0.0022 =
gamma-Chlordane	mg/kg	0.0049 U	0.0014 UJ	NA	NA	0.0013 U	0.0014 U	0.0014 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
PCB = Polychlorinated biphenyl.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-27. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a]

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-164**	**LL2-164**	**LL2-165**	**LL2-166**	**LL2-167**	**LL2-169**
Sample ID		**LL20950**	**LL21167**	**LL20953**	**LL20956**	**LL20959**	**LL20963**
Date		**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**	**07/27/2001**	**07/24/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	0.38 U	0.38 U	0.37 U	0.48 U	0.37 U	0.37 U
2-Methylnaphthalene	mg/kg	0.38 U	0.38 U	0.14 J	0.18 J	0.37 U	0.2 J
Acenaphthene	mg/kg	0.38 U	0.38 U	0.1 J	0.13 J	0.37 U	0.28 J
Acenaphthylene	mg/kg	0.38 U	0.38 U	0.14 J	0.17 J	0.37 U	0.18 J
Anthracene	mg/kg	0.38 U	0.38 U	0.44 =	0.26 J	0.37 U	0.73 =
Benz(*a*)anthracene	mg/kg	0.38 U	0.09 J	1.6 =	1.5 =	0.19 J	1.7 =
Benzo(*a*)pyrene	mg/kg	0.077 J	0.1 J	1.9 =	1.9 =	0.21 J	1.8 =
Benzo(*b*)fluoranthene	mg/kg	0.077 J	0.13 J	2.4 =	2.5 =	0.37 =	2 =
Benzo(*g,h,i*)perylene	mg/kg	0.069 J	0.066 J	0.74 =	0.93 =	0.11 J	0.91 =
Benzo(*k*)fluoranthene	mg/kg	0.38 U	0.38 U	1.3 =	1.5 =	0.2 J	1.1 =
Benzoic Acid	mg/kg	1.8 U	1.8 U	0.33 J	0.49 J	0.5 J	1.8 U
Butyl benzyl phthalate	mg/kg	0.38 U	0.38 U	0.065 J	0.13 J	0.37 U	0.37 U
Carbazole	mg/kg	0.38 U	0.38 U	0.19 J	0.27 J	0.37 U	0.48 =
Chrysene	mg/kg	0.065 J	0.11 J	1.7 =	2.4 =	0.32 J	1.8 =
Di-n-butyl phthalate	mg/kg	0.38 U	0.38 U	0.19 J	0.22 J	0.27 J	0.37 U
Dibenz(*a,h*)anthracene	mg/kg	0.38 U	0.38 U	0.22 J	0.27 J	0.37 U	0.28 J
Dibenzofuran	mg/kg	0.38 U	0.38 U	0.13 J	0.15 J	0.37 U	0.42 =
Fluoranthene	mg/kg	0.13 J	0.24 J	3.6 =	4.1 =	0.37 =	4.1 =
Fluorene	mg/kg	0.38 U	0.38 U	0.21 J	0.22 J	0.37 U	0.66 =
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.38 U	0.38 U	0.76 =	0.89 =	0.1 J	0.95 =
Naphthalene	mg/kg	0.38 U	0.38 U	0.13 J	0.19 J	0.065 J	0.35 J
Pentachlorophenol	mg/kg	0.38 U	0.38 U	0.37 U	0.48 U	0.35 J	0.37 U
Phenanthrene	mg/kg	0.088 J	0.16 J	1.9 =	2.3 =	0.15 J	3.8 =
Pyrene	mg/kg	0.11 J	0.2 J	3.2 =	4.2 =	0.34 J	3.4 =

Table 4-27. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-170**	**LL2-171**	**LL2-172**	**LL2-175**	**LL2-180**	**LL2-212**
Sample ID		**LL20966**	**LL20969**	**LL20972**	**LL20977**	**LL20992**	**LL21052**
Date		**07/24/2001**	**07/24/2001**	**07/24/2001**	**07/27/2001**	**07/25/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	6.8 U	0.37 U	0.36 U	0.38 U	0.37 U	0.42 U
2-Methylnaphthalene	mg/kg	4.5 J	0.21 J	0.36 U	0.4 =	0.37 U	0.42 U
Acenaphthene	mg/kg	6.8 U	0.37 U	0.36 U	1.7 =	0.37 U	0.42 U
Acenaphthylene	mg/kg	6.8 U	0.37 U	0.36 U	0.093 J	0.37 U	0.42 U
Anthracene	mg/kg	6.8 U	0.08 J	0.36 U	5.6 =	0.37 U	0.42 U
Benz(*a*)anthracene	mg/kg	1.1 J	0.44 =	0.22 J	10 =	0.37 U	0.42 U
Benzo(*a*)pyrene	mg/kg	1.5 J	0.56 =	0.3 J	9.9 =	0.37 U	0.42 U
Benzo(*b*)fluoranthene	mg/kg	1.3 J	0.61 =	0.35 J	11 =	0.37 U	0.42 U
Benzo(*g,h,i*)perylene	mg/kg	4.6 J	0.37 =	0.2 J	3.7 =	0.37 U	0.42 U
Benzo(*k*)fluoranthene	mg/kg	6.8 U	0.29 J	0.2 J	6.7 =	0.37 U	0.42 U
Benzoic Acid	mg/kg	33 U	1.8 U	1.8 U	1.9 U	1.8 U	2 U
Butyl benzyl phthalate	mg/kg	6.8 U	0.37 U	0.36 U	0.38 U	0.37 U	0.42 U
Carbazole	mg/kg	6.8 U	0.062 J	0.36 U	1.3 =	0.37 U	0.42 U
Chrysene	mg/kg	1.6 J	0.61 =	0.3 J	11 =	0.37 U	0.42 U
Di-n-butyl phthalate	mg/kg	6.8 U	0.37 U	0.36 U	0.24 J	0.37 U	0.42 U
Dibenz(*a,h*)anthracene	mg/kg	6.8 U	0.11 J	0.36 U	1.3 =	0.37 U	0.42 U
Dibenzofuran	mg/kg	6.8 U	0.058 J	0.36 U	1 =	0.37 U	0.42 U
Fluoranthene	mg/kg	1.6 J	1.1 =	0.58 =	24 =	0.37 U	0.42 U
Fluorene	mg/kg	6.8 U	0.37 U	0.36 U	2.2 =	0.37 U	0.42 U
Indeno(1,2,3-*cd*)pyrene	mg/kg	6.8 U	0.35 J	0.19 J	5.1 =	0.37 U	0.42 U
Naphthalene	mg/kg	2.6 J	0.16 J	0.36 U	0.41 =	0.37 U	0.42 U
Pentachlorophenol	mg/kg	6.8 U	0.37 U	0.36 U	0.38 U	0.37 U	0.42 U
Phenanthrene	mg/kg	3 J	0.64 =	0.29 J	18 =	0.37 U	0.42 U
Pyrene	mg/kg	5.3 J	1.1 =	0.46 =	23 =	0.37 U	0.42 U

