3.0 OB/OD AT CAMP CLAIBORNE, LOUISIANA

3.1 TCRA At Camp Claiborne

Because the Camp Claiborne ranges had been utilized by both the Army and Air Force as firing/bombing ranges, a wide variety of ordnance was found and destroyed. Table 3.1 lists all ordnance and shows which items were destroyed in place (further breakdown and additional data is provided in Volume 2 of this study). Table 3.2 lists the ordnance and associated items moved to the detonation pits for the first disposal shot which was monitored by the sampling team.

3.2 Selection of Site and Pre-Shot Sample Collection.

The Camp Claiborne site is currently administered as part of the Kisatchie National Forest and is used as an off road vehicle riding area. At Camp Claiborne the disposal area was selected by the remediation contractor UXB Inc. (Figure 3.1). This site was in a large clearing surrounded by a stand of southern pine trees on 3 sides. The ground in this area was gently sloping to the north and west in the general direction of the only open area. The area immediately near the disposal area was cleared using a controlled burn after background samples had been taken. Soil conditions consisted of a thin veneer of dark brown to black organic top soil mixed with fine sand over a thick strata of red sandy clay. The initial disposal pits dug by a backhoe penetrated the red clay about 18 inches (Figure 3.2). These two disposal pits were enlarged into a single large pit that resulted from the first detonation. This large pit was used for the successive 3 detonations. The ejected materials from all detonations were strewn around the perimeter of the disposal area for about 30 meters. After disposal activity was completed, UXB pushed sand and the ejected material into the disposal crater for backfill and returned the site to somewhat level ground matching the nearby terrain. However the red sandy clay was evident not the black to brown organic top soil. Also the area was void of any vegetation. See Volume II for photographs of the site after final disposal activities.

Sample collection occurred three times at Camp Claiborne as described below. A layout of sample points for all three times is shown in Figure 3.3. Background sampling at the time the disposal pit was sited consisted of 12 samples: ground zero (1 sample), perimeter locations (4 each @30 meters), and a total of 4 samples from the anticipated downwind direction 1 each @ 60, 90, 190 meters. Three random samples were collected and one water sample was also collected from a low spot near the disposal area. Typically this area has no standing water, however recent rains had caused some to accumulate in the nearby areas downhill from the disposal area. In addition to the collected samples, a trip blank sample was analyzed as a quality control measure.

Figure 3.1 TCRA Site at Camp Claiborne
View Looking North

Figure 3.2 Large Trench Which Will Be Filled with Explosives,
UXO and Backfilled With Sand

