



THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

AR File Number 301

Defense Distribution Depot Memphis, Tennessee

FINAL

BRAC Parcel Summary Reports

Prepared by



CH2MHILL

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Contents

Parcel 1

- Subparcel 1.1: Gate No. 1, Building 1
- Subparcel 1.2: Gate No. 2, Building 2
- Subparcel 1.3: Waiting Shelter, Building 129
- Subparcel 1.4: Waiting Shelter, Building 139
- Subparcel 1.5: Depot Headquarters, Building 144
- Subparcel 1.6: Security, Building S145
- Subparcel 1.7: Waiting Shelter, Building 155
- Subparcel 1.8: Flagpole, Building 143; Antenna Tower, Building 146; and Headquarters Switch Station, Building 147; and Surrounding Areas

Parcel 2

- Subparcel 2.1: Military Family House, Building 176
- Subparcel 2.2: Detached Garage, Building S178
- Subparcel 2.3: Military Family Housing, Building 179
- Subparcel 2.4: Military Family Housing, Building 181
- Subparcel 2.5: Detached Garage, Building S183
- Subparcel 2.6: Military Family Housing, Building 184
- Subparcel 2.7: Outdoor Area

Parcel 3

- Subparcel 3.1: Swimming Pool, Building 193
- Subparcel 3.2: Community Club, Building 195
- Subparcel 3.3: MWR/Public Toilet, Building 196
- Subparcel 3.4: Equipment Shed, Building 198
- Subparcel 3.5: Outdoor Area, Buildings 188, 189, 192, 194, and 197, and Golf Course Area
- Subparcel 3.6: Lake Danielson Storm-Water Runoff Pond
- Subparcel 3.7: Lake Danielson Outlet Ditch
- Subparcel 3.8: Golf Course Pond
- Subparcel 3.9: Golf Course Pond Outlet Ditch
- Subparcel 3.10: Area Near Golf Course 9th Hole
- Subparcel 3.11: Area East of Lake Danielson, Former Flame-thrower Test Area

Parcel 4

- Subparcel 4.1: Physical Fitness Center, Building 252
- Subparcel 4.2: Facility Installation Services, Building 270
- Subparcel 4.3: Former Pro Shop, Building 271
- Subparcel 4.4: Facility Engineer Maintenance Shop, Building 260
- Subparcel 4.5: Buildings T256 and T261 and the Surrounding Area
- Subparcel 4.6: Heating Fuel Storage, Building T254
- Subparcel 4.7: Gas Station, Building 257
- Subparcel 4.8: Vehicle Grease Rack, Building 263

Contents (continued)

Parcel 4 (continued)

- Subparcel 4.9 Pad 267, Former Building T267
- Subparcel 4.10: Mixing Area Shed, Building 273
- Subparcel 4.11: Vehicle Maintenance Shop, Building 253
- Subparcel 4.12: Thrift Shop, Building 251
- Subparcel 4.13: Facility Engineer Maintenance Shop, Building 265

Parcel 5

- Subparcel 5.1: Building T272 and Surround Area
- Subparcel 5.2: Post Cafeteria, Building 274 and Surrounding Area

Parcel 6

- Subparcel 6.1: Area Surrounding Buildings 250, 349, and 350
- Subparcel 6.2: General Purpose Warehouse, Building 250
- Subparcel 6.3: General Purpose Warehouse, Building 349
- Subparcel 6.4: General Purpose Warehouse, Building 350

Parcel 7

- Subparcel 7.1: Area Surrounding General Purpose Warehouse, Building 249
- Subparcel 7.2: General Purpose Warehouse, Building 249

Parcel 8

- Subparcel 8.1: Area Surrounding Buildings in Parcel 8
- Subparcel 8.2: General Purpose Warehouse, Building 229
- Subparcel 8.3: General Purpose Warehouse, Building 230
- Subparcel 8.4: General Purpose Warehouse, Building 329
- Subparcel 8.5: General Purpose Warehouse, Building 330

Parcel 9

- Subparcel 9.1: Area Surrounding Buildings in Parcel 9
- Subparcel 9.2: General Purpose Warehouse, Building 429
- Subparcel 9.3: General Purpose Warehouse, Building 430
- Subparcel 9.4: General Purpose Warehouse, Building 449
- Subparcel 9.5: General Purpose Warehouse, Building 450

Parcel 10

- Subparcel 10.1: General Purpose Warehouse, Building 649
- Subparcel 10.2: Land Area Surrounding Parcel 10
- Subparcel 10.3: Land Area Between General Purpose Warehouses, Buildings 550 and 650
- Subparcel 10.4: General Purpose Warehouse, Building 549
- Subparcel 10.5: General Purpose Warehouse, Building 550
- Subparcel 10.6: General Purpose Warehouse, Building 650

Contents (continued)

Parcel 11

- Subparcel 11.1: Area Surrounding Buildings 529, 530, and 630
- Subparcel 11.2: General Purpose Warehouse, Building 529
- Subparcel 11.3: General Purpose Warehouse, Building 530
- Subparcel 11.4: General Purpose Warehouse, Building 630

Parcel 12

- Subparcel 12.1: Area Surrounding Buildings in Parcel 12
- Subparcel 12.2: General Purpose Warehouse, Building 629

Parcel 13

- Subparcel 13.1: Sentry Station Gate No. 23
- Subparcel 13.2: Sentry Station Gate No. 24
- Subparcel 13.3: Sentry Station Gate No. 25
- Subparcel 13.4: Warehouse/Office Space, Building 210
- Subparcel 13.5: Building 211 and Areas Surrounding the Buildings in Parcel 13

Parcel 14

- Subparcel 14.1: Gate 22 Sentry Station
- Subparcel 14.2: Building S209, Administrative/General Purpose Warehouse and Surrounding Areas

Parcel 15

- Subparcel 15.1: Sentry Station Gate No. 15
- Subparcel 15.2: Warehouse/Storage, Building 308
- Subparcel 15.3: Hazardous Waste Storage, Building 319
- Subparcel 15.4: Hobby Shop, Building S702
- Subparcel 15.5: Screening Sites 36, 37, 38, and 39
- Subparcel 15.6: Buildings 301, 304, 305, 306, 307, S309, T416, T417, 701, and Surrounding Areas

Parcel 16

- Subparcel 16.1: Outdoor Area and Railroad Tracks
- Subparcel 16.2: General Purpose Warehouses, Building S558 and Building S559
- Subparcel 16.3:

Parcel 17

- Subparcel 17.1: Facility Training, Building 459
- Subparcel 17.2: Outdoor Area and Standby Generator
- Subparcel 17.3: Building 359

Parcel 18

- Subparcel 18.1: General Purpose Warehouse, Building 560
- Subparcel 18.2: Outdoor Area and Railroad Tracks

Parcel 19

- Subparcel 19.1: General Purpose Warehouse, Building T467; Installation Service Warehouse, Building S468; and Area Surrounding the Buildings in Parcel 19
- Subparcel 19.2: Vehicle Wash Rack, Building S465
- Subparcel 19.3: Battery Shop, Building S469

Parcel 20

- Subparcel 20.1: North Dock of Building 489
- Subparcel 20.2: General Purpose Warehouse, Building 670
- Subparcel 20.3: General Purpose Warehouse, Building 470
- Subparcel 20.4: General Purpose Warehouse, Building 489
- Subparcel 20.5: Area Surrounding the Buildings (mostly Building 670) in Parcel 20
- Subparcel 20.6: Area Between Buildings 489 and 490