Table 4-27. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Semivolatile – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-243**	**LL2-252**	**LL2sd/sw-048(d)**	**LL2ss-025**	**LL2ss-026**	**LL2ss-027**
Sample ID		**LL20834**	**LL21125**	**LL2SD-048(D)-0142-SD**	**LL2SS-025-0116-SO**	**LL2SS-026-0117-SO**	**LL2SS-027-0118-SO**
Date		**08/13/2001**	**07/30/2001**	**08/20/1996**	**08/08/1996**	**08/08/1996**	**08/08/1996**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**						
Semivolatile Organics							
2,4-Dinitrotoluene	mg/kg	0.48 UJ	0.48 U	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Acenaphthene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Acenaphthylene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Anthracene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Benz(*a*)anthracene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.052 J	0.069 J	0.34 U
Benzo(*a*)pyrene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.059 J	0.068 J	0.34 U
Benzo(*b*)fluoranthene	mg/kg	0.48 UJ	0.09 J	0.37 U	0.043 J	0.062 J	0.34 U
Benzo(*g,h,i*)perylene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.045 J	0.074 J	0.34 U
Benzo(*k*)fluoranthene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.066 J	0.054 J	0.34 U
Benzoic Acid	mg/kg	2.3 UJ	2.3 U	NA	NA	NA	NA
Butyl benzyl phthalate	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Carbazole	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Chrysene	mg/kg	0.48 UJ	0.076 J	0.37 U	0.06 J	0.084 J	0.34 U
Di-n-butyl phthalate	mg/kg	0.48 UJ	0.48 U	0.37 U	0.11 J	0.34 U	0.34 U
Dibenz(*a,h*)anthracene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Dibenzofuran	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Fluoranthene	mg/kg	0.086 J	0.14 J	0.37 U	0.1 J	0.12 J	0.039 J
Fluorene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.049 J	0.054 J	0.34 U
Naphthalene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.34 U	0.34 U	0.34 U
Pentachlorophenol	mg/kg	0.48 UJ	0.48 U	0.89 U	0.82 U	0.83 U	0.83 U
Phenanthrene	mg/kg	0.48 UJ	0.48 U	0.37 U	0.056 J	0.073 J	0.34 U
Pyrene	mg/kg	0.11 J	0.12 J	0.37 U	0.07 J	0.093 J	0.34 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
NA = Not analyzed.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-28. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Volatiles – Site-Related Contaminants[a]

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-164**	**LL2-164**	**LL2-165**	**LL2-166**
Sample ID		**LL20950**	**LL21167**	**LL20953**	**LL20956**
Date		**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**				
Volatile Organics					
2-Butanone	mg/kg	0.023 U	0.023 U	0.023 U	0.029 U
Acetone	mg/kg	0.023 U	0.023 U	0.023 U	0.029 U
Carbon Disulfide	mg/kg	0.0057 U	0.0057 U	0.0056 U	0.0072 U
Toluene	mg/kg	0.0018 J	0.0034 J	0.00074 J	0.055 =

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-167**	**LL2-169**	**LL2-170**	**LL2-175**
Sample ID		**LL20959**	**LL20963**	**LL20966**	**LL20977**
Date		**07/27/2001**	**07/24/2001**	**07/24/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Volatile Organics					
2-Butanone	mg/kg	0.022 U	0.022 U	0.021 U	0.023 U
Acetone	mg/kg	0.022 U	0.022 U	0.021 U	0.023 U
Carbon Disulfide	mg/kg	0.0056 U	0.0056 U	0.0051 U	0.0058 U
Toluene	mg/kg	0.056 =	0.0056 U	0.0051 U	0.0058 U

Table 4-28. Load Line 2 Surface Soil Preparation and Receiving Areas Aggregate – Organics Volatiles – Site-Related Contaminants[a] (continued)

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2-180**	**LL2-212**	**LL2-243**	**LL2-252**
Sample ID		**LL20992**	**LL21052**	**LL20834**	**LL21125**
Date		**07/25/2001**	**07/27/2001**	**08/13/2001**	**07/30/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Volatile Organics					
2-Butanone	mg/kg	0.023 U	0.025 U	0.012 J	0.029 U
Acetone	mg/kg	0.023 U	0.025 U	0.038 J	0.029 U
Carbon Disulfide	mg/kg	0.0056 U	0.0063 U	0.0047 J	0.0072 U
Toluene	mg/kg	0.0056 U	0.0086 =	0.014 U	0.0072 U

Functional Area		Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate	Preparation and Receiving Areas Aggregate
Station ID		**LL2sd/sw-048(d)**	**LL2ss-025**	**LL2ss-026**	**LL2ss-027**
Sample ID		**LL2SD-048(D)-0142-SD**	**LL2SS-025-0116-SO**	**LL2SS-026-0117-SO**	**LL2SS-027-0118-SO**
Date		**08/20/1996**	**08/08/1996**	**08/08/1996**	**08/08/1996**
Depth (ft)		**0 - 2**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab Composite**	**Grab Composite**	**Grab Composite**	**Grab Composite**
Analyte	**Units**				
Volatile Organics					
2-Butanone	mg/kg	0.006 U	0.005 UJ	0.005 UJ	0.005 U
Acetone	mg/kg	0.006 U	0.005 R	0.005 R	0.005 U
Carbon Disulfide	mg/kg	0.006 U	0.005 U	0.005 UJ	0.005 U
Toluene	mg/kg	0.006 U	0.005 UJ	0.005 J	0.005 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-29. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Pesticides – Site-Related Contaminants

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-064**	**LL2-065**	**LL2-066**	**LL2-067**
Sample ID		**LL20684**	**LL20687**	**LL20690**	**LL20693**
Date		**07/24/2001**	**07/24/2001**	**07/26/2001**	**07/26/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Pesticides and PCBs					
PCB-1254	mg/kg	0.04 U	0.037 U	0.042 U	0.042 U
PCB-1260	mg/kg	0.04 U	0.037 U	0.042 U	0.042 U

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-067**	**LL2-068**	**LL2-069**	**LL2-071**
Sample ID		**LL21182**	**LL20696**	**LL20699**	**LL20703**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Field Duplicate**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Pesticides and PCBs					
PCB-1254	mg/kg	0.041 U	0.038 U	0.037 U	0.043 U
PCB-1260	mg/kg	0.051 J	0.13 J	0.037 U	0.043 U

Table 4-29. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Pesticides – Site-Related Contaminants (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-072**	**LL2-073**	**LL2-074**	**LL2-076**
Sample ID		**LL20706**	**LL20709**	**LL20712**	**LL20716**
Date		**07/25/2001**	**07/24/2001**	**07/24/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Pesticides and PCBs					
PCB-1254	mg/kg	0.04 U	0.036 U	0.035 U	0.036 U
PCB-1260	mg/kg	0.04 U	0.036 U	0.035 U	0.036 U