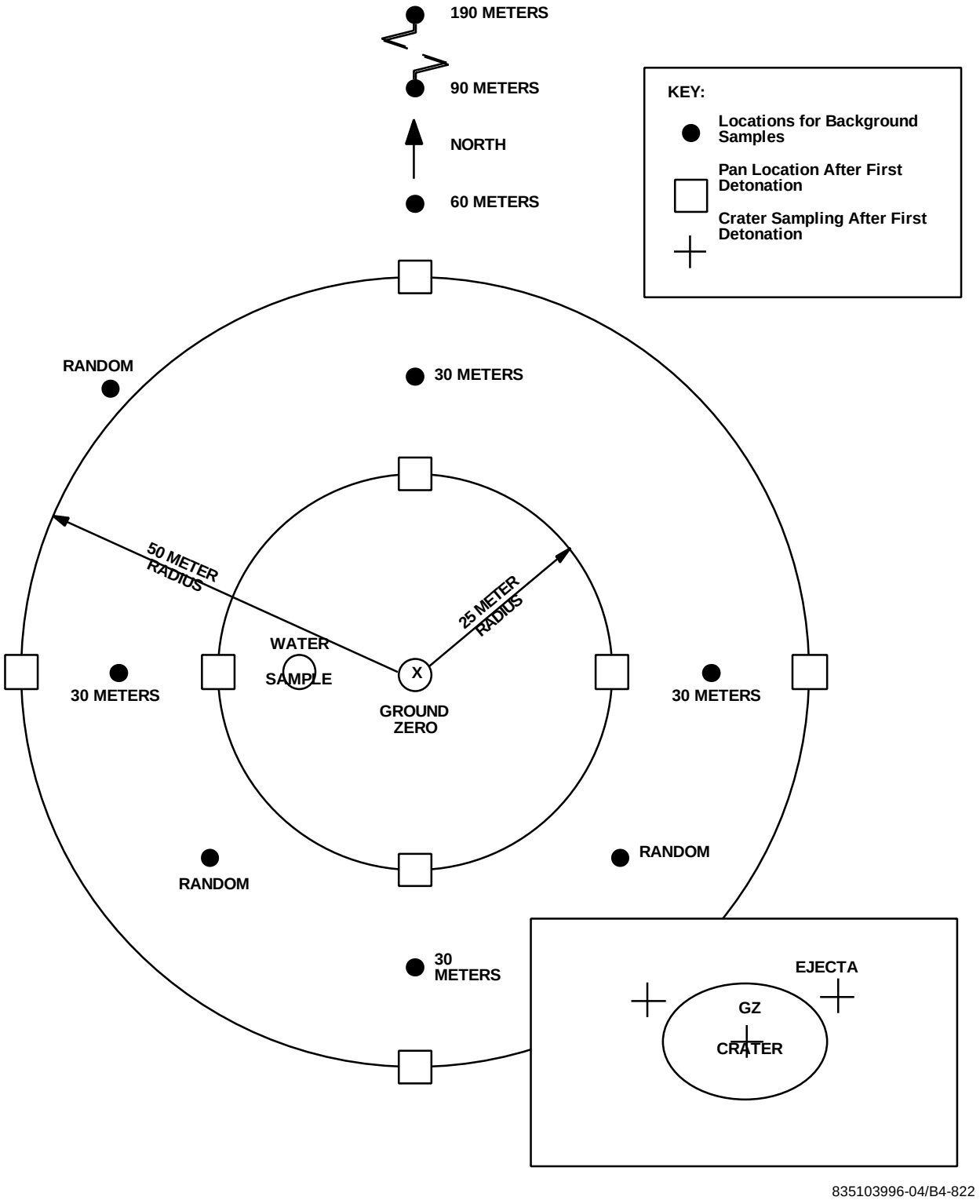

Figure 3.3 Composite of Sample Locations for Baseline and First Detonation at Camp Claiborne.

Results of laboratory analyses are given in Tables 3.3, 3.4 and 3.5 for semivolatiles, nitroaromatics and nitramines and metals respectively. Compounds which exceed the detection limits are:

(a) Butylbenzyl phthalate (1172 vs 330 MDL μg/kg)

(b) Dibutyl phthalate (942 vs 330 MDL μg/kg)

(c) Bis(2-ethylhexyl)phthalate (734 vs 330 MDL μg/kg)

(d) 1,3 DNB (4170 μg/kg vs MDL of 0.008 μg/kg)

The first three hits may have come from plasticizer in gloves used in collecting samples — a practice which was discontinued in all following collection activities. 1,3 DNB in the single sample cannot be fully explained. 1,3 DNB is used in dyes, explosives, pesticides and as a solvent for certain applications. The very high reading may be the result of spraying for mosquitoes and hence real. The water sampled was in a drainage area and could have concentrated here. Since these are isolated levels not seen in any other samples, they are neglected in our conclusion that all levels of contamination are below the method detection limit.

3.3 Post Shot Measurements

A Set of samples was collected immediately after the first demolition shot at the selected demolition site. A total of 12 samples were collected on 27 June 1995. Fall out/ejecta samples were taken from 4 collection pans 25m form ground zero. One sample was collected from the pit at ground zero and two samples were collected from ejecta at the lip of the pit. Since builders sand was used as backfill material to tamp the shot, a sample of sand was collected as a background sample. In addition, two rinsate samples and a trip blank were collected for quality control purposes. Location of sample sites are shown in Figure 3.3. Samples 1706 and 1708 are dirty and clean rinsate samples respectively. All samples were packed in ice and driven back to the laboratory in Huntsville, Alabama.

Results of laboratory analyses of the post detonation samples are summarized in Tables 3.5 (metals), 3.6 (semivolatiles) and 3.7 (nitroaromatics and nitramines). RDX was found in four soil samples and in the dirty rinsate sample (water used to clean implements prior to obtaining next sample). This compound did not appear in the background samples and hence was introduced by the detonation. The most likely source for this contamination is the 3.5 in. rocket which has composition B containing RDX and TNT.

3.4 Post OB/OD Activity

Because of scheduling problems approximately two months elapsed from completion of the TCRA disposal and final grading of the site to its near original condition. Appearance of the site is shown in Volume II of this report. Little to no vegetation was evident in the crater area and significant erosion had taken place. There was a large area down slope from the pit where water accumulated and allowed material to precipitate out. Samples were taken from this area. Figure 3.4 shows the location of sample sites.

After the collection and analysis of two sets of samples from Camp Claiborne, a change was made in the collection and analysis plan. Based on the results of the analysis of the previous samples, it was determined that composite samples would provide the required data and would result in considerable savings in analysis cost allowing for a third sampling activity at both sites. The revised procedure called for the collection of the same

number of samples from the same locations as previously described, however portions of individual samples would be combined into composite samples for analysis, with the remainder of the samples being held in cold storage for future analysis in case any anomalies were discovered during the analysis of the composite samples

The samples collected consisted of 2 samples consolidated from two sets of 4 each from the perimeter sites at the 25 meter circle and the 50 meter circle in addition to red clay soils located near the center of the disposal pit. In addition a sample was collected from the low ponding area down grade from the disposal area. Core samples in the approximate center of the crater were taken as shown in Figure 3.4. The center sample was frozen for possible later analysis if required.