Parcel 21

- Subparcel 21.1: General Purpose Warehouse, Building 690
- Subparcel 21.2: General Purpose Warehouse, Building 490
- Subparcel 21.3: General Purpose Warehouse, Building 689
- Subparcel 21.4: General Purpose Warehouse, Building 685
- Subparcel 21.5: Area Surrounding Buildings in MDRA Parcel 21

Parcel 22

- Subparcel 22.1: Area Between Buildings 689 and 690, East of the Battery Recoupment Area
- Subparcel 22.2: Battery Recoupment Area Between Buildings 689 and 690

Parcel 23

- Subparcel 23.1: Sentry Station Gate No. 7
- Subparcel 23.2: Sentry Station Gate No. 8
- Subparcel 23.3: General Purpose Warehouse, Building 787
- Subparcel 23.4: Waiting Shelter, Building 795
- Subparcel 23.5: Transportation-Steel Building S995
- Subparcel 23.6: Area Surrounding Easter Portion of Parcel 23
- Subparcel 23.7: Equipment Storage, Building 783
- Subparcel 23.8: Equipment Storage, Building 793
- Subparcel 23.9: Open Area Outside of Building S995
- Subparcel 23.10: Open Storage Area X01
- Subparcel 23.11: Area Surrounding Buildings in the Western Portion of Parcel 23

Parcel 24

- Subparcel 24.1: Gravel Parking Area on the Southeast Side of Building S873
- Subparcel 24.2: Open Storage Area X03
- Subparcel 24.3: Buildings 770 and T771 and Surrounding Area

Parcel 25

- Subparcel 25.1: Open Shed Warehouse, Building S873
- Subparcel 25.2: Open Shed Warehouse, Building S875 and Surrounding Area
- Subparcel 25.3 :

Parcel 26

- Subparcel 26.1: Loading and Unloading Dock, Building 889 and Area Surrounding the Buildings in Parcel 26
- Subparcel 26.2: Open Shed Warehouse, Building S970

Parcel 27

- Subparcel 27.1: Outdoor Area Surrounding Building 972
- Subparcel 27.2: Open Shed, Building S972

Parcel 28

- Subparcel 28.1: Open Storage Area, X04
- Subparcel 28.2: Acid Storage, Building 1089 and Surrounding Area

Parcel 29

- Subparcel 29.2: Buildings 801, 802, 804, also Open Storage Areas X27 and X30
- Subparcel 29.3: West Storm-water Drainage Canal

Parcel 30

- Subparcel 30.1: Special Purpose Warehouse, Building 925
- Subparcel 30.2: Area Between Buildings 925 and P949
- Subparcel 30.3: Area Surroundings the Buildings in Parcel 30
- Subparcel 30.4: Building P949
- Subparcel 30.5: Area Adjacent to South Side of Building P949

Parcel 31

- Subparcel 31.1: Open Storage Areas X17, X19, X20, and X21

Parcel 32

- Subparcel 32.1: Open Storage Areas X02, X13, and X15
- Subparcel 32.2: Special Purpose Warehouse, Building 835
- Subparcel 32.3: Special Purpose Warehouse, Building 865

Parcel 33

- Subparcel 33.1: Sentry Station, Building 727
- Subparcel 33.2: Water Storage Tank, Building 754
- Subparcel 33.3: Pump House, Building 755
- Subparcel 33.4: Fire Pump House, Building 756
- Subparcel 33.5: Office, Building T860
- Subparcel 33.6: Wastewater Treatment Unit Area
- Subparcel 33.7: Fuel Oil Building (Screening Site 81), Previous Location of Building 765

Parcel 33 (continued)

Subparcel 33.8: Loading and Operations, Building 863

Subparcel 33.9: Railroad Engine Shop, Building 720; Pesticide Shop, Building 737;
Diesel Fuel Tank House, Building 765; Open Storage Areas X05,
X06, X07, X08, X10, X11, and X12

Subparcel 33.10: Water Pump Station, Building 753

Subparcel 33.11: Diesel Fuel UST

Parcel 34

Subparcel 34.1: General Purpose Warehouse, Building 360

Subparcel 34.2: Area Surrounding Building 360

Parcel 35

Subparcel 35.1: Paint Storage Warehouse, Building 1090

Subparcel 35.2: Pesticides and POL Storage Area, Building 1084

Subparcel 35.3: Hazardous Materials Storage, Building 1086

Subparcel 35.4: Former Spray Paint Booth in Building 1087 and Sandblasting Waste
Drum Storage Area

Subparcel 35.5: Remaining Areas of Parcel 35

Works Cited

ACM	asbestos-containing materials
AST	aboveground storage tank
BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
beta BHC	beta hexachlorocyclohexane
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CLP	Contract Laboratory Program
COPC	chemical of potential concern
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDMT	Defense Distribution Depot Memphis, Tennessee
DDT	dichlorodiphenyltrichloroethane
DRMO	Defense Reutilization and Marketing Organization
EBS	Environmental Baseline Survey
EPA	U.S. Environmental Protection Agency
ER	Early Removal
FE	facility engineer
FFA	Federal Facilities Agreement
GWP	groundwater protection
HAP	hazardous air pollutant
kg	kilogram
LBP	lead-based paint
MEK	methyl ethyl ketone
MFH	Military Family Housing

mg	milligram
MWR	men's and women's restrooms
NFA	No Further Action
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
OU	operable unit
PCP	pentachlorophenol
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricants
ppb	parts per billion
ppm	parts per million
PRE	Preliminary Risk Evaluation
PVC	polyvinyl chloride
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RI	Remedial Investigation
SS	Screening Sites
SVOC	semivolatile organic compound
SWMU	solid waste management unit
TAL	Target Analyte List
TCL	Target Compound List
TCDD	tetrachlorodibenzo-p-dioxin
TPH	total petroleum hydrocarbons
USAHEA	U.S. Army Environmental Hygiene Agency
USATHMA	U.S. Army Toxic and Hazardous Materials Agency
UST	underground storage tank
VOC	volatile organic compound
XRF	x-ray fluorescence
ZnO	zinc oxide

TAB

10

BRAC Parcel 1 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 1

1.1 Parcel Description

Parcel 1 is a 784,602-square-foot parcel in the east central part of the Main Installation in OU-3 (see Figure 1). Parcel 1, consisting primarily of the Administration Building (Building 144) and the parking lots located north and south of Building 144, includes eight subparcels and associated sites: Gate No. 1, Building 1; Gate No. 2, Building 2; and Buildings 129, 139, 144, S145, 155, 143, 146, and 147.

No sampling was performed before the BRAC characterization of 1996. Sampling under the BRAC Program has occurred in this parcel, but no sampling under the RI or Screening Sites programs has occurred at Parcel 1.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 1 consist of surface soil contamination and ACM and LBP in the building interiors.

