5. SITE INVESTIGATION FINDINGS

This section presents the results of the Parcel D site investigation. As part of a self-imposed program to identify areas of potential concern, the analytical results were compared to a set of health-based remediation goals (HBRGs) developed for the site (IESI 1997). The HBRGs were calculated following standard guidance for development of risk-based remediation goals as promulgated by the U.S. EPA and Cal/EPA. These receptor- and chemical-specific values were back calculated based on future site conditions, land-use scenarios, and aggregate risk levels deemed acceptable by the regulatory agencies. The HBRGs have been used for screening purposes during demolition to enhance the effectiveness of field activities.

As previously stated, it is important to note that these HBRG values have not been approved by the Department of Toxic Substances Control (DTSC) as site cleanup goals and were used only for internal, soil-screening purposes during demolition. The use of these values does not guarantee DTSC approval of soil closure and were used at the owner's risk. It is understood by all parties that the findings of the post-demolition health risk assessment will establish whether Parcel D requires remediation. The HBRGs are presented in Appendix B.

During the Parcel D site investigation, approximately 44 soil samples were submitted for chemical analysis. Table 5-1 summarizes the chemicals detected, minimum and maximum detected concentrations, and frequency of detection. The analytical results are discussed below.

5.1 BUILDING 59A

Before soil borings were advanced in Building 59A, the structure and foundation were removed. The sampling approach involved advancing two borings to a depth of 15 feet bgs and collecting soil samples at depths of 6 inches and 5, 10, and 15 feet. One boring (B9) was advanced at the location of the former tank, the other (B10) in the center of the waste storage area.

TABLE 5-1
SUMMARY OF DETECTIONS
C-6 FACILITY, PARCEL D

Parameter	Min. Detected Concentration (1) (µg/kg)	Max. Detected Concentration (2) (µg/kg)	Frequency of Detection (3)	HBRG (4)
Volatile Organic Compounds (ug/kg)				
chloroform	2.5	330	21/45	1.49E+05
cis-1,2-dichloroethene	5	5	1/45	1.34E+03
tetrachloroethene	4.9	47	11/45	3.36E+05
total xylenes	6.2	6.2	1/45	3.26E+07
Semi-Volatile Organic Compounds (ug/kg)				
anthracene	100	100	1/46	4.06E+03
benzo(a)anthracene	120	170	2/46	1.14E+01
bis(2-ethylhexyl)phthalate	880	880	1/46	2.10E+06
chrysene	140	190	2/46	1.14E+02
fluoranthene	210	320	2/46	2.10E+06
phenanthrene	150	290	2/46	NA
phenol	120	1500	11/46	1.04E+06
pyrene	200	290	2/46	2.35E+03
Pesticides (ug/kg)				
4,4'-DDD	4.9	4.9	1/45	1.03E+02
4,4'-DDE	7.7	26	2/45	7.28E+01
4,4'-DDT	3.5	4.8	2/45	1.22E+04
Endrin	2.2	2.2	1/45	7.33E-00
Metals (mg/kg)				
arsenic	**3.6**	**18**	**45/45**	**1.40E+01**
barium	37	220	45/45	2.52E+03
beryllium	0.51	0.89	42/45	1.56E+01
cadmium	0.53	3.6	3/45	1.64E+01
chromium (total)	11	34	45/45	9.73E+01
cobalt	4.7	15	45/45	2.00E+01
copper	8.6	69	45/45	1.26E+03
lead	2.5	19	45/45	1.11E+02
molybdenum	1	1.3	2/45	1.24E+03
nickel	9.5	26	45/45	2.39E+02
vanadium	29	71	45/45	8.37E+01
zinc	23	1000	45/45	8.73E+03

Boldface indicates the HBRG has been exceeded.
NA = Not available

Notes:
(1) Minimum concentration detected above the method detection limit.
(2) Maximum concentrationd etected above the method detection limit.
(3) Frequency of detection represents the total number of samples in which the constituent was positively detected over the total number of samples analyzed for that specific analyte.
(4) Health-based remediation goal (HBRG) developed specifically for the C-6 facility, Los Angeles, CA (IESI 1997).

Eight soil samples were submitted to the laboratory and analyzed for VOCs, SVOCs, TPH, PCBs, and metals. The results are presented in Tables 5-2 and 5-3. The laboratory reports for the site investigation samples are included in Appendix C.

No VOCs, SVOCs, TPH, PCBs, or metals were detected above the HBRGs in borings B9 or B10.

5.2 STORAGE YARD

The sampling approach for the storage yard involved advancing eight borings to a depth of 25 feet bgs and collecting soil samples at depths of 6 inches and 5, 10, 15, and 25 feet. Prior to the collection of the samples, the asphalt used for the storage yard and parking area was pulverized due to scheduling concerns and to facilitate the collection of the samples. Thirty-six soil samples were submitted to the laboratory analyzed for VOCs, SVOCs, TPH, pesticides, and metals. Two additional samples collected at 25 feet bgs were submitted for SVOC analysis because concentrations were detected in the associated 15-foot sample, however, none were above the HBRG.

Since no detections were observed in the 15-foot samples of the remaining two sets placed on hold (B3 and B6), no further analysis was conducted. No VOCs, SVOCs, TPH, or pesticides were detected above the HBRGs. Only a single metal at a single location was identified as exceeding the HBRG.

Arsenic was detected at a concentration of 18 mg/kg in the 0.5-foot sample in B3. The HBRG for arsenic is 14 mg/kg. Tables 5-2 and 5-3 present the detected concentrations for borings B1 through B8. The laboratory reports for the site investigation samples are presented in Appendix C.

The following section details the procedures followed in determining the extent of the arsenic contamination.