Considerable erosion was apparent in the backfilled area of the detonation crater. The southern rim of the crater was exposed to a depth of approximately two feet (part of this exposure may have already existed if not completely backfilled and leveled originally). A series of trenches were dug and core samples pulled until it appeared the deepest part of the crater had been found. The coreing tube penetrated to a depth of 4 feet below the eroded depth of the backfill encountering little resistance to penetration over the last 8 to 10 inches. This sample was very moist and gray in appearance. It was evident that water was collecting in this area and finding a difficult time in dispersing through the heavy red clay. All pits were filled and leveled after sampling activities were completed.

Erosion resulted in setting of particulates in a ponding area west of the backfilled crater. Particulates were very fine and gray in appearance. Erosion material beyond this area was barely noticeable.

Results of the laboratory analyses on the samples collected are summarized in Tables 3.5 (metals) 3.8 (semivolatiles) and 3.9 (nitroaromatics and nitramines). Only one sample compound exceeded the method detection limit: Sample 1220 at the bottom of the pit showed 353 μg/kg (vs the MDL of 330). Since plastic bags were likely buried with the backfill, this may be plastic contamination and hence we feel can be disregarded. Thus, all semivolatiles and nitroaromatics and nitramines are below MDL.

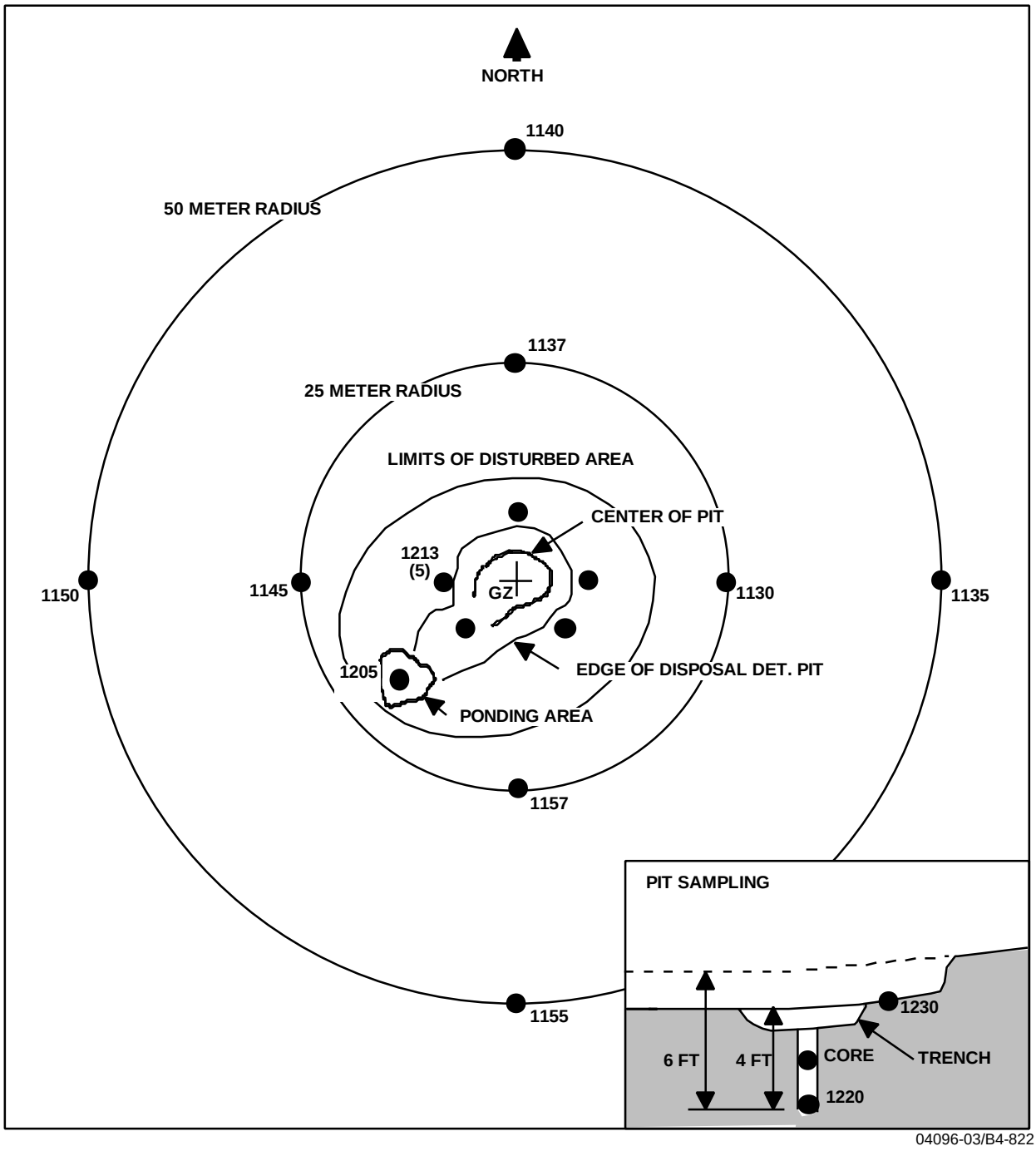

Figure 3.4 Post Disposal Activities for TCRA Action
At Camp Claiborne, Louisiana

TABLE 3.1 ORDNANCE FOUND BY USB AT CAMP CLAIBORNE, LOUISIANA — TCRA FROM 5/16/95 THROUGH 8/24/95

NUMBER OF UNITS	DESIGNATION	DESCRIPTION
1	2.36"	* Bazooka Rocket
1	155mm	* Projectile
4767	20mm	Projectiles
228		Practice Bomb
3	M51	Mechanical Time Fuses
50	M57	Point Detonating Fuses
1	3.5"	Bazooka Rocket
1	2.25"	Sub Caliber Aircraft Rocket
1	M23	* White Phosphorus Napalm Bomb igniter with M173 fuse
3	75mm	Projectiles
2	2.75"	* Folding fin Aircraft Rocket
1	2.75"	* Warhead with Point Detonation Fuse
3	37mm	Projectiles
3	37mm	* Projectiles with M-38 Fuze
6		Miscellaneous flares, signals and ejection cartridges
1	M117	Demolition Bomb - 750lb.

*** Blow-In-Place**

TABLE 3.2 ORDNANCE DESTROYED IN FIRST DEMOLITION SHOT ON 6/27/95 AND MONITORED BY SAMPLING TEAM

NUMBER OF UNITS	DESIGNATION	DESCRIPTION
1535	20mm	Projectiles
26		Practice Bombs
1	M51	Mechanical Time Fuses
7	M57	Point Detonating Fuses
1	3.5"	Bazooka Rocket
1	2.25"	Sub Caliber Aircraft Rocket

TABLE 3.3 BACKGROUND SEMIVOLATILE CONCENTRATIONS FOR CAMP CLAIBORNE

	0929	0935	0940	0943	0947	0954	0957	1003	1020	1026	1035	1036	Trip Blank
Compounds (1)	µg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L
Bis(2-chloroethyl)ether	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
1,3-Dichlorobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
1,2-Dichlorobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
1,4-Dichlorobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Bis(2-chloroisopropyl)ether	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
N-Nitrosodi-n-propylamine	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Hexachloroethane	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Nitrobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Isophorone	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Bis(2-chloroethoxy)methane	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
1,2,4-Trichlorobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Naphthalene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Hexachlorobutadiene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-Chloronaphthalene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Dimethyl phthalate	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,6-Dinitrotoluene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Acenaphthylene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,4-Dinitrotoluene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Diethyl phthalate	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Benzidine	<49	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<46