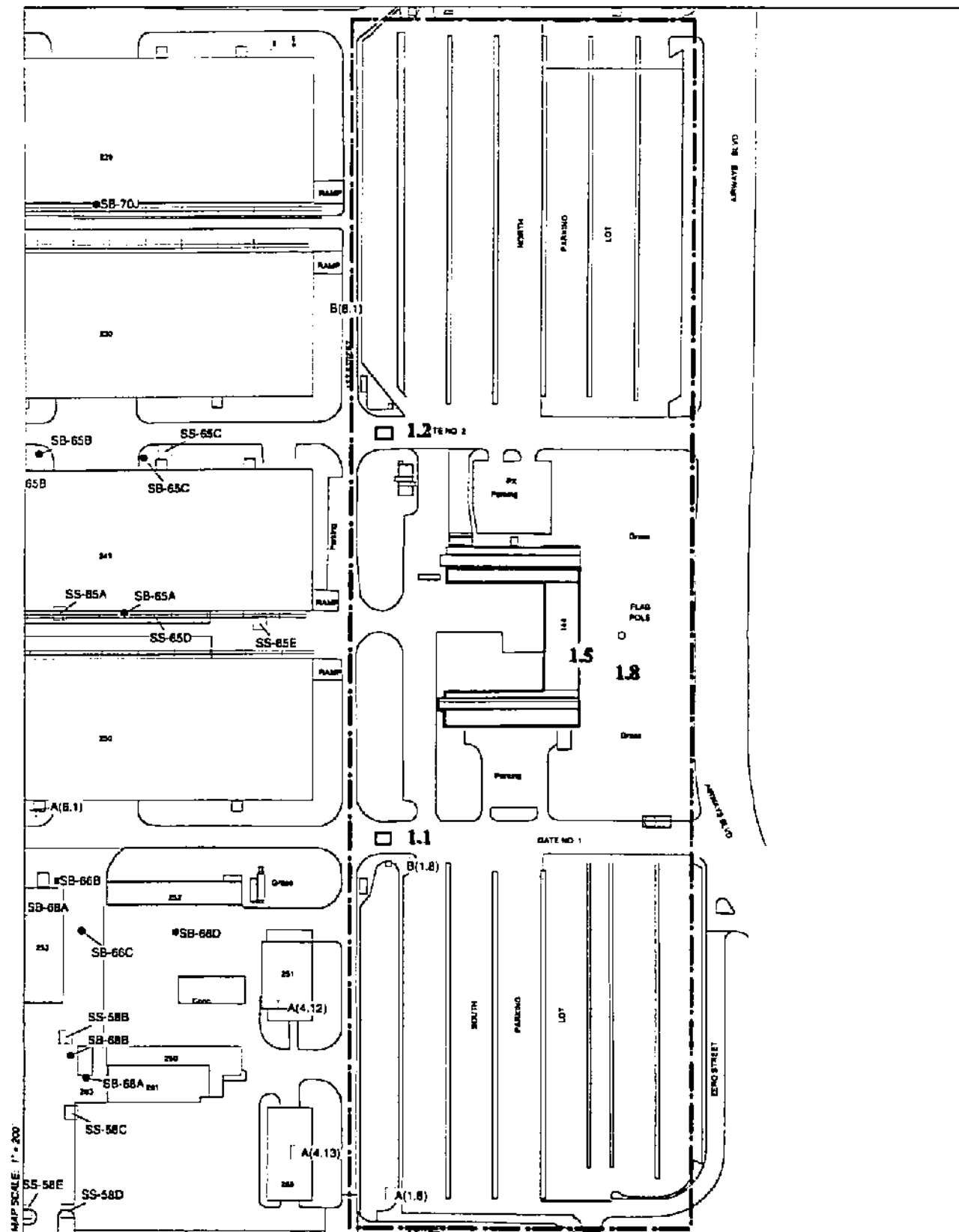
Dieldrin at Subparcel 1.8 in one sample presents slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

Subparcels 1.1 through 1.7 are recommended to remain as CERFA Category 1, while Subparcel 1.8 will remain CERFA Category 7. Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Necessary additional sampling is discussed by subparcel below.

2.0 Subparcel 1.1: Gate No. 1, Building 1

2.1 Description

Subparcel 1.1 includes Gate 1, the Sentry Station Gate No. 1 (DDMT, November 1997). Less than 0.01 acre in size, the station was built in 1959 and includes 280 square feet of space. This subparcel is used as a sentry post (Woodward-Clyde, 1996).



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- △ Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- - - Sub-Parcel Boundary



KEY LOCATION MAP

Figure 1
PARCEL 1
Sampling Locations

Defense Distribution Depot Memphis, TN

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TABLE 1
Analytes Investigated for Parcel 1
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 1.1 is used as a sentry post.

2.2.2 Sampling History

No media sampling has occurred at this subparcel, but ACM was tested for.

2.3 Findings

Storage of hazardous substances or petroleum products has not been documented in this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the guard station (Building 1) from earlier surveys (Woodward-Clyde, 1996). ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in Building 1, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

2.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 1.1.

2.5 Identified Data Gaps

LBP was not specifically tested for in Building 1.

2.6 Recommendations

During the BCT meetings (September 1997), it was recommended that Subparcel 1.1 remain a CERFA Category 1.

3.0 Subparcel 1.2: Gate No. 2, Building 2

3.1 Description

Subparcel 1.2 is also a 0.01-acre area that houses a gate station (DDMT, November 1997). Sentry Station Gate No. 2 was built in 1958 and includes 280 square feet of space (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 1.2 is used as a sentry post.

3.2.2 Sampling History

No media sampling has occurred at this subparcel.

3.3 Findings

Storage of hazardous substances or petroleum products has not been documented at Subparcel 1.2, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the storage space (Building 2) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in Building 2, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 1.2.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building 2.

3.6 Recommendations

During the BCT meetings (September 1997), it was recommended that Subparcel 1.2 remain a CERFA Category 1.

4.0 Subparcel 1.3: Waiting Shelter, Building 129

4.1 Description

Subparcel 1.3 is another small area in Parcel 1, measuring less than 0.01 acre (DDMT, November 1997). Included as part of this subparcel is Building 129, waiting shelter. Built in 1980, this structure measures 75 square feet and has been used as a shelter since its construction (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

The waiting shelter is used to provide shelter from inclement weather.

4.2.2 Sampling History

No media sampling has occurred at Subparcel 1.3.

4.3 Findings

Storage of hazardous substances or petroleum products has not been documented in this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

Although the waiting shelter (Building 129) was not included in the Asbestos Identification Survey (Woodward-Clyde, 1996), ACM may/may not be present based on the year of construction. Although LBP was not specifically tested for in Building 129, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

4.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns in Subparcel 1.3.

4.5 Identified Data Gaps

LBP and ACM were not specifically tested for in Building 129.

4.6 Recommendations

During the BCT meetings (September 1997), it was recommended that Subparcel 1.3 remain a CERFA Category 1.

5.0 Subparcel 1.4: Waiting Shelter, Building 139

5.1 Description

The 0.01-acre Subparcel 1.4, contains another waiting shelter (Building 139) (DDMT, November 1997). This shelter was built in 1959 and has 144 square feet (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

This waiting shelter also is used to provide shelter from inclement weather.

5.2.2 Sampling History

No media sampling has occurred at Subparcel 1.4.

5.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the bus stop/waiting shelter (Building 139) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in Building 139, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

5.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 1.4.

5.5 Identified Data Gaps

LBP was not specifically tested for in Building 139.

5.6 Recommendations

During the BCT meetings (September 1997), it was recommended that Subparcel 1.4 remain a CERFA Category 1.

6.0 Subparcel 1.5: Depot Headquarters, Building 144

6.1 Description

The 0.31-acre Subparcel 1.5 includes Building 144, the depot Headquarters building (DDMT, November 1997). This building, built in 1942, is an administration building with 13,500 square feet of space (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Building 144 houses administrative functions of the installation.

6.2.2 Sampling History

No media sampling has occurred at Subparcel 1.5.

6.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the office space (Building 144) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Because these were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

6.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 1.5.

6.5 Identified Data Gaps

LBP was not specifically tested for in Building 144.