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-100**	**LL2-101**	**LL2-102**	**LL2-103**
Sample ID		**LL20778**	**LL20781**	**LL20784**	**LL20787**
Date		**07/26/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Pesticides and PCBs					
PCB-1254	mg/kg	3 =	0.08 =	0.038 U	0.35 =
PCB-1260	mg/kg	0.39 U	0.036 U	0.054 =	0.069 U

Table 4-29. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Pesticides – Site-Related Contaminants (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-104**	**LL2-105**	**LL2-106**	**LL2-107**
Sample ID		**LL20790**	**LL20793**	**LL20796**	**LL20799**
Date		**07/24/2001**	**07/25/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Pesticides and PCBs					
PCB-1254	mg/kg	9.5 J	0.2 =	0.75 =	0.27 =
PCB-1260	mg/kg	3.9 U	0.17 U	0.37 U	0.036 U

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-108**	**LL2-112**	**LL2-179**	**LL2-181**
Sample ID		**LL20802**	**LL20814**	**LL20989**	**LL20995**
Date		**07/27/2001**	**07/27/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Pesticides and PCBs					
PCB-1254	mg/kg	0.036 U	0.036 U	0.04 U	0.04 U
PCB-1260	mg/kg	0.053 =	0.036 U	0.04 U	0.04 U

ID = Identification.
PCB = Polychlorinated biphenyl.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-30. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Semivolatile – Site-Related Contaminants

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-064**	**LL2-066**	**LL2-071**	**LL2-076**
Sample ID		**LL20684**	**LL20690**	**LL20703**	**LL20716**
Date		**07/24/2001**	**07/26/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Semivolatile Organics					
Acenaphthene	mg/kg	0.4 U	0.42 U	1.1 =	0.36 UJ
Anthracene	mg/kg	0.4 U	0.42 U	0.69 =	0.36 UJ
Benz(*a*)anthracene	mg/kg	0.11 J	0.42 U	0.72 =	0.36 UJ
Benzo(*a*)pyrene	mg/kg	0.13 J	0.42 U	0.41 J	0.36 UJ
Benzo(*b*)fluoranthene	mg/kg	0.21 J	0.078 J	0.61 =	0.36 UJ
Benzo(*g,h,i*)perylene	mg/kg	0.098 J	0.42 U	0.17 J	0.36 UJ
Benzo(*k*)fluoranthene	mg/kg	0.098 J	0.42 U	0.34 J	0.36 UJ
Benzoic Acid	mg/kg	1.9 U	2 U	2.1 U	1.8 UJ
Carbazole	mg/kg	0.4 U	0.42 U	0.37 J	0.36 UJ
Chrysene	mg/kg	0.21 J	0.12 J	0.59 =	0.36 UJ
Di-n-butyl phthalate	mg/kg	0.4 U	0.42 U	0.43 U	0.36 UJ
Dibenz(*a,h*)anthracene	mg/kg	0.4 U	0.42 U	0.066 J	0.36 UJ
Dibenzofuran	mg/kg	0.4 U	0.42 U	0.77 =	0.36 UJ
Fluoranthene	mg/kg	0.13 J	0.26 J	4.2 =	0.36 UJ
Fluorene	mg/kg	0.4 U	0.42 U	1.4 =	0.36 UJ
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.087 J	0.42 U	0.17 J	0.36 UJ
Phenanthrene	mg/kg	0.4 U	0.1 J	4.6 =	0.36 UJ
Pyrene	mg/kg	0.21 J	0.2 J	3.3 =	0.36 UJ

Table 4-30. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Semivolatile – Site-Related Contaminants (continued)

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-108**	**LL2-112**	**LL2-179**
Sample ID		**LL20802**	**LL20814**	**LL20989**
Date		**07/27/2001**	**07/27/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**
Analyte	**Units**			
Semivolatile Organics				
Acenaphthene	mg/kg	0.36 U	0.36 U	0.4 U
Anthracene	mg/kg	0.074 J	0.36 U	0.4 U
Benz(*a*)anthracene	mg/kg	0.16 J	0.36 U	0.4 U
Benzo(*a*)pyrene	mg/kg	0.19 J	0.36 U	0.4 U
Benzo(*b*)fluoranthene	mg/kg	0.28 J	0.36 U	0.4 U
Benzo(*g,h,i*)perylene	mg/kg	0.14 J	0.36 U	0.4 U
Benzo(*k*)fluoranthene	mg/kg	0.14 J	0.36 U	0.4 U
Benzoic Acid	mg/kg	1.7 U	1.7 U	0.24 J
Carbazole	mg/kg	0.36 U	0.36 U	0.4 U
Chrysene	mg/kg	0.22 J	0.056 J	0.4 U
Di-n-butyl phthalate	mg/kg	0.16 J	0.36 U	0.4 U
Dibenz(*a,h*)anthracene	mg/kg	0.36 U	0.36 U	0.4 U
Dibenzofuran	mg/kg	0.36 U	0.36 U	0.4 U
Fluoranthene	mg/kg	0.38 =	0.086 J	0.4 U
Fluorene	mg/kg	0.36 U	0.36 U	0.4 U
Indeno(1,2,3-*cd*)pyrene	mg/kg	0.13 J	0.36 U	0.4 U
Phenanthrene	mg/kg	0.24 J	0.36 U	0.4 U
Pyrene	mg/kg	0.33 J	0.071 J	0.4 U

ID = Identification.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-31. Load Line 2 Surface Soil Packaging and Shipping Areas Aggregate – Organics Volatile – Site-Related Contaminants[a]

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-064**	**LL2-066**	**LL2-071**	**LL2-076**
Sample ID		**LL20684**	**LL20690**	**LL20703**	**LL20716**
Date		**07/24/2001**	**07/26/2001**	**07/25/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Volatile Organics					
Toluene	mg/kg	0.006 U	0.0063 U	0.0065 U	0.0037 J

Functional Area		Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate	Packaging and Shipping Areas Aggregate
Station ID		**LL2-103**	**LL2-108**	**LL2-112**	**LL2-179**
Sample ID		**LL20787**	**LL20802**	**LL20814**	**LL20989**
Date		**07/25/2001**	**07/27/2001**	**07/27/2001**	**07/25/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Volatile Organics					
Toluene	mg/kg	0.0052 U	0.0016 J	0.0054 U	0.006 U

[a]Table presents both Phase I (1996) and Phase II (2001) data.
ID = Identification.
= - Detected result.
J - Estimated result.
U - Not detected.

Perimeter Area Aggregate

Five pesticide/PCBs and two SVOCs were detected in surface soil samples taken from the Perimeter Area aggregate (Table 4-3). Detections were limited to a limited number of sample locations, mostly in the vicinity of the eastern-most set of railroad tracks connecting the process areas to one another.

PCB-1254 was the most commonly detected compound, with four detections (Table 4-3). Concentrations greater than 1 mg/kg were seen in three stations, LL2-078 and LL2-079, located near Buildings DA-7/-21 and the railroad tracks, and LL2-248, located on the southern end of the load line along the railroad tracks east of the Preparation and Receiving Areas Aggregate (refer to Figures 4-14 through 4-16). The detailed presentation of detections by station is shown on Table 4-32.