TA[illegible]5-2

ORGANIC CHEMICALS DETECTED IN SOIL

C-6 Facility, Parcel D Site Investigation, June 1999

Boring No.	Depth (feet)	VOCs EPA Method 8260				SVOCs EPA Method 8270								Pesticides EPA Method 8080			
		Chloroform	cis-1-2,-Di chloroethene	Tetrachloro-ethene	Total Xylenes	Anthracene	Benzo(a) anthracene	Bis(2-ethyl hexyl) phthalate	Chrysene	Fluoranthene	Phenanthrene	Phenol	Pyrene	4,4'-DDD	4,4'-DDE	4,4'-DDT	Endrin
		(ug/kg)				(ug/kg)								(ug/kg)			
B1	0.5	24	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B2	0.5	130	ND	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.5	ND
B3	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	880	ND	ND	ND	ND	ND	ND	ND	ND	ND
	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B5	0.5	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	120	ND	ND	ND	ND	ND
	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	180	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	260	ND	ND	ND	ND	ND
	15	7.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	ND	ND	ND	ND	ND
	25	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	1500	ND	NA	NA	NA	NA
B6	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8	ND
	5	9.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	25	6.8	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7	0.5	3.5	ND	7.1	ND	100	170	ND	190	320	290	ND	290	ND	7.7	ND	ND
	5	10	5	16	ND	ND	120	ND	140	210	150	ND	200	4.9	26	8.4	2.2
	10	16	ND	4.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	260	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	25	330	ND	9.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B8	0.5	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	170	ND	ND	ND	ND	ND
	5	86	ND	19	ND	ND	ND	ND	ND	ND	ND	120	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	270	ND	ND	ND	ND	ND
	10D	4.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	200	ND	ND	ND	ND	ND
	15	3.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	310	ND	ND	ND	ND	ND
	25	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	740	ND	NA	NA	NA	NA
B9	0.5	37	ND	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5	40	ND	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B10	0.5	50	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5	17	ND	ND	6.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	10D	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ND = not detected
NA = not analyzed

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TABLE 5-3
INORGANIC CHEMICALS DETECTED IN SOIL
C-6 Facility, Parcel D Site Investigation, June 1999

Boring No.	Depth (feet)	Title 22 Metals EPA Method 6010/7196											
		Arsenic	Barium	Beryllium	Cadmium	Total Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Vanadium	Zinc
		(mg/kg)											
B1	0.5	7	130	0.56	ND	18	9.3	24	2.7	ND	14	37	64
	5	7.7	130	0.78	ND	29	13	31	7.1	ND	23	59	66
	10	6.2	120	0.51	ND	23	10	23	4.2	ND	15	46	50
	15	6.7	160	0.74	ND	27	12	31	5.6	ND	20	59	69
	25	12	37	ND	ND	11	4.7	8.6	2.5	1	9.5	29	23
B2	0.5	5.6	180	0.89	ND	26	10	14	5.4	ND	18	52	44
	5	6.3	170	0.71	ND	26	15	28	5.5	ND	22	57	71
	10	6.3	220	0.56	ND	22	10	24	4.6	ND	20	49	52
	15	8.1	180	0.82	ND	31	15	38	6.7	ND	24	71	78
	25	6.4	150	0.62	3.6	26	8.4	27	4.8	ND	17	48	57
B3	0.5	18	130	0.64	ND	27	10	35	9	ND	15	44	50
	5	5.5	140	0.86	ND	28	11	18	5.4	ND	18	52	51
	10	7.8	130	0.82	ND	31	13	36	6.6	ND	25	61	71
	15	7.2	190	0.88	ND	31	14	38	7.9	ND	23	60	86
	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4	0.5	4.1	110	0.57	ND	19	11	17	5	ND	14	39	37
	5	6.5	150	0.86	ND	27	12	24	5.7	ND	22	58	61
	10	6.2	140	0.6	ND	24	11	28	4.9	ND	19	52	60
	15	6.6	160	0.69	ND	25	13	31	5.4	ND	19	58	71
	25	7.8	160	0.89	ND	33	14	37	7.4	1.3	23	68	85
B5	0.5	6.5	140	0.77	ND	27	11	24	5.5	ND	23	56	61
	5	6	150	0.68	ND	22	11	24	5.4	ND	21	49	60
	10	6.8	140	0.67	ND	24	12	30	5.5	ND	20	49	64
	15	7.9	160	0.79	0.53	27	13	38	6.9	ND	21	61	71
	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B6	0.5	5.1	160	0.73	ND	23	9.2	16	4.9	ND	15	47	41
	5	6.7	180	0.83	ND	28	12	27	5.6	ND	22	59	63
	10	7.3	120	0.54	ND	22	10	23	4.7	ND	17	48	55
	15	7.9	170	0.76	0.54	29	13	35	5.9	ND	21	66	75
	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7	0.5	7.1	130	0.71	ND	25	9.6	57	19	ND	18	47	62
	5	11	180	0.8	ND	27	11	69	13	ND	19	51	63
	10	7.4	160	0.68	ND	27	14	35	5.9	ND	23	53	72
	15	6.3	180	0.77	ND	26	14	36	6.1	ND	21	62	76
	25	6.2	140	0.51	ND	22	11	28	4.3	ND	19	59	60
B8	0.5	5.4	130	0.72	ND	24	11	21	7.5	ND	18	49	53
	5	5.8	180	0.86	ND	26	11	20	5.7	ND	19	52	54
	10	6.2	140	0.64	ND	24	12	30	5.3	ND	22	51	62
	10D	6.6	140	0.7	ND	27	13	32	5.3	ND	26	55	63
	15	6	180	0.73	ND	26	14	32	5.5	ND	21	54	76
	25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B9	0.5	3.6	89	ND	ND	16	9.2	13	4.1	ND	11	33	31
	5	4.6	120	0.62	ND	24	8.4	16	4.8	ND	13	47	45
	10	7.3	140	0.71	ND	27	12	31	5.2	ND	21	58	59
	15	6.1	140	0.65	ND	24	12	28	5.1	ND	18	52	67
B10	0.5	3.7	130	ND	ND	16	11	14	4.8	ND	13	34	32
	5	5.6	150	0.62	ND	21	10	18	7	ND	18	48	52
	10	5.9	110	0.52	ND	20	9.8	27	6	ND	19	46	1000
	10D	7	140	0.81	ND	34	12	31	6.2	ND	23	60	69
	15	6.6	160	0.79	ND	28	14	36	6.2	ND	20	62	77

Notes:
ND = not detected
NA = not analyzed

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5.3 ARSENIC-IMPACTED AREA

To determine the extent of the arsenic contamination, almost 200 delineation samples were collected at 25-foot increments over an area of approximately 500 by 300 feet. Samples were collected at depths of 0.5, 1, and 2 feet bgs. At locations where arsenic concentrations were greater than 14 mg/kg at 2 feet bgs, additional samples were collected at 3 feet bgs.