4-Bromophenyl phenyl ether	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
N-nitrosodimethylamine	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Hexachlorocyclopentadiene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
4,Chlorophenyl phenylether	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Fluorene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Azobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Hexachlorobenzene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Phenanthrene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Anthracene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Dibutyl phthalate	<24	<330	<330	**942**	<330	<330	<330	<330	<330	<330	<330	<330	<23
Fluoranthene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Pyrene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Butylbenzyl phthalate	<24	<330	<330	**1172**	<330	<330	<330	<330	<330	<330	<330	<330	<23
3,3'-Dichlorobenzidine	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23

(1) < N means N is method detection limit and concentration is <N.
(2) Presence indicated, but less than detection limit.
(3) Tentatively identified and quantitatively estimated.

TABLE 3.3 BACKGROUND SEMIVOLATILE CONCENTRATIONS FOR CAMP CLAIBORNE (Continued)

	0929	0935	0940	0943	0947	0954	0957	1003	1020	1026	1035	1036	Trip Blank
Compounds (1)	µg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L
Benzo(a)anthracene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Chrysene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Bis(2-ethylhexyl)phthalate	<24	<330	<330	**734**	<330	<330	<330	<330	<330	<330	<330	<330	<23
Di-n-octyl phthalate	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Benzo(b)fluoranthene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Benzo(k)fluoranthene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Benzo(a)pyrene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Indeno(1,2,3-cd)pyrene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Dibenzo(a,h)anthracene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Benzo(g,h,i)perylene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
N-Nitrosodiphenylamine	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Phenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-Chlorophenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-Nitrophenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,4-Dimethylphenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,4-Dichlorophenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
4-Chloro-3-Methylphenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,4,6-Trichlorophenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,4-Dinitrophenol	<122	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
4-Nitrophenol	<122	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<115
2-Methyl-4,6-Dinitrophenol	<122	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<115
Pentachlorophenol	<122	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<115
1-Methylnaphthalene	<24	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<115
Acetophenone	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
Diphenylamine	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-Aminonaphthalene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
1-Nitropyrene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,5-Diphenyloxazole	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-Nitronaphthalene	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-Methylnaphthalene (3)	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2-&/or 3-Methylphenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
4-Methylphenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23
2,4,5-Trichlorophenol	<24	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<23

(1) <N means N is method detection limit and concentration is <N.
(2) Presence indicated, but less than detection limit.
(3) Tentatively identified and quantitatively estimated.