Two SVOC compounds, benzoic acid and fluoranthene, were detected once at low estimated concentrations (Table 4-3). Both compounds were detected in surface soil from station LL2-204. Refer to Figures 4-17 through 4-19 for the distribution of SVOC in surface soils at Load Line 2.

VOCs were not detected in surface soils from the Perimeter Area Aggregate.

North Ditches Aggregate

Acetone was detected in low (less than 0.1 mg/kg) estimated concentrations in samples LL2-233 and LL2-234 from the North Ditches Aggregate. No other organic compounds were detected in surface soils from the North Ditches Aggregate.

4.2.6 Summary

Contamination in surface soils varied somewhat by aggregate, with aggregates containing the main process buildings (Explosives Handling Areas Aggregate, Preparation and Receiving Areas Aggregate, and Packaging and Shipping Areas Aggregate) having a greater variety of SRCs and generally having higher concentrations than the outlying aggregates (Change Houses Aggregate, North Ditches Areas Aggregate, and Perimeter Areas Aggregate). Explosives were detected in all aggregates but the Change Houses. In all aggregates, 2,4,6-TNT was the most common explosive and it occurred at the highest concentration. Between 6 and 19 inorganic SRCs were detected in each aggregate in Load Line 2. The most commonly detected inorganics include aluminum, arsenic, barium, chromium, lead, manganese, and zinc. Arsenic, lead, and manganese were most commonly detected above background. Organic compounds were widespread at low estimated concentrations, and only sporadically occurred at higher concentrations (greater than 1 mg/kg). Almost all stations with high concentrations and/or a high variety of organic compounds detected occurred in the immediate vicinity of the process buildings, or along the railroad tracks connecting the process areas to one another. PCB-1254, PAH compounds, and toluene were the most commonly detected organic compounds.

Based on the evaluation of the occurrence and distribution of contaminants in surface soil at Load Line 2, the following observations can be made.

- Explosives are present in surface soils in the vicinity of the buildings and railroad tracks in the Explosive Handling Area Aggregate, Preparation and Receiving Area Aggregate, Packaging and Shipping Area Aggregate, and, to a much lesser extent, in the Perimeter Area and North Ditches Area Aggregates. Explosives were not detected in the Change Houses Area Aggregate. The most commonly detected explosive compound is 2,4,6-TNT.

Table 4-32. Load Line 2 Surface Soil Perimeter Area Aggregate – Organics Pesticides – Site-Related Contaminants

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-078**	**LL2-078**	**LL2-079**	**LL2-094**	**LL2-095**	**LL2-184**	**LL2-189**
Sample ID		**LL20720**	**LL21171**	**LL20723**	**LL20760**	**LL20763**	**LL20833**	**LL21019**
Date		**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**07/26/2001**	**08/13/2001**	**07/28/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	NA	NA	NA	NA	NA	NA	NA
Dieldrin	mg/kg	NA	NA	NA	NA	NA	NA	NA
PCB-1254	mg/kg	1.2 =	1.4 =	0.051 =	1.1 =	0.036 U	0.037 U	0.038 U
alpha-Chlordane	mg/kg	NA	NA	NA	NA	NA	NA	NA
beta-BHC	mg/kg	NA	NA	NA	NA	NA	NA	NA

Functional Area		Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate	Perimeter Area Aggregate
Station ID		**LL2-200**	**LL2-201**	**LL2-201**	**LL2-204**	**LL2-205**	**LL2-248**	**LL2sd-050(d)**
Sample ID		**LL21040**	**LL21041**	**LL21181**	**LL21044**	**LL21045**	**LL21117**	**LL21099**
Date		**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/31/2001**	**07/30/2001**	**07/29/2001**	**07/27/2001**
Depth (ft)		**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**	**0 - 1**
Sample Type		**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**							
Pesticides and PCBs								
4,4'-DDE	mg/kg	0.0033 =	NA	NA	0.0019 U	NA	NA	NA
Dieldrin	mg/kg	0.002 U	NA	NA	0.0032 J	NA	NA	NA
PCB-1254	mg/kg	0.038 U	0.038 U	0.037 U	0.036 U	0.036 U	5.7 =	0.051 U
alpha-Chlordane	mg/kg	0.0083 =	NA	NA	0.0019 U	NA	NA	NA
beta-BHC	mg/kg	0.0022 J	NA	NA	0.004 J	NA	NA	NA

ID = Identification.
NA = Not analyzed.
PCB = Polychlorinated biphenyl.
= - Detected result.
J - Estimated result.
U - Not detected.

- Propellants were detected in six samples in the Explosives Handling Area (five detections) and Perimeter Area (one detection) Aggregates.

- Although inorganic SRCs occurred widely in all aggregates, the majority of detected concentrations were less than 2 times the site-related background criteria for those constituents having background values. Inorganic SRCs were very consistent across all aggregates in Load Line 2; however, the Change House Aggregate had the fewest SRCs and the lowest concentrations, while the Preparation and Receiving Areas Aggregate showed the greatest number of inorganic SRCs and the highest percentage of samples with concentrations of inorganic SRCs more than twice the background criteria.

- The samples with the highest number of SRCs and/or the highest detected concentrations tended to be located either in the immediate vicinity of a building footprint or between buildings and the major railroad tracks running the length of the load line.

- PCBs are widespread contaminants in surface soils, and high concentrations are found in a few sample locations within each aggregate. Pesticides tend to be more sporadic in their occurrence and are generally detected in low, estimated concentrations.

- SVOC contamination is pervasive at low concentrations in surface soils at Load Line 2. PAH compounds are especially common. Higher concentrations are isolated into a relatively few sample locations, usually immediately adjacent to process buildings. SVOCs were especially prevalent in samples from the Preparation and Receiving Areas Aggregate.

- VOC contamination is almost all low, estimated concentrations of toluene, acetone, and occasionally a random detection of another compound.

4.3 SUBSURFACE SOILS

4.3.1 Summary of Phase I Remedial Investigation Data

Subsurface soils were not sampled as part of the Phase I RI.

4.3.2 Geotechnical Results

Three Shelby tubes were collected from monitoring well locations (LL2mw-263, LL2mw-265, and LL2mw-268) collected from just above the unconsolidated zone/bedrock contact. These samples were submitted for moisture content, grain size distribution analyses, Atterburg limits analyses, specific gravity, and USCS classification. In addition, six disturbed grab samples were collected from two of the test pits to evaluate lateral and vertical heterogeneity for geotechnical parameters. Three grab samples were collected from Test Pit 3 and Test Pit 6 and submitted for moisture content, grain size distribution analyses, pH, Atterberg limits, specific gravity, and USCS classification. Table 4-33 provides a summary of the geotechnical data for subsurface soil at Load Line 2.

Sieve analyses and USCS classification identified the samples as ranging from clay (CL) to silty, clayey sands (SC-SM). Moisture content of the samples varied depending on the location, with results ranging from 13.1% [0.85 to 0.98 m (2.8 to 3.2 ft) bgs at LL2-223] to 19.9% [1.2 to 1.37 m (4 to 4.5 ft) bgs at LL2-220].