6.6 Recommendations

During the BCT meetings (September 1997), it was recommended that Subparcel 1.5 remain a CERFA Category 1.

7.0 Subparcel 1.6: Security, Building S145

7.1 Description

Subparcel 1.6 measures 0.02 acres and includes Building S145, the security building (DDMT, November 1997). The 860-square-foot security building was built in 1943 and is used for security and pass identification (Woodward-Clyde, 1996).

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

The security building is used for pass and identification purposes.

7.2.2 Sampling History

No media sampling has occurred at Subparcel 1.6.

7.3 Findings

Storage of hazardous substances or petroleum products has not been documented in this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the main security office (Building S145) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in Building S145, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

7.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 1.6.

7.5 Identified Data Gaps

LBP was not specifically tested for in Building S145.

7.6 Recommendations

During the BCT meetings (September 1997), it was recommended that this subparcel remain a CERFA Category 1.

8.0 Subparcel 1.7: Waiting Shelter, Building 155

8.1 Description

The 144-square-foot Subparcel 1.7 was built in 1960 and contains an additional waiting shelter, Building 155 (Woodward-Clyde, 1996). This subparcel is small in size like the other subparcels in Parcel 11, measuring less than 0.01 of an acre (DDMT, November 1997).

8.2 History of Subparcel Activities and Past Sampling Activities

8.2.1 Summary of Subparcel Activities

Subparcel 1.7 also is a waiting shelter.

8.2.2 Sampling History

No media sampling has occurred at this subparcel

8.3 Findings

Storage of hazardous substances or petroleum products has not been documented in this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the bus stop/waiting shelter (Building 155) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in Building 155, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

8.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 1.7.

8.5 Identified Data Gaps

LBP was not specifically tested for in Building 155.

8.6 Recommendations

During the BCT meetings (September 1997), it was recommended that this subparcel remain a CERFA Category 1.

9.0 Subparcel 1.8: Flagpole, Building 143; Antenna Tower, Building 146; and Headquarters Switch Station, Building 147; and Surrounding Areas

9.1 Description

Subparcel 1.8 is made up of Buildings 143 (the flagpole), 146 (the antenna tower), 147 (the Headquarters switch station), and the areas surrounding these structures. Measuring 15.2 acres, Subparcel 1.8 is the largest of the subparcels in Parcel 1 (DDMT, November 1997). This subparcel was the location of former housing units before the buildings were constructed; however, it is unknown when the flagpole and antenna tower were built. The Headquarters switch station building was built in 1981 and has 204 square feet of space (Woodward-Clyde, 1996). Subparcel 1.8 is also associated with the southern parking lot within Parcel 1.

9.2 History of Subparcel Activities and Past Sampling Activities

9.2.1 Summary of Subparcel Activities

The surface soils surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. The north and south parking lots in this subparcel are the location of former housing units, which have since been demolished.

In addition, this parcel is associated with two previously reported petroleum, oil, and lubricant spills. A 4-gallon motor oil spill was reported on March 22, 1995, at the Gate 1 parking lot. A minor diesel spill was reported on October 28, 1993, in the street at Gate 1 (Woodward-Clyde, 1996). The precise locations of the spills are unknown. Application of absorbent was sufficient to contain the spills, and no further remedial action was deemed necessary.

9.2.2 Sampling History

Sampling was performed to provide information on the presence of pesticides and PCBs in surface soils. Two BRAC surface soil samples, A(1.8) and B(1.8), were collected from the southern parking lot and analyzed for pesticides and PCBs. No subsurface soil samples were collected.

9.3 Findings

A PRE (CH2M HILL, January 1988) was performed for Subparcel 1.8. Because there are no RI or SS sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk is above for residential exposure and within the range for the industrial worker scenario of 1 in a million (10^{-6}). The estimated risk is primarily from dieldrin detected at 0.31 mg/kg and 0.59 mg/kg, which exceed a dieldrin critical value of 0.5 mg/kg at one of the samples. Dieldrin concentration in one of the two samples is elevated above the critical value. There are no noncarcinogenic chemicals in the BRAC samples from Subparcel 1.8.

In summary, dieldrin at Subparcel 1.8 presents slightly elevated risk for the residential exposure scenario. There are no noncarcinogenic PRE ratios above acceptable land use levels (industrial) at Subparcel 1.8. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

Building 147 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required.

Although LBP was not specifically tested for in Building 147, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

9.4 Summary of Environmental Concerns

Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

9.5 Identified Data Gaps

Although Building 147 was constructed after 1978 and should not contain LBP, it was not tested for LBP.

9.6 Recommendations

In accordance with the BCT meeting (September 1997) and the Draft PRE (CH2M HILL, January 1998; Table 5-2), it is recommended that the category remain a CERFA Category 7, primarily based on the dieldrin concern. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

TAB

2.0

BRAC Parcel 2 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 2

1.1 Parcel Description

Parcel 2 is a 103,733-square-foot parcel in the southeast corner of the Main Installation in OU-3 (see Figure 1). Parcel 2 consists of the four housing units known as Buildings 176, 179, 181, and 184, and detached garage structures.

No sampling was performed before the BRAC characterization of 1996. Sampling under the BRAC Program has occurred at Parcel 2, but no RI or SS sampling has occurred at this parcel.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 2 consist of ACM in poor or friable condition, LBP on exterior surfaces, and chlorinated hydrocarbon pesticides in the surface soils.

Dieldrin at Subparcel 2.7 presents slightly elevated risk for the industrial exposure scenario, and all of the chlorinated pesticides present slightly elevated risk for the residential scenario. This subparcel should be further evaluated for dieldrin and other chlorinated pesticides.

Subparcels 2.1 through 2.6 are recommended to remain CERFA Category 1, while Subparcel 2.7 will remain CERFA Category 6. Table 2 summarizes the analytical methodologies that will be used on any proposed samples included in the recommendations. Necessary additional sampling is discussed by subparcel below.

2.0 Subparcel 2.1: Military Family Housing, Building 176

2.1 Description

Subparcel 2.1 contains Building 176, MFH, which is a 4,787-square-foot residential structure built in 1948 (Woodward-Clyde, 1996). The total subparcel size is 0.11 acre (DDMT, November 1997).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 2.1 has been used for residential housing.

Defense Distribution Depot Memphis, TN

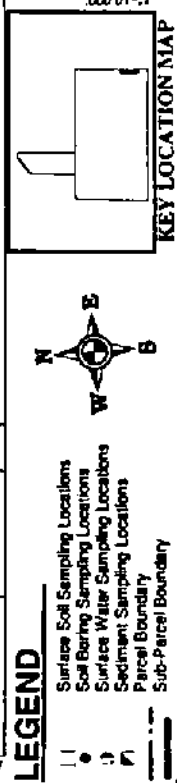


TABLE 1
Analytes Investigated for Parcel 2
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

301 27

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM and LBP were tested for.

2.3 Findings

Storage of hazardous substances or petroleum products has not been documented in this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in Building 176 from earlier surveys (Woodward-Clyde, 1996).

ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. LBP was specifically tested for in Building 176 with XRF, and exterior LBP surfaces were detected (Woodward-Clyde, 1996).

2.4 Summary of Environmental Concerns

Timely abatement or removal of ACM products in poor or friable condition at Subparcel 2.1 is an environmental concern. LBP was detected on exterior surfaces of the building.

2.5 Identified Data Gaps

No data gaps were identified for this subparcel.