TABLE 3.4 BACKGROUND NITROAROMATICS AND NITRAMINES FOR CAMP CLAIBORNE

	0929	0935	0940	0943	0947	0954	0957	1003	1020	1026	1035	1036	Trip Blank
Compound	µg/L	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
HMX	<0.012	<26.1	<26.1	<26.1	<26.1	<26.1	<26.1	<26.1	<26.1	<26.1	<26.1	<26.1	—
RDX	<0.018	<40.6	<40.6	<40.6	<40.6	<40.6	<40.6	<40.6	<40.6	<40.6	<40.6	<40.6	—
1,3,5 TNB	<0.020	<45.8	<45.8	<45.8	<45.8	<45.8	<45.8	<45.8	<45.8	<45.8	<45.8	<45.8	—
1,3 DNB	**4170(1)**	<17.1	<17.1	<17.1	<17.1	<17.1	<17.1	<17.1	<17.1	<17.1	<17.1	<17.1	—
NB	<0.009	<20.6	<20.6	<20.6	<20.6	<20.6	<20.6	<20.6	<20.6	<20.6	<20.6	<20.6	—
2,4,6 TNT	<0.013	<30.1	<30.1	<30.1	<30.1	<30.1	<30.1	<30.1	<30.1	<30.1	<30.1	<30.1	—
2 AM DNT	<0.015	<34.1	<34.1	<34.1	<34.1	<34.1	<34.1	<34.1	<34.1	<34.1	<34.1	<34.1	—
2,4 DNT	<0.049	<111	<111	<111	<111	<111	<111	<111	<111	<111	<111	<111	—
2,6 DNT	—	—	—	—	—	—	—	—	—	—	—	—	—

Key:

RDX -	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine
HMX -	Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazocine
NB -	Nitrobenzene
DNB -	Dinitrobenzene
TNB -	Trinitrobenzene
TNT -	Trinitrotoluene
DNT -	Dinitrotoluene
2 AmDNT -	2 Amino-DNT

(1) MDL = 0.008 µg/L

TABLE 3.5 METAL CONCENTRATIONS FOR CAMP CLAIBORNE

CAMP CLAIBORNE				Trip 1													
BACKGROUND SAMPLES				950411-SAMPLE NUMBER													
METAL	TRIP BLANK	929 WATER	935	940	943	947	954	957	1003	1020	1026	1035	1036		MEAN	HIGH VALUE	
COPPER	<.01	<.01	5.1	1.88	3.4	8.05	0.94	1.43	0.61	1.56	2.34	1.29	3.47		2.73	8.05	
LEAD	<.06	<.06	5.88	5.39	9.55	4.36	3.7	4.55	3.71	11	4.97	4.11	8.45		5.97	11	
CHROMIUM	<.01	<.01	7.15	1.71	2.1	1.78	1.38	1.39	2.32	2.37	5.64	1.73	8.38		3.27	8.38	
MERCURY	<.08	<.08	<.083	<0.73	<0.80	<0.66	<0.89	<0.83	<0.87	4.69	<0.80	<0.97	<1.06		<1.05	4.69	
BARIUM	<.01	0.07	38	19.9	63.1	24.8	24.4	24.1	17.1	21	31.1	34.2	62		32.70	63.1	
NICKEL	<.05	<.05	2.91	0.046	0.83	0.47	0.39	0.52	0.8	1.31	3.87	1.2	6.22		1.69	6.22	
POTASSIUM	<.5	<.5	237	57.9	119	70.5	82.1	70.1	102	85.2	234	75.7	298		130.14	298	
ZINC	<.01	<.01	13	7.86	7.54	2.72	2.13	3.39	3.34	6.07	12.1	3.25	20.2		7.42	20.2	
CADMIUM	<.01	<.01	0.08	0.05	0.07	0.03	0.05	0.06	0.04	0.52	0.07	<0.12	0.21		0.12	0.52	
ALUMINUM	0.19	5.21	6140	1560	2020	1760	1840	1520	1890	1670	4150	1810	7130		2624.17	7130	
CALCIUM	<.5	4.05	509	143	463	383	144	143	139	128	600	322	1270		385.82	1270	
TITANIUM	0.03	0.12	27.1	17	22.9	20.2	12.8	14.6	25.5	22.2	62.6	25.7	27.1		25.25	62.6	
	mg/L			all values in mg/kg of soil													
Camp Claiborne				Trip 2													
Post Detonation Sampling				950627-Sample Number													
METAL	TRIP BLANK	1706 (1)	1708 (2)	1630	1633	1640	1643	1647	1650	1655	1658	1712	1715	1717	MEAN	HIGH VALUE	1317(3) SAND
COPPER	<.01	<.01	<.01	4.59	4.95	21.4	15	2.09	6.05	10.8	31.1	4.26	1.99	2.28	9.50	31.1	0.42
LEAD	<.06	<.06	<.06	2.99	3.06	3.57	3.14	2.23	3.98	3.51	5.88	3.92	3.58	3.4	3.57	5.88	<.73
CHROMIUM	<.01	<.01	<.01	3.34	3.77	3.64	2.71	2.74	3.41	3.19	3.75	9.82	3.64	7.53	4.32	9.82	2.51
MERCURY	<.08	<.08	<.08	<1.23	<0.70	<1.40	<1.22	<1.18	5.59	<1.62	<1.74	<0.90	<1.27	<1.17	<1.63	5.59	<1.17
BARIUM	<.01	<.01	<.01	26.4	29.7	20.2	26.6	20.4	29.6	25.9	35.3	17.1	27.6	19.4	25.3	35.3	17.6
NICKEL	<.05	<.05	<.05	1.32	1.59	1.63	1.48	1.7	1.47	1.16	1.67	2.67	1.26	2.03	1.63	2.67	0.83
POTASSIUM	<.5	<.5	<.5	149	142	128	140	102	101	93.9	126	137	76.1	122	119.7	149	61.4
ZINC	<.01	0.2	<.01	3.48	4.55	4.88	6.66	2.81	7.82	8.18	13.3	8.65	3.9	7.1	6.48	13.3	11.9
CADMIUM	<.01	<.01	<.01	<0.15	<0.09	<0.17	<0.15	<0.15	<0.19	<0.20	<0.22	0.18	<0.16	0.16	<0.16	0.18	<.15
ALUMINUM	<.02	.26	.14	3060	3220	1810	2210	1470	2420	2490	2660	7940	2860	5510	3240	7940	685
CALCIUM	<.5	1.77	.15	155	159	129	131	83.8	202	193	317	59.3	251	134	164	317	43.1
TITANIUM	<.21	<.01	<.01	33.3	35	19.4	24.6	21	38	34.7	31.5	41.4	37	71	35	71	71.0
	mg/L			all values in mg/kg of soil													
Camp Claiborne				Trip 3													
Post Disposal Sampling				951031-Sample Number													
METAL		1205	1213	1220	1239	1240									MEAN	HIGH VALUE	
COPPER		13	6.2	5.43	3.98	5.39									6.80	13	
LEAD		9.71	3.05	3.38	3.39	4.55									4.82	9.71	
CHROMIUM		8.24	2.74	4.05	3.3	5.32									4.73	8.24	
MERCURY		3.62	<1.05	2.21	<1.05	<1.05									<0.49	3.62	
BARIUM		51.2	15.7	20	28.2	17.4									26.5	51.2	
NICKEL		2.34	<1.31	2.04	<1.31	2.65									<1.93	2.65	
POTASSIUM		157	58.18	73	85	85									91.6	157	
ZINC		31.3	3.26	17	4.61	5.57									12.4	31.3	
CADMIUM		0.51	<.26	<.26	<.26	<.26									0.31	0.51	
ALUMINUM		5040	1454	2212	1929	3041									2740	5040	
CALCIUM		376	112	149	239	138									20.3	376	
TITANIUM		35.8	20.44	26	23	29									26.8	35.8	
NITRATE-NITROGEN		1.02	9.32	0.709	1.9	3.99									3.39	9.32	
		all values in mg/kg of soil															