Table 4-33. Geotechnical Data for Load Line 2 Subsurface Soil Samples

Sample ID	Station No.	Depth (ft)	Moist. Cont. (%)	Grain Size Distribution (%)				pH	Attbg. Limits		Hyd. Cond. cm/sec	Specific Gravity	Classification
				Gravel	Sand	Silt	Clay		LL	PI			
Shelby Tube Samples													
LL21160	LL2-268	8 to 10	15.8	1.7	15.7	40.1	42.5	-	30	14	-	2.715	Lean clay with sand, CL
LL21162	LL2-263	3 to 5	17.3	0.2	17.1	40.6	42.1	-	32	13	-	2.714	Lean clay with sand, CL
LL21163	LL2-265	6 to 8	13.5	20.3	47.9	25.2	6.6	-	17	6	-	2.731	Silty clayey sand with gravel, SC-SM
Test Pit Samples													
LL21066	LL2-220	4 to 4.5	19.9	3.0	42.0	34.8	20.2	4.84	30	13	-	2.728	Sandy lean clay, CL
LL21065	LL2-220	2 to 2.5	16.4	2.5	24.9	46.9	25.7	4.32	32	17	-	2.740	Lean clay with sand, CL
LL21064	LL2-220	1 to 1.5	16.5	4.7	22.2	47.6	25.5	3.91	31	14	-	2.781	Lean clay with sand, CL
LL21074	LL2-223	2.8 to 3.2	13.1	3.6	15.9	41.7	38.8	5.60	34	16	-	2.689	Lean clay with sand, CL
LL21073	LL2-223	7.3 to 7.6	14.1	1.8	57.6	35.7	4.9	7.23	20	7	-	2.782	Silty clayey sand, SC-SM
LL21075	LL2-223	9	14.4	7.7	22.2	47.0	23.1	7.29	23	9	-	2.759	Lean clay with sand, CL

ID = Identification.
LL = Liquid limit.
PI = Plasticity index.

All samples selected for Atterberg limits analyses were identified as having some degree of plasticity. Specific gravity ranged from 2.689 to 2.782, and pH ranged from 3.91 to 7.29 (Table 4-33).

Field screening for 2,4,6-TNT and RDX was performed on 15 subsurface samples from 10 sample locations. 2,4,6-TNT was detected in nine samples; RDX was not detected.

4.3.3 Explosives and Propellants

Subsurface soil samples were collected to explosives/propellant non-detect (based on field screening) or refusal, whichever came first. Target depths were not attained for many Load Line 2 subsurface soil samples due to refusal of hand auger borings on bedrock or float.

Explosives Handling Areas Aggregate

At least one of eight explosive compounds was detected in each of the eight subsurface soil samples sent for laboratory analyses from the Explosives Handling Areas Aggregate. No propellants were detected in subsurface soils in this aggregate (Table 4-4). The most commonly detected explosive was 2,4,6-TNT, detected in all eight samples. The MDC was 1,600 mg/kg in station LL2-086. 1,3,5-TNT and 2-amino-4,6-DNT were each detected in six samples, and 2,4-DNT and RDX were detected in four and three samples, respectively. The other explosive compounds were detected in one sample each, as indicated in Table 4-34 and shown on Figure 4-20.

Preparation and Receiving Areas Aggregate

Explosive and Propellant compounds were not detected in laboratory analyses of subsurface soils in the Preparation and Receiving Areas Aggregate. 2,4,6-TNT was detected in one of five field screening samples (LL2-188).

Packaging and Shipping Areas Aggregate

Explosive and propellant compounds were not detected in laboratory analyses of subsurface soils in the Packaging and Shipping Areas Aggregate. 2,4,6-TNT was detected in one of four field screening samples (LL2-072).

Perimeter Area Aggregate

Three explosive compounds were detected in laboratory analyses of subsurface soil sample LL2-094 in the Perimeter Area Aggregate. This station is located between the two sets of railroad tracks just northeast of Building DA-21. 1,3,5-TNB, 2,4,6-TNT, and 2,4-DNT were each detected, with 2,4,6-TNT having the highest concentration in the sample (450 mg/kg) (Table 4-35 and Figure 4-20). 2,4,6-TNT was also detected in the field screening analysis of this sample. No propellants were detected.

4.3.4 Inorganic Constituents

Explosives Handling Areas Aggregate

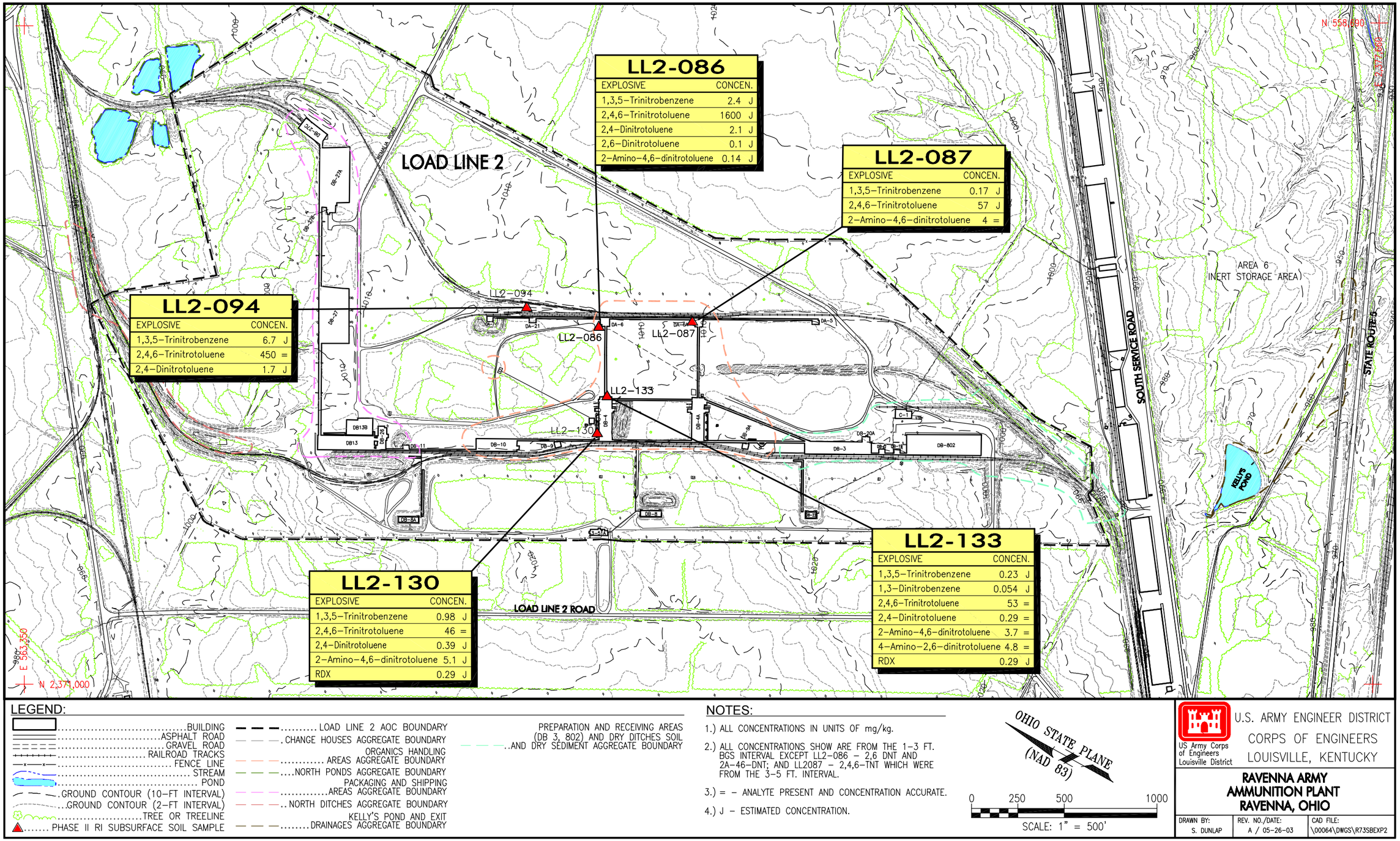
Ten inorganic constituents were considered to be SRCs in subsurface soils (> 1 ft bgs) from the Explosives Handling Areas Aggregate (Table 4-4). Aluminum, antimony, arsenic, barium, beryllium, chromium, lead, mercury, and zinc were detected above the background criteria in at least 1 of 15 samples. There is no site-related background value for cadmium, so background was set to zero and it is considered to be a SRC if detected. Table 4-36 shows the detected concentrations for these 10 SRCs in subsurface soils in the Explosives Handling Areas Aggregate. Figures 4-21 to 4-23, 4-24 to 4-26, and 4-27 to 4-29 show the distribution and relative concentration of antimony, lead, and mercury. The maximum concentration for