All samples were collected with hand augers and placed in glass jars for transport to the laboratory. Under RWQCB guidance, the first eight samples were submitted for arsenic and total chromium analysis. All subsequent samples were submitted for arsenic analysis only since the first eight sample results did not to indicate chromium concentrations to be above the HBRGs. The laboratory analytical method used on all samples during the Parcel D excavation program was EPA Method 6010 for arsenic.

5.3.1 Sample Identification

All samples collected were assigned a unique identification number. This identification number was used on all documentation relating to the collection, handling, analysis, and reporting of the analytical results of each sample. The following template was used:

B3C-xy-z

where

B3C	=	Boring 3 Confirmation
x	=	distance from Boring 3 (expressed in feet)
y	=	direction from Boring 3 at which the sample was collected (e.g., E, NW, SSW)
z	=	sample depth (expressed in feet below ground surface)

For example, the soil sample collected 100 feet northwest of boring B3 at a depth of 2 feet bgs was designated B3C-100NW-2.

5.3.2 Delineation Results

An area approximately 400 by 200 feet (Figure 5-1) was determined to be impacted by arsenic. Figures 5-2 and 5-3 show the arsenic delineation sample locations and detected concentrations, respectively. The arsenic-impacted soil extended to a depth of approximately 1.5 feet below the contact between base material and existing fill soils, with four isolated locations extending to 2.5 feet below the contact. Arsenic-impacted soil, by definition, contains arsenic concentrations greater than the site-specific HBRG of 14 mg/kg. Table 5-4 presents the results for the delineation samples. Appendix D contains the laboratory reports for the delineation samples.

In June 1999, approximately 200 cubic yards of arsenic-impacted soil were over excavated from the northeast and placed in the northwest portion of Parcel D. During the over excavation, arsenic-impacted soil was mixed with approximately 2,000 cubic yards of non-impacted soil and placed over an area measuring approximately 300 by 100 feet, to a depth of 1.5 feet (see Figure 5-4). Six delineation samples (Par Do-1 through -6) were collected from this area to determine the extent of impact. Results of these delineation samples exhibited total arsenic concentrations between 4.9 mg/kg and 70 mg/kg (see Table 5-4).

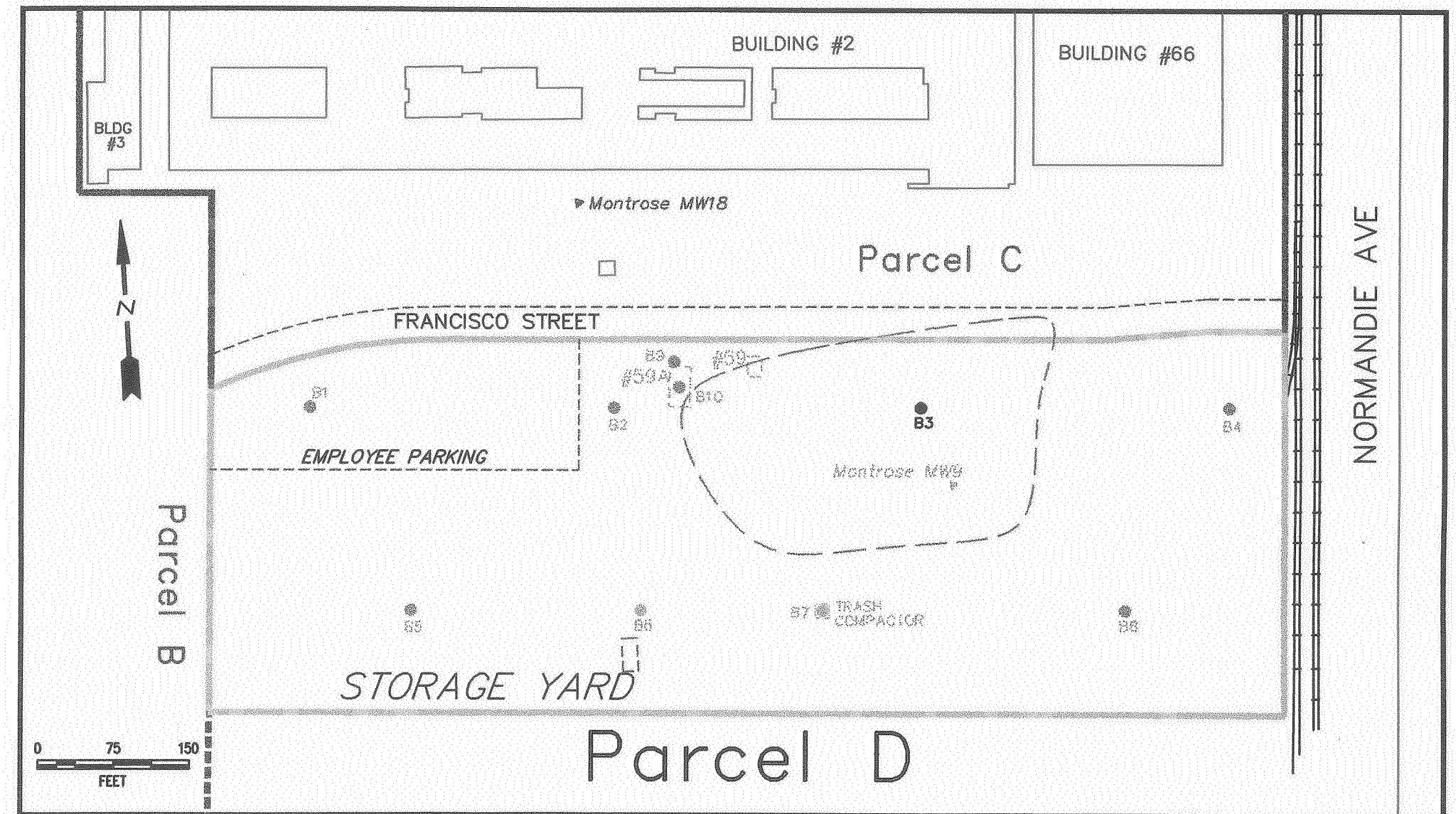
5.3.3 Characterization of Arsenic-Impacted Soil

The impacted soil was characterized for disposal using the following criteria:

1) Soils were classified as non-RCRA hazardous waste if representative soil samples contained arsenic in total concentrations equal to or greater than its total threshold limit concentration (TTLC) of 500 mg/kg. This was done in accordance with CCR Title 22.