(1) Dirty Rinsate (2) Clean Rinsate (3) Sand Used As Tamping Material

TABLE 3.6 POST DETONATION SEMIVOLATILE CONCENTRATIONS FOR CAMP CLAIBORNE

	1630	1633	1640	1643	1647	1650	1655	1658	1712	1715	1717	1706	1708	1317	Trip Blank
Compounds (1)	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L	µg/L	µg/kg	µg/L
Bis(2-chloroethyl)ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
1,3-Dichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
1,2-Dichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
1,4-Dichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Bis(2-chloroisopropyl)ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
N-Nitrosodi-n-propylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Hexachloroethane	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Nitrobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Isophorone	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Bis(2-chloroethoxy)methane	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
1,2,4-Trichlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Naphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Hexachlorobutadiene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-Chloronaphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Dimethyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,6-Dinitrotoluene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Acenaphthylene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,4-Dinitrotoluene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Diethyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Benzidine	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<66	<33	<660	<134
4-Bromophenyl phenyl ether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
N-nitrosodimethylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Hexachlorocyclopentadiene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
4,Chlorophenyl phenylether	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Fluorene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Azobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Hexachlorobenzene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Phenanthrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Anthracene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Dibutyl phthalate	<330(2)	<330(2)	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Butylbenzyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
3,3'-Dichlorobenzidine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67

(1) < N means N is method detection limit and concentration is <N.
(2) Presence indicated, but less than detection limit.
(3) Tentatively identified and quantitatively estimated.