Table 4-34. Load Line 2 Subsurface Soil Explosives Handling Areas Aggregate – Organics – Site-Related Contaminants

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-086**	**LL2-086**	**LL2-086**	**LL2-087**
Sample ID		**LL20741**	**LL20742**	**LL21005**	**LL20744**
Date		**07/28/2001**	**07/29/2001**	**07/30/2001**	**07/29/2001**
Depth (ft)		**1 - 3**	**3 - 5**	**5 - 7**	**1 - 3**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Explosives					
1,3,5-Trinitrobenzene	mg/kg	2.4 J	0.093 J	0.28 J	0.17 J
1,3-Dinitrobenzene	mg/kg	5 U	0.25 U	0.5 U	0.25 U
2,4,6-Trinitrotoluene	mg/kg	1,600 J	61 =	91 J	21 =
2,4-Dinitrotoluene	mg/kg	2.1 J	0.055 J	0.5 U	0.25 U
2,6-Dinitrotoluene	mg/kg	5 U	0.1 J	0.5 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	5 U	0.14 J	0.5 U	4 =
4-Amino-2,6-dinitrotoluene	mg/kg	50 U	0.25 U	5 U	8.3 U
RDX	mg/kg	10 U	0.5 U	1 U	0.5 U

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-087**	**LL2-130**	**LL2-133**	**LL2-133**
Sample ID		**LL20745**	**LL20863**	**LL20872**	**LL20873**
Date		**07/30/2001**	**07/28/2001**	**07/29/2001**	**07/30/2001**
Depth (ft)		**3 - 5**	**1 - 3**	**1 - 3**	**3 - 5**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**				
Explosives					
1,3,5-Trinitrobenzene	mg/kg	0.25 U	0.98 J	0.23 J	0.25 U
1,3-Dinitrobenzene	mg/kg	0.25 U	0.25 U	0.054 J	0.25 U
2,4,6-Trinitrotoluene	mg/kg	57 J	46 =	53 =	5.8 J
2,4-Dinitrotoluene	mg/kg	0.25 U	0.39 J	0.29 =	0.25 U
2,6-Dinitrotoluene	mg/kg	0.25 U	0.87 U	1.2 U	0.25 U
2-Amino-4,6-dinitrotoluene	mg/kg	2.4 =	5.1 J	3.7 =	0.61 =
4-Amino-2,6-dinitrotoluene	mg/kg	8.4 U	10 U	4.8 =	1.5 U
RDX	mg/kg	0.5 U	0.29 J	0.29 J	0.24 J

ID = Identification.
RDX = Hexahydro-1,3,5-trinitro-1,3,5-triazine.
= - Detected result.
J - Estimated result.
U - Not detected.



LEGEND:

- BUILDING
- ASPHALT ROAD
- GRAVEL ROAD
- RAILROAD TRACKS
- FENCE LINE
- STREAM
- POND
- GROUND CONTOUR (10-FT INTERVAL)
- GROUND CONTOUR (2-FT INTERVAL)
- TREE OR TREELINE
- PHASE II RI SUBSURFACE SOIL SAMPLE
- LOAD LINE 2 AOC BOUNDARY
- CHANGE HOUSES AGGREGATE BOUNDARY
- ORGANICS HANDLING AREAS AGGREGATE BOUNDARY
- NORTH PONDS AGGREGATE BOUNDARY
- PACKAGING AND SHIPPING AREAS AGGREGATE BOUNDARY
- NORTH DITCHES AGGREGATE BOUNDARY
- DRAINAGES AGGREGATE BOUNDARY
- PREPARATION AND RECEIVING AREAS (DB 3, 802) AND DRY DITCHES SOIL AND DRY SEDIMENT AGGREGATE BOUNDARY

NOTES:

1.) ALL CONCENTRATIONS IN UNITS OF mg/kg.

2.) ALL CONCENTRATIONS SHOW ARE FROM THE 1-3 FT. BGS INTERVAL EXCEPT LL2-086 - 2,6 DNT AND 2A-46-DNT; AND LL2087 - 2,4,6-TNT WHICH WERE FROM THE 3-5 FT. INTERVAL.

3.) = - ANALYTE PRESENT AND CONCENTRATION ACCURATE.

4.) J - ESTIMATED CONCENTRATION.

OHIO STATE PLANE (NAD 83)

0 250 500 1000

SCALE: 1" = 500'

US Army Corps of Engineers Louisville District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
LOUISVILLE, KENTUCKY

RAVENNA ARMY AMMUNITION PLANT
RAVENNA, OHIO

DRAWN BY:	REV. NO./DATE:	CAD FILE:
S. DUNLAP	A / 05-26-03	\00064\DWGS\R73SBEXP2

Figure 4-20. Distribution of Explosives in Subsurface Soil at Load Line 2

Table 4-35. Load Line 2 Subsurface Soil Perimeter Area Aggregate – Organics – Site-Related Contaminants

Functional Area		**Perimeter Area Aggregate**
Station ID		**LL2-094**
Sample ID		**LL20761**
Date		**07/30/2001**
Depth (ft)		**1 - 3**
Sample Type		**Grab**
Analyte	**Units**	
Explosives		
1,3,5-Trinitrobenzene	mg/kg	6.7 J
2,4,6-Trinitrotoluene	mg/kg	450 =
2,4-Dinitrotoluene	mg/kg	1.7 J
Pesticides and PCBs		
PCB-1260	mg/kg	0.64 J

ID = Identification.
PCB = Polychlorinated biphenyl.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
= - Detected result.
J - Estimated result.
U - Not detected.