2.6 Recommendations

The BCT Meetings (September 1997) recommended that Subparcel 2.1 remain a CERFA Category 1. However, the PRE results (CH2M HILL, January 1998) indicated that surface soils containing chlorinated pesticides present a slightly elevated risk for the residential scenario. This site should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

3.0 Subparcel 2.2: Detached Garage, Building S178

3.1 Description

Subparcel 2.2 consists of Building S178, detached garage: family housing. This garage, which also was built in 1948, has 1,440 square feet of space used for automobile parking and maintenance activities (Woodward-Clyde, 1996). This subparcel measures 0.3 acre (DDMT, November 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 2.2 has been used for residential parking and maintenance activities. As part of a recent LBP removal project, many of the rotted wood boards have been replaced (Cooper, D., April 1998).

3.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

3.3 Findings

Storage of hazardous substances or petroleum products has not been documented at Subparcel 2.2, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the garage (Building S178) from earlier surveys (Woodward-Clyde, 1996). ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM and LBP are potential environmental concerns at Subparcel 2.2.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building S178.

3.6 Recommendations

During the BCT Meetings (September, 1997), it was recommended that this subparcel remain a CERFA Category 1. However, the PRE results (CH2M HILL, January 1998) indicated that surface soils containing chlorinated pesticides present a slightly elevated risk for the residential scenario. This site should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

4.0 Subparcel 2.3: Military Family Housing, Building 179

4.1 Description

Subparcel 2.3, measuring 0.11 acre, contains another MFH structure, Building 179 (DDMT, November 1997). Building 179 was built in 1948 and has 4,835 square feet of space used for residential purposes (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 2.3 is used for residential purposes.

4.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM and LBP were tested for.

4.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in Building 179 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

LBP was specifically tested for in Building 179, with XRF, and exterior LBP surfaces were detected (Woodward-Clyde, 1996).

4.4 Summary of Environmental Concerns

ACM and LBP are environmental concerns at Subparcel 2.3.

4.5 Identified Data Gaps

No data gaps were identified for this subparcel.

4.6 Recommendations

The BCT meetings (September, 1997) recommended that this subparcel remain a CERFA Category 1. However, the PRE results (CH2M HILL, January 1998) indicated that surface soils containing chlorinated pesticides present a slightly elevated risk for the residential scenario. This site should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

5.0 Subparcel 2.4: Military Family Housing, Building 181

5.1 Description

Subparcel 2.4 is identical to Subparcel 2.3 in that it is 0.11 acre in size and contains another MFH structure (Building 181) (DDMT, November 1997). This building was also built in 1948 and has 4,835 square feet of space (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Subparcel 2.4 consists of residential housing.

5.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM and LBP were tested for.

5.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in Building 181 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. LBP was specifically tested for in Building 181, with XRF, and exterior LBP surfaces were detected (Woodward-Clyde, 1996).

5.4 Summary of Environmental Concerns

ACM and LBP are environmental concerns at Subparcel 2.4.

5.5 Identified Data Gaps

Data gaps were not identified at this subparcel.

5.6 Recommendations

The BCT meetings (September, 1997) recommended that this subparcel remain a CERFA Category 1. However, the PRE results (CH2M HILL, January 1998) indicated that surface soils containing chlorinated pesticides present a slightly elevated risk for the residential scenario. This site should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

6.0 Subparcel 2.5: Detached Garage, Building S183

6.1 Description

The 0.11-acre Subparcel 2.5 includes Building S183, a detached garage: family housing (DDMT, November 1997). This structure was built in 1948 and has 1,440 square feet of space used for automobile parking and maintenance (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Residential parking and maintenance activities occur at Subparcel 2.5. As part of a recent LBP removal project, many of the rotted wood boards have been replaced (Cooper, D., April 1998).

6.2.2 Sampling History

No previous media sampling occurred at this subparcel, but ACM was tested for.

6.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in Building S183 from earlier surveys (Woodward-Clyde, 1996). ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

6.4 Summary of Environmental Concerns

ACM and LBP may be environmental concerns at Subparcel 2.5.

6.5 Identified Data Gaps

LBP was not specifically tested for in Building S183.

6.6 Recommendations

The BCT meetings (September, 1997) recommended that this subparcel remain a CERFA Category 1. However, the PRE results (CH2M HILL, January 1998) indicated that surface soils containing chlorinated pesticides present a slightly elevated risk for the residential scenario. Subparcel 2.5 should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

7.0 Subparcel 2.6: Military Family Housing, Building 184

7.1 Description

Another MFH structure, Building 184, is located on the 0.11-acre Subparcel 2.6 (DDMT, November 1997). Like other MFH structures, Building 184 was built in 1948 and has 4,739 square feet for residential use (Woodward-Clyde, 1996).

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

Subparcel 2.6 is used for residential housing.

7.2.2 Sampling History

No previous media sampling occurred at this subparcel, but ACM and LBP were tested for.

7.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in Building 184 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition

was recommended to be performed in a timely manner. LBP was specifically tested for in Building 184, with XRF, and exterior LBP surfaces were detected (Woodward-Clyde, 1996).

7.4 Summary of Environmental Concerns

LBP and ACM are environmental concerns at Subparcel 2.6.

7.5 Identified Data Gaps

No data gaps were identified for this subparcel.

7.6 Recommendations

The BCT meetings (September, 1997) recommended that this subparcel remain a CERFA Category 1. However, the PRE results (CH2M HILL, January 1998) indicated that surface soils containing chlorinated pesticides present a slightly elevated risk for the residential scenario. This site should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

8.0 Subparcel 2.7: Outdoor Area

8.1 Description

Subparcel 2.7, the largest of the subparcels, measures 1.8 acres and includes the area surrounding the buildings in MDRA Parcel 2 (DDMT, November 1997).

8.2 History of Subparcel Activities and Past Sampling Activities

8.2.1 Summary of Subparcel Activities

Because pesticides have been routinely applied at the facility, the surface soil surrounding the buildings contains pesticides.

8.2.2 Sampling History

Sampling under the BRAC Program was performed to provide information on the presence of pesticides and PCBs in surface soil. Four surface soil samples, A(2.7) through D(2.7), were collected at Subparcel 2.7.

8.3 Findings

A PRE was performed for Subparcel 2.7 (CH2M HILL, January, 1988). Because there are no SS or RI sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk for residential exposure at three of the four sample locations is above 1 in a million (10^6). For an industrial worker exposure at one of the four sample locations, the risk is also above 1 in a million (10^6). The estimated risk is primarily from chlorinated hydrocarbon pesticides, dieldrin, DDE, DDT, and gamma-chlordane. Dieldrin concentration in three samples ranged between 0.72 and 5.5 mg/kg, which is above a critical value of 0.5 mg/kg. There are no noncarcinogenic chemicals in the BRAC samples from Subparcel 2.7.

In summary, dieldrin at Subparcel 2.7 presents slightly elevated risk for the industrial exposure scenario; and all of the chlorinated pesticides present slightly elevated risk for the residential scenario. There are no noncarcinogenic PRE ratios above acceptable land use levels (industrial) at Subparcel 2.7. This subparcel should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

8.4 Summary of Environmental Concerns

Chlorinated hydrocarbon pesticides (dieldrin, DDE, DDT, and gamma-chlordane) present slightly elevated risks for either the industrial or residential exposure scenario.

8.5 Identified Data Gaps

Subparcel 2.7 needs to be further evaluated for dieldrin and other chlorinated pesticides.