2) Representative soil samples were analyzed for soluble arsenic concentrations using the Waste Extraction Test (WET) if the total concentration of arsenic was equal to or greater than 10 times its soluble threshold limit concentration (STLC) of 5 mg/l. Soil was classified as non-RCRA hazardous waste if representative samples contained arsenic in soluble concentrations (based on the WET) equal to or greater than its STLC. This was done in accordance with CCR Title 22.

BC6PDSIR.dwg



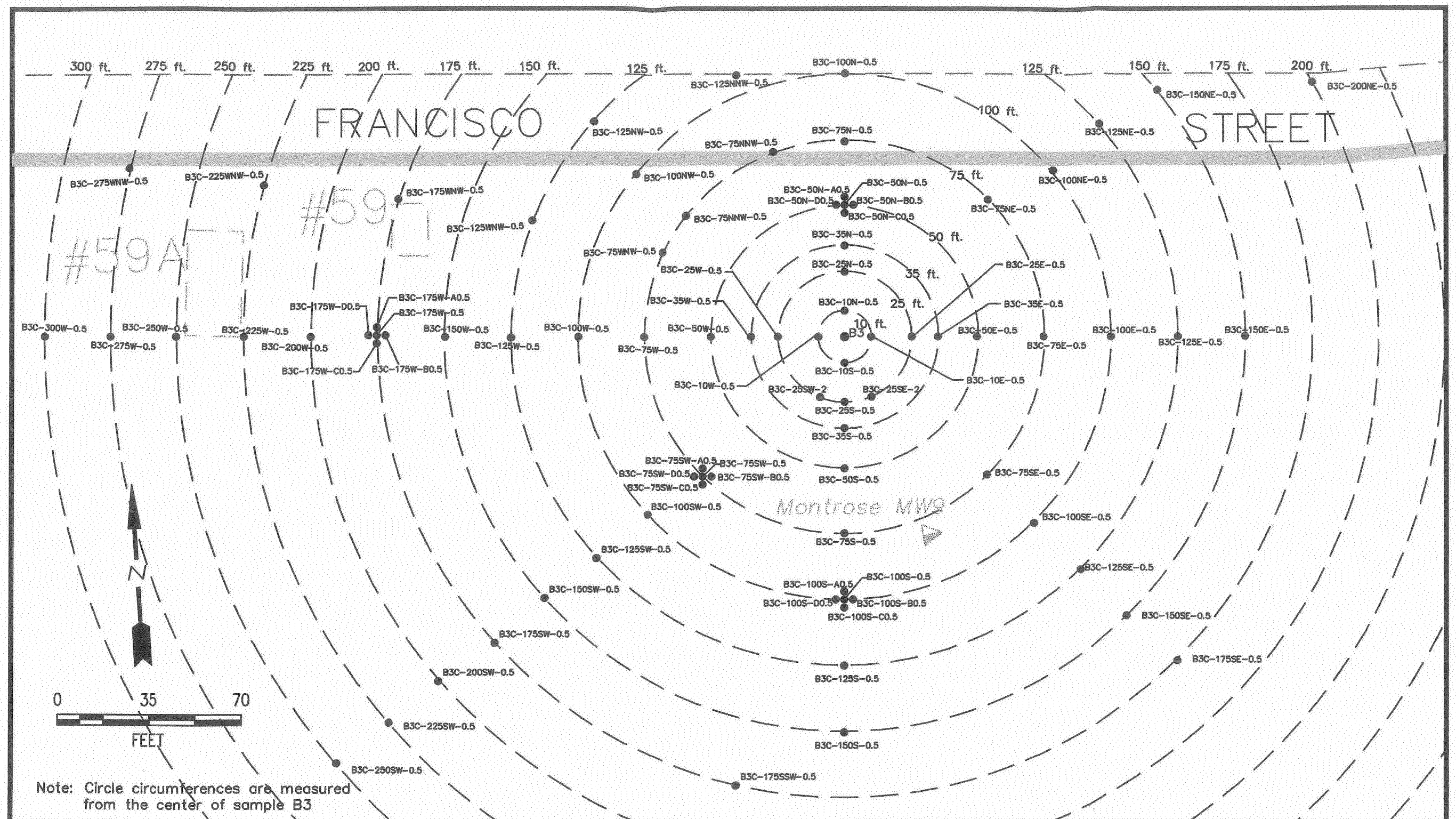
INTEGRATED Environmental Services, Inc.
3990 Westerly Place, Suite 210 (949) 852-9050
Newport Beach, CA 92660