TABLE 3.6 POST DETONATION SEMIVOLATILE CONCENTRATIONS FOR CAMP CLAIBORNE
(Continued)

	1630	1633	1640	1643	1647	1650	1655	1658	1712	1715	1717	1706	1708	1317	Trip Blank
Compounds (1)	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L	µg/L	µg/kg	µg/L
Benzo(a)anthracene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17(2)	<330	<67
Chrysene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Bis(2-ethylhexyl)phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Di-n-octyl phthalate	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Benzo(b)fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Benzo(k)fluoranthene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Benzo(a)pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Indeno(1,2,3-cd)pyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Dibenzo(a,h)anthracene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Benzo(g,h,i)perylene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
N-Nitrosodiphenylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Phenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-Chlorophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-Nitrophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,4-Dimethylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,4-Dichlorophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
4-Chloro-3-Methylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,4,6-Trichlorophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,4-Dinitrophenol	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<165	<84	<1650	<335
4-Nitrophenol	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<165	<84	<1650	<335
2-Methyl-4,6-Dinitrophenol	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<165	<84	<1650	<335
Pentachlorophenol	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<1650	<165	<84	<1650	<335
1-Methylnaphthalene	<----------NOT EXTRACTED---------->														
Acetophenone	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
Diphenylamine	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-Aminonaphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
1-Nitropyrene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,5-Diphenyloxazole	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-Nitronaphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-Methylnaphthalene	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2-&/or 3-Methylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
4-Methylphenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67
2,4,5-Trichlorophenol	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<33	<17	<330	<67

(1) < N means N is method detection limit and concentration is <N.
(2) Presence indicated, but less than detection limit.
(3) Tentatively identified and quantitatively estimated.

TABLE 3.7 POST DETONATION NITROAROMATICS AND NITRAMINES FOR CAMP CLAIBORNE

	1630	1633	1640	1643	1647	1650	1655	1658	1712	1715	1717	1706	1708	1317	Trip Blank
Compound	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/L	µg/L	µg/kg	µg/L
HMX	<23.7	<23.7	<24.9	<26.1	<23.7	<26.1	<26.1	<26.1	<24.9	<26.1	<26.1	<0.058	<0.050	<27.5	—
RDX	<36.9	<36.9	**102(1)**	**56.0(2)**	**59.7(3)**	<40.6	<40.6	**88.5(4)**	<38.7	<40.6	<40.6	**0.247(5)**	<0.077	<42.7	—
1,3,5 TNB	<41.6	<41.6	<43.6	<45.8	<41.6	<45.8	<45.8	<45.8	<43.6	<45.8	<45.8	<0.102	<0.087	<48.2	—
1,3 DNB	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
NB	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2,4,6 TNT	<27.4	<27.4	<28.7	<30.1	<27.4	<30.1	<30.1	<30.1	<28.7	<30.1	<30.1	<0.067	<0.057	<31.7	—
2 AM DNT	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2,4 DNT	<101	<101	<106	<111	<101	<111	<111	<111	<106	<111	<111	<0.247	<0.211	<117	—
2,6 DNT	<73.9	<73.9	<77.4	<81.3	<73.9	<81.3	<81.3	<81.3	<77.4	<81.3	<81.3	<0.181	<0.154	<85.6	—

Key:

HMX -	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine
RDX -	Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazacine
NB -	Nitrobenzene
DNB -	Dinitrobenzene
TNB -	Trinitrobenzene
TNT -	Trinitrotoluene
DNT -	Dinitrotoluene
2 AmDNT -	2 Amino-DNT

(1) MDL = 38.7 µg/kg
(2) MDL = 40.6 µg/kg
(3) MDL = 36.9 µg/kg
(4) MDL = 40.6 µg/kg
(5) MDL = 0.090 µg/L

TABLE 3.8 POST DISPOSAL SEMIVOLATILE CONCENTRATIONS FOR CAMP CLAIBORNE

Compounds (1)	1205 µg/kg	1213 µg/kg	1220 µg/kg	1240 µg/kg	1239 µg/kg							
Bis(2-chloroethyl)ether	<330	<330	<330	<330	<330							
1,3-Dichlorobenzene	<330	<330	<330	<330	<330							
1,2-Dichlorobenzene	<330	<330	<330	<330	<330							
1,4-Dichlorobenzene	<330	<330	<330	<330	<330							
Bis(2-chloroisopropyl)ether	<330	<330	<330	<330	<330							
N-Nitrosodi-n-propylamine	<330	<330	<330	<330	<330							
Hexachloroethane	<330	<330	<330	<330	<330							
Nitrobenzene	<330	<330	<330	<330	<330							
Isophorone	<330	<330	<330	<330	<330							
Bis(2-chloroethoxy)methane	<330	<330	<330	<330	<330							
1,2,4-Trichlorobenzene	<330	<330	<330	<330	<330							
Naphthalene	<330	<330	<330	<330	<330							
Hexachlorobutadiene	<330	<330	<330	<330	<330							
2-Chloronaphthalene	<330	<330	<330	<330	<330							
Dimethyl phthalate	<330	<330	<330	<330	<330							
2,6-Dinitrotoluene	<330	<330	<330	<330	<330							
Acenaphthylene	<330	<330	<330	<330	<330							
2,4-Dinitrotoluene	<330	<330	<330	<330	<330							
Diethyl phthalate	<330	<330	<330	<330	<330							
Benzidine	<660	<660	<660	<660	<660							
4-Bromophenyl phenyl ether	<330	<330	<330	<330	<330							
N-nitrosodimethylamine	<330	<330	<330	<330	<330							
Hexachlorocyclopentadiene	<330	<330	<330	<330	<330							
4,Chlorophenyl phenylether	<330	<330	<330	<330	<330							
Fluorene	<330	<330	<330	<330	<330							
Azobenzene	<330	<330	<330	<330	<330							
Hexachlorobenzene	<330	<330	<330	<330	<330							
Phenanthrene	<330	<330	<330	<330	<330							
Anthracene	<330	<330	<330	<330	<330							
Dibutyl phthalate	<330(2)	<330	<330	<330	<330							
Fluoranthene	<330	<330	<330	<330	<330							
Pyrene	<330	<330	<330	<330	<330							
Butylbenzyl phthalate	<330	<330	353	<330	<330(2)							
3,3'-Dichlorobenzidine	<330	<330	<330	<330	<330							