8.6 Recommendations

The BCT meeting recommendation (September, 1997) for this subparcel was that it should be classified as CERFA Category 6. In accordance with the results of the PRE, the category remains a CERFA Category 6, primarily due to the dieldrin concerns. This subparcel should be further evaluated for dieldrin and other chlorinated pesticides by further defining the extent of dieldrin distribution and conducting a focused risk evaluation.

TAB

3.0

BRAC Parcel 3 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 3

1.1 Parcel Description

Parcel 3 is a 2,163,177-square-foot parcel in the southeastern corner of the Main Installation in OU-3 (see Figure 1). Parcel 3 consists of the golf course, Lake Danielson, the golf course pond, and Buildings 188, 189, 192, 193, 194, 195, 196, 197, and 198. The parcel consists of eleven subparcels.

Sampling has occurred in this parcel (1) as part of the initial RIs at DDMT, reported by Law Environmental (1990) and (2) as part of the EDRW Inc. (1996) investigation of offsite drainage pathways. Sampling at this parcel has also occurred under the BRAC, SS, and RI Sites Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

The environmental concerns at this parcel consist of surface and subsurface soil contamination and ACM and LBP in the building interiors.

PAH compounds and dieldrin detected at this parcel are sitewide problems that will be addressed in upcoming sitewide investigations. Arsenic, DDE, DDT, manganese, and chromium are chemicals that also require further investigation.

All buildings in this parcel (except for Building 194) were tested for ACM. Buildings 193 and 197 were found not to have ACM; all other tested buildings had ACM products that were either non-friable or in fair to good condition. These products can be managed without removal unless renovation or demolition is imminent.

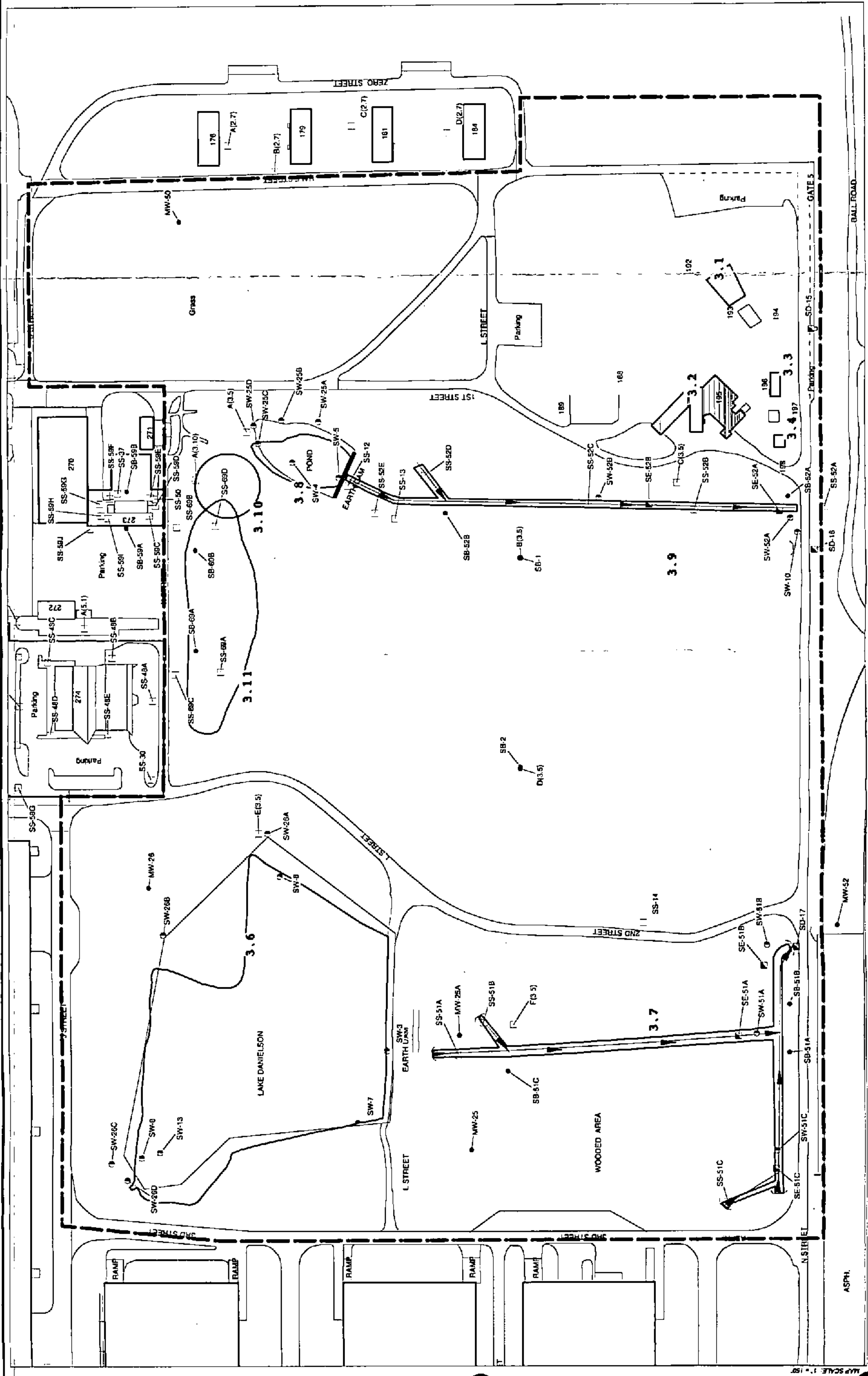
LBP was assumed to be in the buildings based on age of construction and findings from other parts of the DDMT. LBP was specifically tested for in Building 195, and exterior LBP surfaces were detected.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, the potential environmental concerns at Parcel 3 are ACM and LBP in the building interiors as well as contaminants that exceed screening criteria in the surrounding surface and subsurface soil, sediment, and surface water.

COPCs detected at Parcel 3 were found in all four media sampled. COPCs in surface soil include manganese, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dieldrin, arsenic, and chromium. COPCs in subsurface soil include chromium, lead, and dieldrin. COPCs

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LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

Figure 1
PARCEL 3
Sampling Locations
Defense Distribution Depot Memphis, TN

TABLE 1

Analytes Investigated for Parcel 3

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	PNAAs GC	SW846 Method 8100
Surface Water	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Surface Water	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Surface Water	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	TAL Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	PNAAs, GC	SW846 Method 8100
Surface Water	TCL Pesticides/Polychlorinated Biphenyls (PCBs)	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

in sediments are arsenic, DDD, DDE, DDT, and lead. The COPCs in surface water include dissolved arsenic, arsenic, lead, zinc, DDE, DDT, bis(2-ethylhexyl)phthalate, and n-nitrosodiphenyl-amine.

PCBs, radon, unexploded ordnance, and radiological substances are not environmental concerns at Parcel 3.

Sample-specific PRE calculations are available for some subparcels. Table 2 summarizes the analytical methodologies that will be used on the proposed samples for Parcel 3. The following sections discuss findings and necessary additional sampling by subparcel.

2.0 Subparcel 3.1: Swimming Pool, Building 193

2.1 Description

Subparcel 3.1, which consists of Building 193, is approximately 0.01 acre in size. Building 193 is the 426-square-foot swimming pool that was constructed in 1948.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The swimming pool has been used for recreational purposes since its construction in 1948.

2.2.2 Sampling History

No previous media sampling has occurred at Subparcel 3.1, but Building 193 was tested for ACM.

2.3 Findings

Building 193 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than 1 percent. No further action is required.

Although LBP was not specifically tested for in Building 193, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP. The pump house therefore may contain LBP.

2.4 Summary of Environmental Concerns

Building 193 may have been painted with LBP.