TITLE:
Parcel D Arsenic Delineation
Boeing C-6 Facility
Los Angeles, CA

DWN: JDL	DES.: JDL	PROJECT NO.: BOC6\PDSIR
CHK: JFH	APPD: JPO	FIGURE NO.: 5-1
DATE: 09/17/99	REV.: 1	

BOE-C6-0236169

BC6PDSIR.dwg



Note: Circle circumferences are measured from the center of sample B3

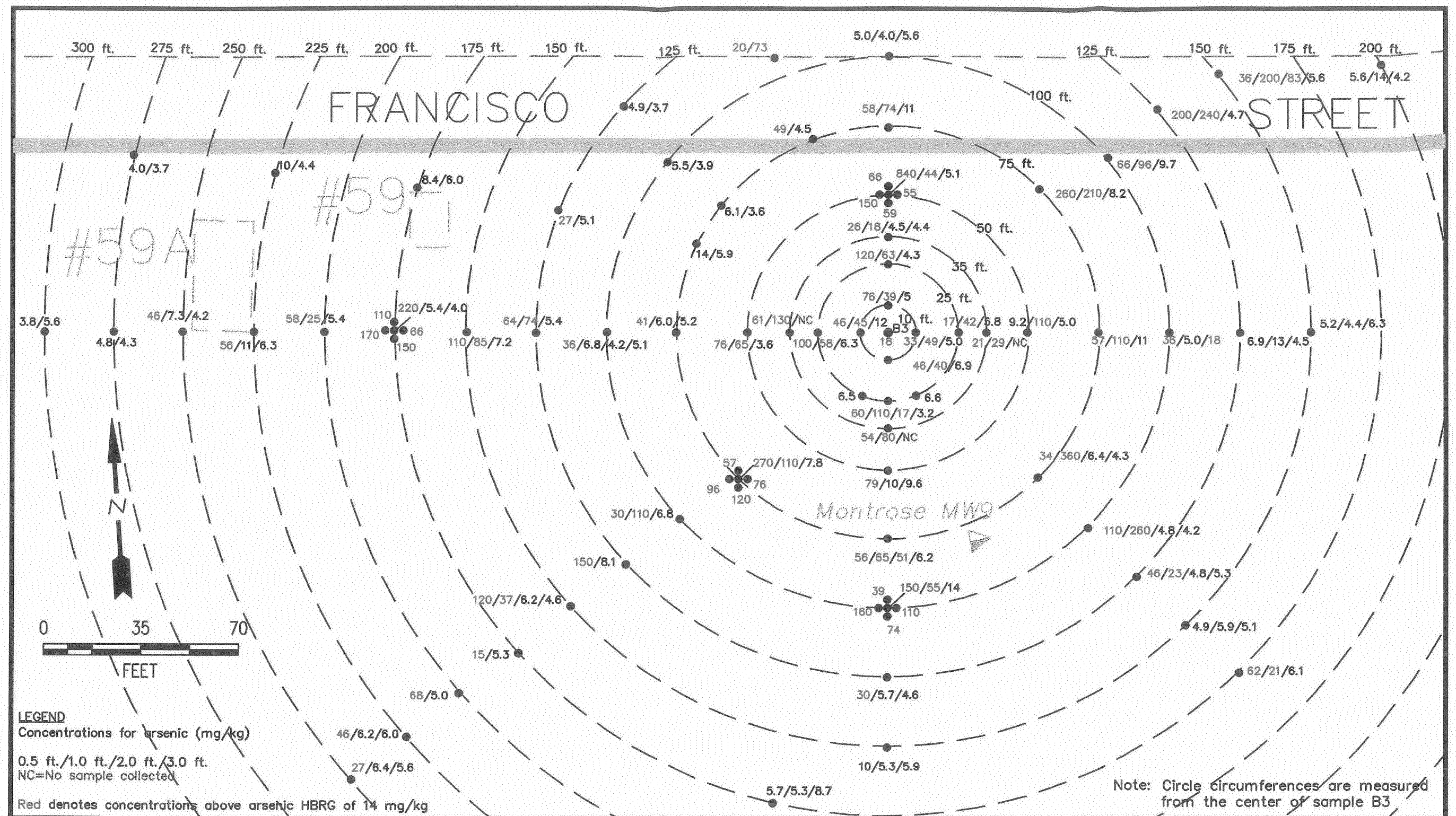
INTEGRATED
Environmental Services, Inc.
3990 Westerly Place, Suite 210 (949) 852-9050
Newport Beach, CA 92660

TITLE:
Parcel D Arsenic Delineation Sample Locations
Boeing C-6 Facility
Los Angeles, CA

DWN:	DES.:	PROJECT NO.:
JDL	JDL	BOC6\PDSIR
CHK:	APPD:	FIGURE NO.:
JFH	JPO	5-2
DATE:	REV.:	
09/18/99	1	

BOE-C6-0236170

BC6PDSIR.dwg



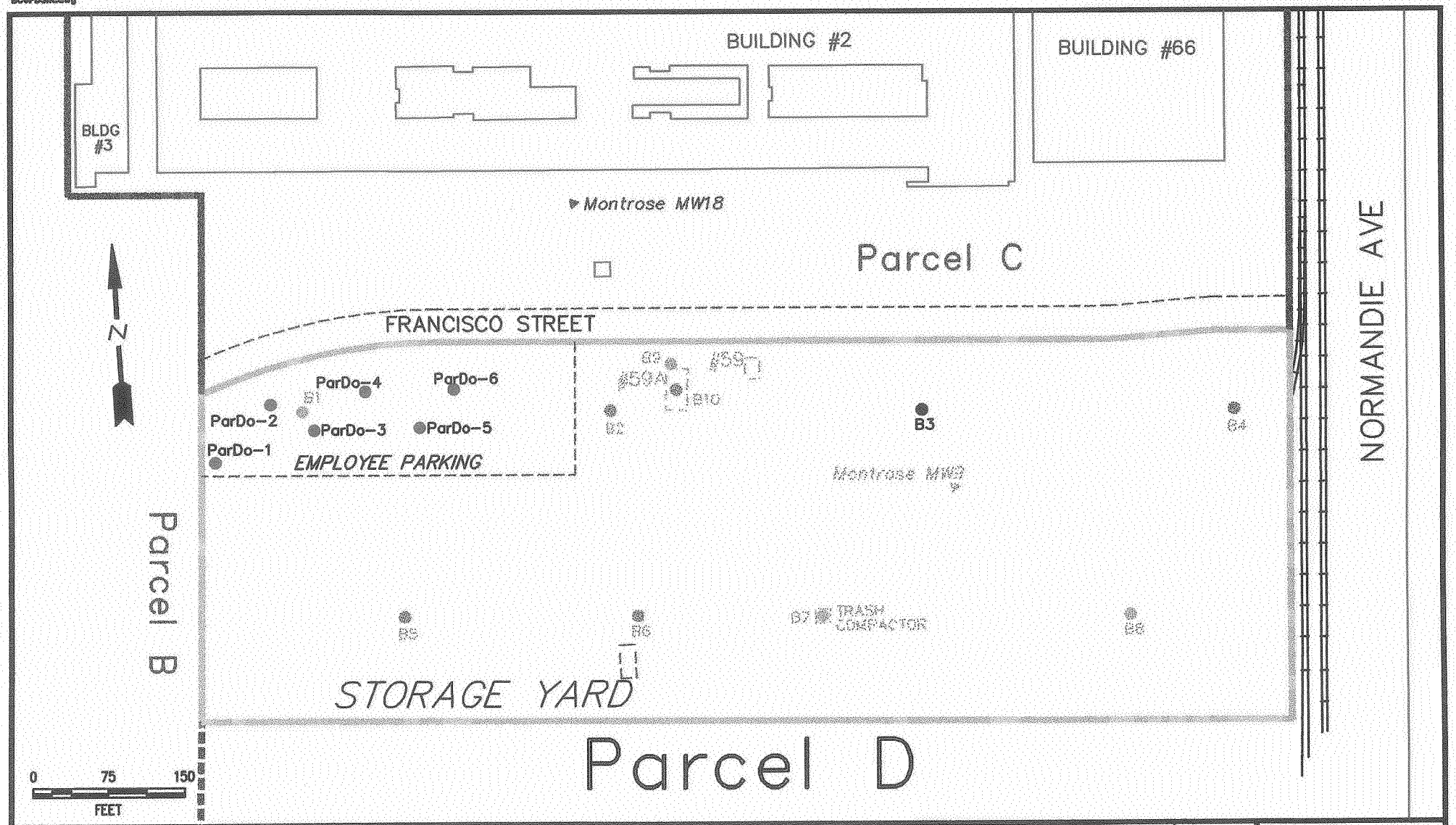
INTEGRATED Environmental Services, Inc.
3990 Westerly Place, Suite 210 (949) 852-9050
Newport Beach, CA 92660