Table 4-36. Load Line 2 Subsurface Soil Explosives Handling Areas Aggregate – Inorganics – Site-Related Contaminants

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-086**	**LL2-086**	**LL2-086**	**LL2-086**	**LL2-087**	**LL2-087**
Sample ID		**LL20741**	**LL21186**	**LL20742**	**LL21005**	**LL20744**	**LL20745**
Date		**07/28/2001**	**07/28/2001**	**07/29/2001**	**07/30/2001**	**07/29/2001**	**07/30/2001**
Depth (ft)		**1 - 3**	**1 - 3**	**3 - 5**	**5 - 7**	**1 - 3**	**3 - 5**
Sample Type		**Grab**	**Field Duplicate**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	9,750 =	9,520 =	12,300 =	10,100 =	10,100 =	10,700 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.1 J *	1.2 UJ
Arsenic	mg/kg	4.1 =	3.6 =	22.1 = *	15.1 =	12.2 =	14.3 =
Barium	mg/kg	48.3 =	43.9 =	87.8 =	59.1 =	66.9 =	69.4 =
Beryllium	mg/kg	0.28 U	0.27 U	0.77 =	0.57 J	0.5 U	0.6 =
Cadmium	mg/kg	0.14 J *	0.6 U	0.6 U	0.58 U	0.19 J *	0.6 U
Chromium	mg/kg	11 =	10.6 =	17.1 =	14.6 =	15.1 =	21.4 =
Lead	mg/kg	56.7 = *	15.7 =	14.7 J	14.2 =	13.8 =	14.9 =
Mercury	mg/kg	0.04 J	0.023 J	0.12 U	0.014 J	0.013 J	0.02 J
Zinc	mg/kg	37.8 =	26.3 =	69.3 J	61.8 =	48.3 =	64.8 =

Table 4-36. Load Line 2 Subsurface Soil Explosives Handling Areas Aggregate Inorganics Site-Related Contaminants (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-128**	**LL2-130**	**LL2-132**	**LL2-132**	**LL2-132**	**LL2-133**
Sample ID		**LL20857**	**LL20863**	**LL20869**	**LL21185**	**LL20870**	**LL20872**
Date		**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/28/2001**	**07/29/2001**	**07/29/2001**
Depth (ft)		**1 - 3**	**1 - 3**	**1 - 3**	**1 - 3**	**3 - 5**	**1 - 3**
Sample Type		**Grab**	**Grab**	**Grab**	**Field Duplicate**	**Grab**	**Grab**
Analyte	**Units**						
Inorganics							
Aluminum	mg/kg	10,100 =	23,100 = *	9,730 =	9,420 =	9,460 =	9,750 =
Antimony	mg/kg	1.2 UJ	19.8 J *	1.2 UJ	2.1 J *	1.2 UJ	1.2 UJ
Arsenic	mg/kg	14 =	6 =	11.3 =	11.6 =	14.5 J	17 =
Barium	mg/kg	53.6 =	289 = *	80.2 =	109 =	98.1 J	104 =
Beryllium	mg/kg	0.56 U	3.1 = *	0.5 J	0.61 =	0.77 =	0.7 =
Cadmium	mg/kg	0.15 U	3.3 = *	0.76 = *	2.2 = *	0.34 J *	0.6 J *
Chromium	mg/kg	14.3 =	106 = *	15.3 =	17.7 =	15.9 J	18.4 =
Lead	mg/kg	16.2 =	747 = *	31.8 = *	91.3 J *	22.6 J *	35.3 J *
Mercury	mg/kg	0.012 J	7.1 = *	0.024 J	0.013 J	0.017 J	0.028 J
Zinc	mg/kg	55.1 =	157 = *	67.3 =	449 = *	69.5 =	100 J *

Table 4-36. Load Line 2 Subsurface Soil Explosives Handling Areas Aggregate Inorganics Site-Related Contaminants (continued)

Functional Area		Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate	Explosives Handling Areas Aggregate
Station ID		**LL2-133**	**LL2-134**	**LL2-149**	**LL2-162**	**LL2-272**
Sample ID		**LL20873**	**LL20875**	**LL20912**	**LL20945**	**LL20689**
Date		**07/30/2001**	**07/29/2001**	**07/28/2001**	**07/30/2001**	**08/26/2001**
Depth (ft)		**3 - 5**	**1 - 3**	**1 - 3**	**1 - 3**	**1 - 3**
Sample Type		**Grab**	**Grab**	**Grab**	**Grab**	**Grab**
Analyte	**Units**					
Inorganics						
Aluminum	mg/kg	8,310 =	10,900 =	8,800 =	10,700 =	8,630 =
Antimony	mg/kg	1.2 UJ	1.2 UJ	1.1 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	18.3 J	13.2 =	14.3 =	16.2 J	8.1 =
Barium	mg/kg	61.7 J	56.8 =	34.1 =	52 J	62 =
Beryllium	mg/kg	0.65 =	0.52 J	0.47 J	0.61 =	0.65 =
Cadmium	mg/kg	0.13 J *	0.32 J *	0.57 U	0.58 U	0.22 J *
Chromium	mg/kg	14.6 J	14.7 =	14.3 =	15.8 J	11.1 =
Lead	mg/kg	14 J	37.5 J *	18.2 =	11.9 J	14.3 =
Mercury	mg/kg	0.12 R	0.021 J	0.11 U	0.12 R	0.019 U
Zinc	mg/kg	74.3 =	79.4 J	52.5 =	64.5 =	39.2 =

ID = Identification.
* - Exceeds Ravenna Army Ammunition Plant background criteria.
= - Detected result.
J - Estimated result.
U - Not detected.