2.5 Identified Data Gaps

This building was not specifically tested for LBP.

2.6 Recommendations

In the BCT Meetings (August, 1997), it was recommended that Subparcel 3.1 be placed into CERFA Category 1.

301 41

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

3.0 Subparcel 3.2: Community Club, Building 195

3.1 Description

The 0.10-acre Subparcel 3.2 consists of Building 195, which is the Community Club. This 4,254-square-foot structure was built in 1949.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The Community Club has been used for recreational purposes since its construction in 1949. The structure underwent major renovation in 1994.

3.2.2 Sampling History

Media sampling has not occurred at Subparcel 3.2, but ACM and LBP were tested for in the Community Club, Building 195.

3.3 Findings

ACM was identified in this Building 195 from earlier surveys (Woodward-Clyde, 1996). At the time of the survey, the ACM was either non-friable or in fair to good condition. Although these ACM products can be managed through a thorough operations and maintenance program, urgent removal would be necessary if renovation or demolition were imminent.

LBP was specifically tested for in the Community Center (Building 195) with XRF; exterior surfaces were detected as containing LBP (Woodward-Clyde, 1996).

3.4 Summary of Environmental Concerns

Building 195 is contaminated with LBP and ACM.

3.5 Identified Data Gaps

There are no identified data gaps for Subparcel 3.2.

3.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 195.

In the BCT Meetings (August 1997), it was recommended that Subparcel 3.2 be placed into CERFA Category 1.

4.0 Subparcel 3.3: MWR/Public Toilet, Building 196

4.1 Description

Subparcel 3.3 contains Building 196, which is an 896-square-foot structure used as the MWR/Public Toilet. The building was constructed in 1952 and is currently part of the recreation complex. Subparcel 3.3 is 0.02 acre in size.

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building 196 has been used for MWR public toilets since construction in 1952.

4.2.2 Sampling History

No previous media sampling has occurred in this subparcel, but ACM was tested for in Building 196.

4.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996), at which time, the ACM was either non-friable or in fair to good condition. Although these ACM products can be managed through a thorough operations and maintenance program, urgent removal would be necessary if renovation or demolition were imminent.

Although LBP was not specifically tested for in Subparcel 3.3, Building 196, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

Building 196 is contaminated with ACM and may have been painted with LBP.

4.5 Identified Data Gaps

This building was not specifically tested for LBP.

4.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 3.3 in order to assess the extent of LBP in or on the outside of this building.

In the BCT meetings (August 1997), it was recommended that Subparcel 3.3 be placed into CERFA Category 1.

5.0 Subparcel 3.4: Equipment Shed, Building 198

5.1 Description

The 0.01-acre Subparcel 3.4 consists of Building 198, which is an equipment shed used for dry goods storage. This 323-square-foot shed was constructed in 1959.

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Activities at Building 198 have been confined to dry goods storage.

5.2.2 Sampling History

Media sampling has not occurred in this subparcel, but ACM was tested for in Building 198.

5.3 Findings

ACM was identified in Building 198 from earlier surveys (Woodward-Clyde, 1996), at which time the ACM was either non-friable or in fair to good condition. Although these ACM products can be managed through a thorough operations and maintenance program, urgent removal would be necessary if renovation or demolition were imminent.

Although LBP was not specifically tested for in Building 198, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

5.4 Summary of Environmental Concerns

Building 198 is contaminated with ACM and may have been painted with LBP.

5.5 Identified Data Gaps

Building 198 was not specifically tested for LBP.

5.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 3.4 in order to assess the extent of LBP in or on the outside of this building.

6.0 Subparcel 3.5: Outdoor Area, Buildings 188, 189, 192, 194, and 197, and Golf Course Area

6.1 Description

Subparcel 3.5, which is 36.3 acres, is the largest subparcel in Parcel 3. Subparcel 3.5 consists of the Golf Course Area; Buildings 188, 189, 192, 194, and 197—located in the recreational area; and the areas surrounding other buildings in Parcel 3. These buildings are all associated with recreation and include the 6,000-square-foot tennis court (Building 188, with unknown construction date); the volleyball court (Building 189) and wading pool (Building 192), both of unknown size and construction date; the pool chemical storage and rest/changing rooms (Building 194), of unknown age and size; and the 280-square-foot Community Center, of unknown age.

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

All structures in Subparcel 3.5 have been directly used for or in support of recreational activities. The golf course represents the largest part of this subparcel.

6.2.2 Sampling History

Soil samples associated with the BRAC Sampling Program that have been collected in Subparcel 3.5 consist of six surface soil samples [A(3.5) through F(3.5)] and two soil borings (SB1 and SB2). One sediment sample (SD-15) also was collected at Subparcel 3.5, as part of the offsite drainage pathway investigation (EDRW Inc., 1996). Two surface soil samples (SS12 and SS13) were also collected during the 1990 Law Environmental investigation. No RI or SS samples were collected at Subparcel 3.5.

As a result of the BCT meetings (fall 1997), additional soil sampling was recommended in order to complete the characterization needed for a leasing agreement. Eight surface soil samples [G(3.5) through N(3.5)] were collected from around the softball diamond and playground areas, and analyzed for TCL/TAL and dieldrin.

6.3 Findings

Building 194 was not tested for ACM; Building 197 was tested for ACM, with negative results. Because the year of construction is unknown, the likelihood of LBP cannot be assessed for Buildings 194 and 197.

The COPCs at Subparcel 3.5 include dieldrin and arsenic in the surface soils.

Risk ratios and systemic toxicity ratios were prepared for Subparcel 3.5 and for Subparcel 3.10, as a single unit; Subparcel 3.10 is also part of the golf course. The resulting risk is slightly above 1 in a million (10^4) for residential exposure and is within a value of 1 in a million (10^4) for an industrial worker exposure. The estimated risk is primarily from arsenic (101 mg/kg and 21.8 mg/kg compared to a background level of 20 mg/kg) or dieldrin (0.44 mg/kg to 10 mg/kg) in each of the samples. All other chemicals have risk levels at least an order of magnitude below 1 in a million risk level ($<10^7$). Dieldrin and arsenic are elevated in some of the samples at Subparcel 3.5.

The carcinogenic ratios for all of the samples are below a ratio of 1.0 for residential and industrial worker receptors at Subparcel 3.5. The only exception is one sample that has a ratio of 1.25 for the residential receptor, primarily from the presence of low levels of the metals chromium, copper, and zinc at slightly above background.

6.4 Summary of Environmental Concerns

In summary, arsenic and dieldrin at Subparcel 3.5 are presenting excess cancer risks above 1 in a million. There are no carcinogenic PRE ratios above acceptable levels for the applicable land use scenario (industrial) at this subparcel. Subparcel 3.5 should be further evaluated for arsenic and dieldrin.

6.5 Identified Data Gaps

Building 194 was not tested for ACM products. The age of Buildings 194 and 197 is unknown, and the possibility of LBP therefore cannot be assessed.

Additional data are needed for arsenic and dieldrin.

6.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 3.5 in order to assess the extent of LBP in or on the outside of this building.

Subparcel 3.5 should be further evaluated for arsenic and dieldrin in surface soils.

7.0 Subparcel 3.6: Lake Danielson Storm-Water Runoff Pond

7.1 Description

Subparcel 3.6 consists of Lake Danielson, which is a storm-water runoff pond and reservoir for fire fighting (A.T. Kearney, Inc., January, 1990) . Located in the northwest corner of the golf course, east of Buildings 470 and 489, this 3.5-acre pond is a maximum of 15 feet deep.