TITLE:
Parcel D Arsenic Delineation Sample Concentrations
Boeing C-6 Facility
Los Angeles, CA

DWN: JDL	DES.: JDL	PROJECT NO.: BOC6\PDSIR
CHK: JFH	APPD: JPO	FIGURE NO.: 5-3
DATE: 09/18/99	REV.: 1	

BOE-C6-0236171

BC6PDSIR.dwg



INTEGRATED Environmental Services, Inc.
3990 Westerly Place, Suite 210
Newport Beach, CA 92660
(949) 852-9050

TITLE:
Arsenic Impacted Soil Placement in the Northwest Corner of Parcel D
Boeing C-6 Facility
Los Angeles, CA

DWN: JDL	DES.: JDL	PROJECT NO.: BOC6\PDSIR
CHK: JFH	APPD: JPO	FIGURE NO.: 5-4
DATE: 09/17/99	REV.: 1	

BOE-C6-0236172

TABLE 5-4
DELINEATION SAMPLE LOG
BOEING-C-6 FACILITY, PARCEL D

Sample Number	Date Collected	Concentration*(mg/kg)
B3C-10N-0.5	6/18/99	**76**
B3C-10N-1	6/22/99	**39**
B3C-10N-2	6/22/99	5
B3C-10N-5	6/22/99	4
B3C-25N-0.5	6/18/99	**120**
B3C-25N-1	6/22/99	**63**
B3C-25N-2	6/22/99	4.3
B3C-25N-5	6/22/99	4.5
B3C-35N-0.5	6/22/99	**26**
B3C-35N-1	6/22/99	**18**
B3C-35N-2	6/24/99	4.5
B3C-35N-3	6/24/99	4.4
B3C-50N-0.5	6/22/99	**840**
B3C-50N-A0.5	7/2/99	**66**
B3C-50N-B0.5	7/2/99	**55**
B3C-50N-C0.5	7/2/99	**59**
B3C-50N-D0.5	7/2/99	**150**
B3C-50N-1	6/22/99	**44**
B3C-50N-2	6/22/99	5.1
B3C-50N-5	6/22/99	4.7
B3C-75N-0.5	6/24/99	**58**
B3C-75N-1	6/24/99	**74**
B3C-75N-2	6/24/99	11
B3C-100N-0.5	6/24/99	5.1
B3C-100N-1	6/24/99	4
B3C-100N-2	6/24/99	5.6
B3C-75NE-0.5	7/2/99	**260**
B3C-75NE-1	7/2/99	**210**
B3C-75NE-2	7/12/99	8.2
B3C-100NE-0.5	7/2/99	**66**
B3C-100NE-1	7/2/99	**96**
B3C-100NE-2	7/12/99	9.7
B3C-125NE-0.5	7/2/99	**200**
B3C-125NE-1	7/2/99	**240**
B3C-125NE-2	7/12/99	4.7
B3C-150NE-0.5	7/12/99	**36**
B3C-150NE-1	7/12/99	**200**
B3C-150NE-2	7/12/99	**83**
B3C-150NE-3	7/12/99	5.6

TABLE 5-4
(CONTINUED)

Sample Number	Date Collected	Concentration*(mg/kg)
B3C-200NE-0.5	7/12/99	5.6
B3C-200NE-1	7/12/99	14
B3C-200NE-2	7/12/99	4.2
B3C-10E-0.5	6/18/99	**33**
B3C-10E-1	6/22/99	**49**
B3C-10E-2	6/22/99	5
B3C-10E-5	6/22/99	4.8
B3C-25E-0.5	6/18/99	**17**
B3C-25E-1	6/22/99	**42**
B3C-25E-2	6/22/99	5.8
B3C-25E-5	6/22/99	4.8
B3C-35E-0.5	6/22/99	**21**
B3C-35E-1	6/22/99	**29**
B3C-50E-0.5	6/22/99	9.2
B3C-50E-1	6/22/99	**110**
B3C-50E-2	6/22/99	5
B3C-50E-5	6/22/99	5.4
B3C-75E-0.5	6/24/99	**57**
B3C-75E-1	6/24/99	**110**
B3C-75E-2	6/24/99	11
B3C-100E-0.5	6/24/99	**36**
B3C-100E-1	6/24/99	5
B3C-100E-2	6/24/99	**18**
B3C-100E-3	6/28/99	5.1
B3C-125E-0.5	6/28/99	6.9
B3C-125E-1	6/28/99	13
B3C-125E-2	6/28/99	4.5
B3C-150E-0.5	6/28/99	5.2
B3C-150E-1	6/28/99	4.4
B3C-150E-2	6/28/99	6.3
B3C-25SE-2	6/24/99	6.6
B3C-75SE-0.5	7/2/99	**34**
B3C-75SE-1	7/2/99	**360**
B3C-75SE-2	7/12/99	6.4
B3C-75SE-3	7/12/99	4.3
B3C-100SE-0.5	7/2/99	**110**
B3C-100SE-1	7/2/99	**260**
B3C-100SE-2	7/12/99	4.8

TABLE 5-4
(CONTINUED)