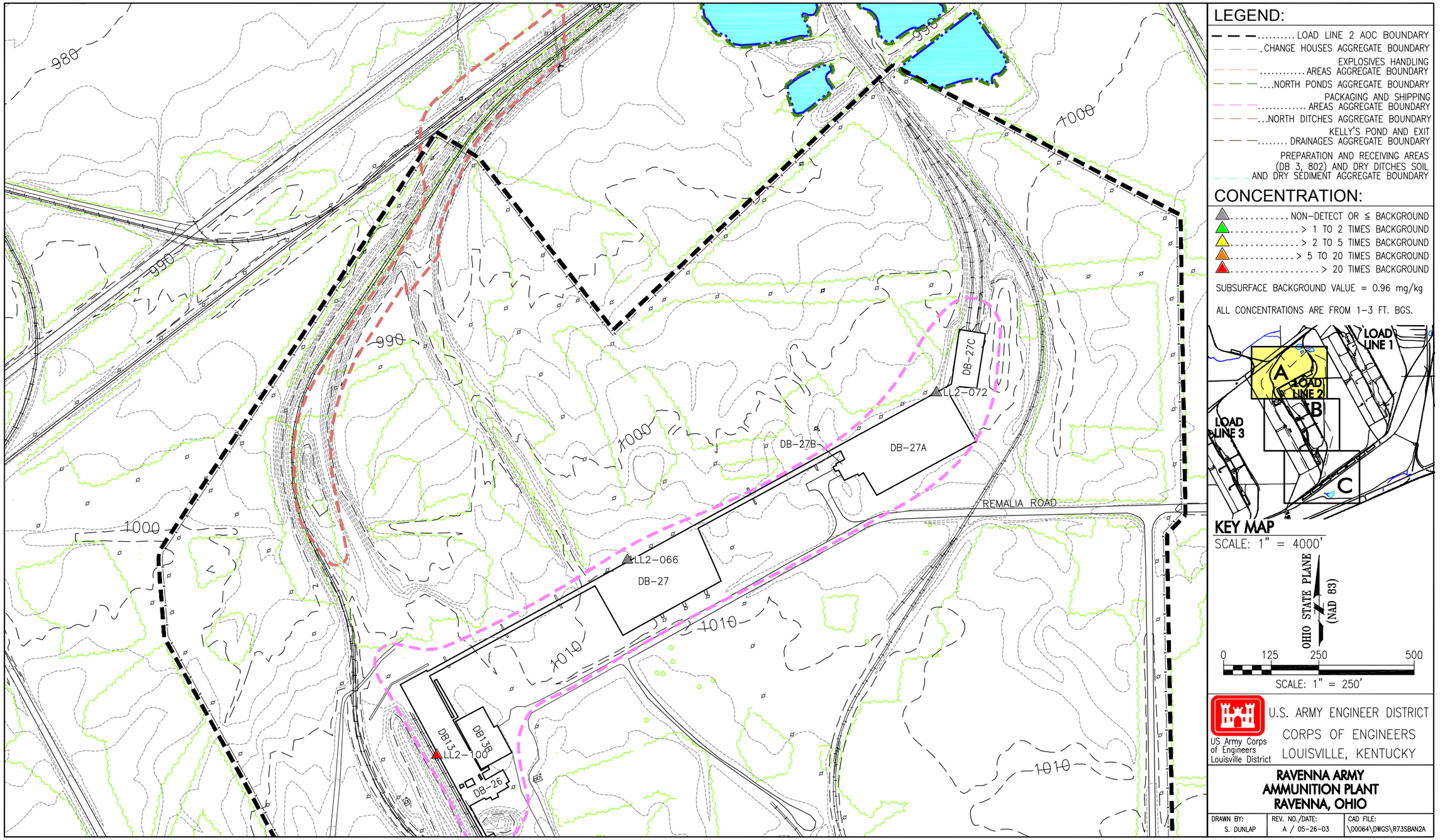


Figure 4-21. Distribution and Relative Concentration of Antimony in Subsurface Soil at Load Line 2 - Northern Section

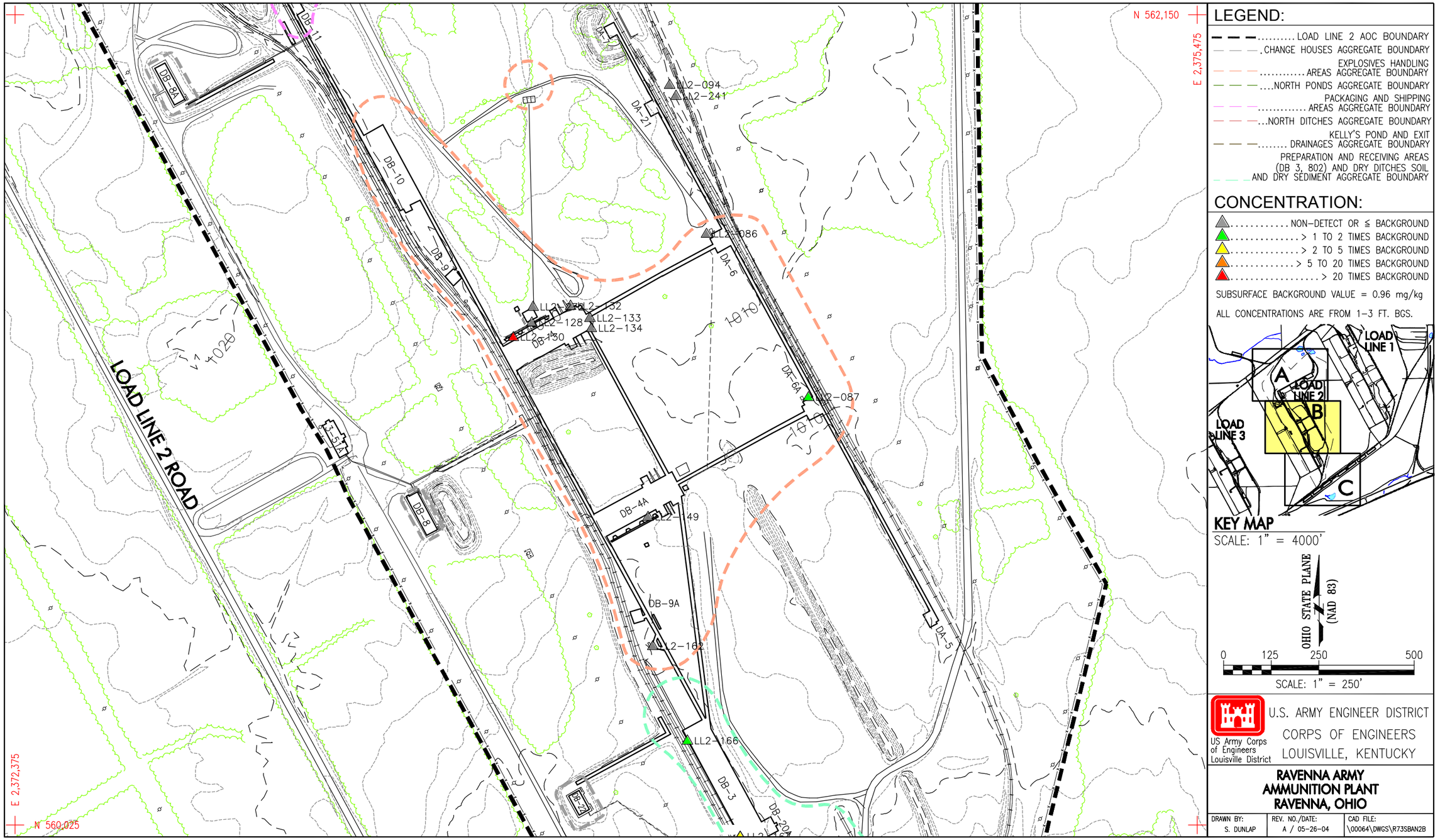


Figure 4-22. Distribution and Relative Concentration of Antimony in Subsurface Soil at Load Line 2 - Central Section