(1) < N means N is method detection limit and concentration is <N.
(2) Presence indicated, but less than detection limit.
(3) Tentatively identified and quantitatively estimated.

TABLE 3.8 POST DISPOSAL SEMIVOLATILE CONCENTRATIONS FOR CAMP CLAIBORNE
(Continued)

	1205	1213	1220	1240	1239							
Compounds (1)	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg							
Benzo(a)anthracene	<330	<330	<330	<330	<330							
Chrysene	<330	<330	<330	<330	<330							
Bis(2-ethylhexyl)phthalate	<330	<330	<330(2)	<330	<330(2)							
Di-n-octyl phthalate	<330	<330	<330	<330	<330							
Benzo(b)fluoranthene	<330	<330	<330	<330	<330							
Benzo(k)fluoranthene	<330	<330	<330	<330	<330							
Benzo(a)pyrene	<330	<330	<330	<330	<330							
Indeno(1,2,3-cd)pyrene	<330	<330	<330	<330	<330							
Dibenzo(a,h)anthracene	<330	<330	<330	<330	<330							
Benzo(g,h,i)perylene	<330	<330	<330	<330	<330							
N-Nitrosodiphenylamine	<330	<330	<330	<330	<330							
Phenol	<330	<330	<330	<330	<330							
2-Chlorophenol	<330	<330	<330	<330	<330							
2-Nitrophenol	<330	<330	<330	<330	<330							
2,4-Dimethylphenol	<330	<330	<330	<330	<330							
2,4-Dichlorophenol	<330	<330	<330	<330	<330							
4-Chloro-3-Methylphenol	<330	<330	<330	<330	<330							
2,4,6-Trichlorophenol	<330	<330	<330	<330	<330							
2,4-Dinitrophenol	<1650	<1650	<1650	<1650	<1650							
4-Nitrophenol	<1650	<1650	<1650	<1650	<1650							
2-Methyl-4,6-Dinitrophenol	<1650	<1650	<1650	<1650	<1650							
Pentachlorophenol	<1650	<1650	<1650	<1650	<1650							
1-Methylnaphthalene	<----------DELETED---------->											
Acetophenone	<10	<10	<10	<10	<10							
Diphenylamine	<10	<10	<10	<10	<10							
2-Aminonaphthalene	<10	<10	<10	<10	<10							
1-Nitropyrene	<10	<10	<10	<10	<10							
2,5-Diphenyloxazole	<10	<10	<10	<10	<10							
2-Nitronaphthalene	<-----NOT EXTRACTED----->											
2-Methylnaphthalene (3)	<330	<330	<330	<330	<330							
2-&/or 3-Methylphenol	<330	<330	<330	<330	<330							
4-Methylphenol	<330	<330	<330	<330	<330							
2,4,5-Trichlorophenol	<330	<330	<330	<330	<330							

(1) < N means N is method detection limit and concentration is <N.
(2) Presence indicated, but less than detection limit.
(3) Tentatively identified and quantitatively estimated.

TABLE 3.9 POST DISPOSAL NITROAROMATICS AND NITRAMINES FOR CAMP CLAIBORNE

	1205	1216	1220	1240	1239						
Compound	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg						
HMX	<18.3	<17.4	<16.6	<18.3	<17.4						
RDX	<28.4	<27.1	<25.8	<28.4	<27.1						
1,3,5 TNB	<32.1	<30.5	<29.1	<32.1	<30.5						
1,3 DNB	—	—	—	—	—						
NB	—	—	—	—	—						
2,4,6 TNT	<21.1	<20.1	<19.2	<21.1	<20.1						
2 AM DNT	—	—	—	—	—						
2,4 DNT	<77.7	<74.0	<70.6	<77.7	<74.0						
2,6 DNT	<56.9	<54.2	<51.7	<56.9	<54.2						

Key:

HMX -	Hexahydro-1,3,5-Trinitro-1,3,5-Triazine
RDX -	Octahydro-1,3,5,7-Tetranitro-1,3,5,7-Tetrazacine
NB -	Nitrobenzene
DNB -	Dinitrobenzene
TNB -	Trinitrobenzene
TNT -	Trinitrotoluene
DNT -	Dinitrotoluene
2 AmDNT -	2 Amino-DNT