Sample Number	Date Collected	Concentration*(mg/kg)
B3C-100SE-3	7/12/99	4.2
B3C-125SE-0.5	7/2/99	**46**
B3C-125SE-1	7/2/99	**23**
B3C-125SE-2	7/12/99	4.8
B3C-125SE-3	7/12/99	5.3
B3C-150SE-0.5	7/12/99	4.9
B3C-150SE-1	7/12/99	5.9
B3C-150SE-2	7/12/99	5.1
B3C-175SE-0.5	7/12/99	**62**
B3C-175SE-1	7/12/99	**21**
B3C-175SE-2	7/12/99	6.1
B3C-10S-0.5	6/18/99	**46**
B3C-10S-1	6/22/99	**40**
B3C-10S-2	6/22/99	6.9
B3C-10S-5	6/22/99	5.2
B3C-25S-0.5	6/18/99	**60**
B3C-25S-1	6/22/99	**110**
B3C-25S-2	6/22/99	**17**
B3C-25S-3	6/24/99	3.2
B3C-25S-5	6/22/99	5.3
B3C-35S-0.5	6/22/99	**54**
B3C-35S-1	6/22/99	**80**
B3C-50S-0.5	6/22/99	**79**
B3C-50S-1	6/22/99	10
B3C-50S-2	6/22/99	9.6
B3C-50S-5	6/22/99	5.2
B3C-75S-0.5	6/24/99	**56**
B3C-75S-1	6/24/99	**65**
B3C-75S-2	6/24/99	**51**
B3C-75S-3	6/28/99	6.2
B3C-100S-0.5	6/24/99	**150**
B3C-100S-A0.5	7/2/99	**39**
B3C-100S-B0.5	7/2/99	**110**
B3C-100S-C0.5	7/2/99	**74**
B3C-100S-D0.5	7/2/99	**160**
B3C-100S-1	6/24/99	**55**
B3C-100S-2	6/24/99	14
B3C-125S-0.5	6/28/99	**30**
B3C-125S-1	6/28/99	5.7
B3C-125S-2	6/28/99	4.6

TABLE 5-4
(CONTINUED)

Sample Number	Date Collected	Concentration*(mg/kg)
B3C-150S-0.5	6/28/99	10
B3C-150S-1	6/28/99	5.3
B3C-150S-2	6/28/99	5.9
B3C-25SW-2	6/24/99	6.5
B3C-75SW-0.5	6/28/99	**270**
B3C-75SW-A0.5	7/2/99	**57**
B3C-75SW-B0.5	7/2/99	**76**
B3C-75SW-C0.5	7/2/99	**120**
B3C-75SW-D0.5	7/2/99	**96**
B3C-75SW-1	6/30/99	**110**
B3C-75SW-2	7/2/99	7.8
B3C-100SW-0.5	6/30/99	**30**
B3C-100SW-1	6/30/99	**110**
B3C-100SW-2	7/2/99	6.8
B3C-125SW-0.5	6/30/99	**150**
B3C-125SW-1	6/30/99	8.1
B3C-150SW-0.5	7/2/99	**120**
B3C-150SW-1	7/2/99	**37**
B3C-150SW-2	7/12/99	6.2
B3C-150SW-3	7/12/99	4.6
B3C-175SW-0.5	7/2/99	**15**
B3C-175SW-1	7/2/99	5.3
B3C-200SW-0.5	7/2/99	**68**
B3C-200SW-1	7/2/99	5
B3C-225SW-0.5	7/12/99	**46**
B3C-225SW-1	7/12/99	6.2
B3C-225SW-2	7/12/99	6
B3C-250SW-0.5	7/12/99	**27**
B3C-250SW-1	7/12/99	6.4
B3C-250SW-2	7/12/99	5.6
B3C-175SSW-0.5	7/20/99	5.7
BC3-175SSW-1	7/20/99	5.3
BC3-175SSW-2	7/20/99	8.7
B3C-10W-0.5	6/18/99	**46**
B3C-10W-1	6/22/99	**45**
B3C-10W-2	6/22/99	12
B3C-10W-5	6/22/99	4.4
B3C-25W-0.5	6/18/99	**100**
B3C-25W-1	6/22/99	**58**

TABLE 5-4
(CONTINUED)

Sample Number	Date Collected	Concentration*(mg/kg)
B3C-25W-2	6/22/99	6.3
B3C-25W-5	6/22/99	4.7
B3C-35W-0.5	6/22/99	**61**
B3C-35W-1	6/22/99	**130**
B3C-50W-0.5	6/22/99	**76**
B3C-50W-1	6/22/99	**65**
B3C-50W-2	6/22/99	3.6
B3C-50W-5	6/22/99	4.5
B3C-75W-0.5	6/24/99	**41**
B3C-75W-1	6/24/99	6
B3C-75W-2	6/24/99	5.2
B3C-100W-0.5	6/24/99	**36**
B3C-100W-1	6/24/99	6.8
B3C-100W-2	6/24/99	4.2
B3C-100W-3	6/24/99	5.1
B3C-125W-0.5	6/28/99	**64**
B3C-125W-1	6/28/99	**74**
B3C-125W-2	6/28/99	5.4
B3C-150W-0.5	6/28/99	**110**
B3C-150W-1	6/28/99	**85**
B3C-150W-2	6/28/99	7.2
B3C-175W-0.5	6/30/99	**220**
B3C-175W-A0.5	7/2/99	**110**
B3C-175W-B0.5	7/2/99	**66**
B3C-175W-C0.5	7/2/99	**150**
B3C-175W-D0.5	7/2/99	**170**
B3C-175W-1	6/30/99	5.4
B3C-175W-2	6/30/99	4
B3C-200W-0.5	6/30/99	**58**
B3C-200W-1	6/30/99	**25**
B3C-200W-2	6/30/99	7.4
B3C-225W-0.5	7/2/99	**56**
B3C-225W-1	7/2/99	11
B3C-225W-2	7/2/99	6.3
B3C-250W-0.5	7/2/99	**46**
B3C-250W-1	7/2/99	7.3
B3C-250W-2	7/2/99	4.2
B3C-275W-0.5	7/7/99	4.8
B3C-275W-1	7/7/99	4.3

TABLE 5-4
(CONTINUED)

Sample Number	Date Collected	Concentration*(mg/kg)
B3C-300W-0.5	7/7/99	3.8
B3C-300W-1	7/7/99	5.6
B3C-75NW-0.5	6/30/99	6.1
B3C-75NW-1	6/30/99	3.6
B3C-100NW-0.5	6/30/99	5.5
B3C-100NW-1	6/30/99	3.9
B3C-125NW-0.5	6/30/99	4.9
B3C-125NW-1	6/30/99	3.7
ParD-275W-0.5	7/7/99	4.8
ParD-275W-1	7/7/99	4.3
ParD-300W-0.5	7/7/99	3.8
ParD-300W-1	7/7/99	5.6
Par Do-1-0.5	7/01/99	**15**
Par Do-1-1.0	7/01/99	**70**
Par Do-2-0.5	7/01/99	8.1
Par Do-2-1.0	7/01/99	11
Par Do-3-0.5	7/01/99	9.7
Par Do-3-1.0	7/01/99	**19**
Par Do-4-0.5	7/01/99	9.3
Par Do-4-1.0	7/01/99	8.4
Par Do-5-0.5	7/01/99	4.9
Par Do-5-1.0	7/01/99	14
Par Do-6-0.5	7/01/99	7.2
Par Do-6-1.0	7/01/99	**40**

***Boldface** indicates HBRG value has been exceeded

3) Additionally, representative soil samples that were analyzed using the WET were also analyzed for soluble arsenic concentrations using the Toxicity Characteristic Leaching Procedure (TCLP). None of the TCLP analytical results exceeded the TCLP threshold limit of 5 mg/l; therefore, none of the soil was characterized as RCRA hazardous waste.

As indicated above, samples with TTLC concentrations above 50 mg/kg were analyzed for soluble arsenic concentrations. Fifty-two samples were submitted for arsenic STLC, and 15 for TCLP analyses. Eleven samples exhibited STLC concentrations greater than 5 mg/l, with the highest detection at 21 mg/l. None of the samples analyzed for TCLP exceeded the TCLP threshold of 5 mg/l. Table 5-5 presents these results.

Since the majority of the samples with concentrations exceeding the STLC limit had TTLC concentrations above 200 mg/kg, as a conservative approach, all soil exhibiting greater than 100 mg/kg on the side walls and bottoms of the isolated excavation pits was characterized as non-RCRA hazardous waste. In addition, any soil determined to have a TTLC greater than 100 mg/kg during confirmation sampling (see Section 6) was characterized as non-RCRA hazardous waste.

As described in Section 6, these soils were stockpiled separately from the soil characterized as non-hazardous waste and transported to a Class 1 landfill.

5.4 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

This section includes the results of the field quality assurance/quality control (QA/QC) sample analysis for trip blanks, equipment rinsates, field blanks, and field duplicates.

One trip blank was analyzed for VOCs to evaluate the potential for contamination during sample handling and transportation to the laboratory. No VOCs were detected in the trip blank.

Field blank results were used to evaluate the quality of the water source used to decontaminate the field equipment. One field blank was analyzed for VOCs, SVOCs, PCBs, pesticides, and metals, none of which were detected.

The results of the equipment rinsate analysis were used to determine whether equipment decontamination was effective. One sample was analyzed for the same constituents as were the samples collected using the particular sampling method. None of the compounds analyzed for were detected in the equipment rinsate sample.

TABLE 5-5
STLC AND TCLP ANALYTICAL RESULTS FOR ARSENIC SOIL SAMPLES
BOEING C-6 FACILITY, PARCEL D

Sample ID	Total Arsenic (mg/kg)	STLC (mg/l)	TCLP (mg/l)
B3C-10N-0.5	76	2.8	NA
B3C-25N-0.5	120	3.4	ND
B3C-25N-1.0	63	2.1	NA
B3C-25S-0.5	60	2.1	NA
B3C-25S-1.0	110	3.9	NA
B3C-25W-0.5	100	3.2	NA
B3C-25W-1.0	58	2.4	NA
B3C-35S-0.5	54	2.1	NA
B3C-35S-1.0	80	2.6	NA
B3C-35W-0.5	61	2.2	NA
B3C-35W-1.0	130	3.9	NA
B3C-50E-1.0	110	4.9	NA
B3C-50N-0.5	**840**	**21**	2.6
B3C-50S-0.5	79	2.6	NA
B3C-50W-0.5	76	3.1	NA
B3C-50W-1.0	65	2.9	NA
B3C-75E-0.5	57	1.8	NA
B3C-75E-1.0	110	**7.5**	ND
B3C-75N-0.5	58	2.2	NA
B3C-75N-1.0	74	3.0	NA
B3C-75NE-0.5	260	**8.0**	1.2
B3C-75NE-1.0	210	**8.5**	1.3
B3C-75S-0.5	56	1.5	NA
B3C-75S-1.0	65	2.3	NA
B3C-75S-2.0	51	1.6	NA
B3C-75SE-1.0	360	**15**	3.4
B3C-75SW-0.5	270	**14**	2.4
B3C-100NE-0.5	66	3.2	NA
B3C-100NE-1.0	96	3.4	NA
B3C-100S-0.5	150	4.8	NA
B3C-100S-1.0	55	2.7	NA
B3C-100S-B0.5	110	4.6	NA
B3C-100S-C0.5	74	2.0	NA
B3C-100S-D0.5	160	**6.0**	ND
B3C-100SE-0.5	110	3.6	ND
B3C-100SE-1.0	260	**12**	2.6
B3C-100SW-1.0	110	3.5	NA

TABLE 5-5
(CONTINUED)

Sample ID	Total Arsenic (mg/kg)	STLC (mg/l)	TCLP (mg/l)
B3C-125NE-0.5	200	**5.6**	ND
B3C-125NE-1.0	240	**11**	1.5
B3C-125SW-0.5	150	3.7	NA
B3C-125W-0.5	64	1.9	NA
B3C-125W-1.0	74	2.7	NA
B3C-150NE-1.0	200	2.6	ND
B3C-150NE-2.0	83	3.1	NA
B3C-150SW-0.5	120	4.8	ND
B3C-150W-0.5	110	3.7	NA
B3C-150W-1.0	85	2.8	NA
B3C-175SE-1.0	62	1.2	NA
B3C-175W-0.5	220	**8.5**	1.7
B3C-200SW-0.5	68	1.5	NA
B3C-200W-0.5	58	2.1	NA
B3C-225W-0.5	56	2.6	NA

Boldface indicates concentration exceeds Total Threshold Limit Concentration (TTLC) of 500 mg/kg or Soluble Threshold Limit Concentration (STLC) of 5 mg/l or Toxicity Characteristic Leaching Procedure (TCLP) of 5 mg/l.

Notes:
1) Total arsenic analyzed using EPA Method 6010.
2) STLC per CCR Title 22.
3) TCLP analyzed using EPA Method 1311.

NA = Not analyzed
ND = Not detected

The results of a field duplicate analysis are used to evaluate the accuracy and reliability of the entire sample measurement system. Two duplicate samples were analyzed for the same constituents as the primary samples. The analytical results of the duplicate samples and their associated routine samples indicate good correlation, except for zinc at 10 feet bgs in Boring 10. Zinc was detected at a concentration of 1000 mg/kg in the routine sample, but it was detected at 69 mg/kg in the duplicate sample.

The laboratory reports for the QA/QC samples are presented in Appendix C.