Lake Danielson receives runoff from the central part of the facility, approximately 65 acres, which contains the majority of the warehouses at the Installation (CH2M HILL, January 1998). Storm water from this area enters the lake through a 48-inch-diameter concrete pipe located at the northwestern corner of the lake. A smaller amount of storm-water flow enters the Lake Danielson by overland flow from areas immediately surrounding the lake. Overflow from the runoff pond then flows through a drop pipe to the Lake Danielson Outlet Ditch (Subparcel 3.7), which eventually drains into Nonconnah Creek. Subparcel 3.6 contains RI Site 26.

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

Since its construction in the 1940s, Lake Danielson has been used for storm-water runoff control and a reservoir for fire fighting purposes. Previous uses of Lake Danielson include fire tank truck testing and recreation. Fire tank truck testing consisted of fire trucks withdrawing water from the lake to test various equipment (pumps, hoses, instruments) and then discharging the water back into the lake. Recreational use (fishing) was discontinued in 1986 after pesticides and PCBs were detected in fish tissue from the lake (CH2M HILL, January 1998).

7.2.2 Sampling History

Surface water, sediment, and fish tissue samples were previously collected from Lake Danielson by USAEHA in 1986 and by Law Environmental in 1990. Five surface water samples (SW3, SW6, SW7, SW8, and SW13) and three sediment samples (SD1, SD2, and SD3) were collected during the 1990 Law Environmental RI. DDT was detected in storm water entering the Lake Danielson from the 48-inch-diameter storm-water pipe in 1986, but was not detected in a sample collected in the same location in 1990. Pesticides and metals were detected in sediment from the lake in both studies. Fish tissue (catfish) samples collected from the lake in 1986 indicated the presence of pesticides and PCBs.

More recent investigation as part of the RI Sampling Program included four surface water samples (SW26A through SW26D). No BRAC or SS samples were taken at Subparcel 3.6.

7.3 Findings

The COPCs detected in Lake Danielson include arsenic, dissolved arsenic, DDE, DDT, lead, zinc, bis(2-ethylhexyl)phthalate, and n-nitrosodiphenylamine in surface waters, and DDE and DDD in sediments. A PRE has not been performed on the surface waters and sediments.

7.4 Summary of Environmental Concerns

Elevated concentrations of metals and pesticides were detected in the surface water and sediment at Subparcel 3.6.

7.5 Identified Data Gaps

A PRE has not been performed on the surface waters and sediments of this subparcel.

7.6 Recommendations

The Draft PRE (CH2M HILL, January 1998; Table 5-2) did not include surface water and sediment data. It is therefore recommended that a PRE be performed on the surface waters and sediments of Subparcel 3.6.

8.0 Subparcel 3.7: Lake Danielson Outlet Ditch

8.1 Description

The Lake Danielson Outlet Ditch, Subparcel 3.7, is located in the golf course in the southeast corner of the Main Installation. Designed as a storm-water runoff channel to Lake Danielson, it is a concrete-lined 2-foot-deep channel that enlarges from a width of 3 feet to a width of 5 feet at the halfway point of its length. The 400-foot channel, which also drains other areas of the golf course, runs south from Lake Danielson to the facility boundary. The channel originally was unlined (CH2M HILL, January 1998). Subparcel 3.7 contains Screening Site 51.

8.2 History of Subparcel Activities and Past Sampling Activities

8.2.1 Summary of Subparcel Activities

Subparcel 3.7 has always been used to control intermittent overflow from Lake Danielson and for storm-water runoff from other parts of the Main Installation.

8.2.2 Sampling History

Sampling in Subparcel 3.7 included surface water samples (SW9 and SW12) from the Law Environmental (1990) RI, one sediment sample (SD17) from the EDRW, Inc. (1996) investigation, and additional samples as part of the SS Program. No BRAC or RI sampling occurred at this subparcel.

Three samples from each medium were collected as collected in the surface and subsurface soils, respectively, while SW51A through SW51C and SE51A and SE51C were collected in surface water and sediments.

8.3 Findings

The only COPCs identified for SS 51 are dieldrin and benzo(a)pyrene, which have been identified at several other SS across DDMT. These chemicals have been identified by the BCT as sitewide COPCs and will be evaluated on a sitewide basis.

In accordance with industrial worker exposure estimates, the sample-specific carcinogenic PRE risk ratio was estimated to be a 1 in a million risk level across Subparcel 3.7 for all samples. Residential exposure-based levels were slightly above 1 in a million risk levels in one of the samples due to the presence of arsenic at 20.1 mg/kg as compared to a background level of 20 mg/kg. Thus there are no significant risks at Subparcel 3.7 (Screening Site 51).

The noncarcinogenic PRE ratios were well below a value of 1.0 for industrial worker exposures. A residential exposure indicated the ratio at a value of 1.0, primarily from low levels of metals.

8.4 Summary of Environmental Concerns

No human health risks are expected from Subparcel 3.7. However, arsenic should be further evaluated for technical documentation that it is not elevated at this subparcel.

8.5 Identified Data Gaps

Additional data may be needed for the dieldrin and PAH sitewide risk evaluation.

8.6 Recommendations

In accordance with the Draft PRE (CH2M HILL, 1998; Table 5-2), it is recommended that low-level arsenic should be further evaluated to document non-exceedance compared to background. It is anticipated that Subparcel 3.7 will become an NFA subparcel, but it is recommended to maintain the CERFA Category 7 assigned by the BCT until the additional risk assessment is complete.

9.0 Subparcel 3.8: Golf Course Pond

9.1 Description

Subparcel 3.8, the golf course pond, was constructed in the 1940s as an unlined pond approximately 75 feet wide and 125 feet long with an earthen dam. The golf course pond serves as a storm-water runoff pond in the northeast corner of the golf course (A.T. Kearney, Inc., January, 1990). This 0.23-acre pond receives runoff from the golf course and the east-central portion of the Main Installation. Storm water enters the pond through overland flow and from two storm-water drainage pipes (one 8-inch-diameter pipe and one 36-inch-diameter pipe). Overflow from the golf course pond flows to an open, concrete-lined storm drain (Subparcel 3.9) that drains to Nonconnah Creek.

9.2 History of Subparcel Activities and Past Sampling Activities

9.2.1 Summary of Subparcel Activities

Subparcel 3.8, the golf course pond, has always been used as a retainment pond for storm-water runoff.

9.2.2 Sampling History

Sampling during the Law Environmental (1990) RI investigation, and sampling as part of the RI Program occurred at Subparcel 3.8, but no BRAC or SS sampling occurred. Two sediment samples (SD4 and SD5) and two surface water samples (SW4 and SW5) were collected by Law Environmental (1990). More recently, four surface water samples (SW25A through SW25D) were collected as part of the RI sampling program.

9.3 Findings

Previous surface water samples collected from the golf course pond indicated that the pond water was generally free of the tested analytes. However, metals and pesticides were detected in sediment from the pond, and fish tissue samples exhibited pesticide and PCB residues (CH2M HILL, January 1998).

COPCs detected at Subparcel 3.8 include DDE, bis(2-ethylhexyl)phthalate, and n-nitrosodiphenylamine in the surface waters, and DDE, DDT, DDE, and lead in the sediments. No PRE has been performed on the surface waters and sediments.

9.4 Summary of Environmental Concerns

9.5 Identified Data Gaps

A PRE has not been performed on the surface waters and sediments at Subparcel 3.8.

9.6 Recommendations

The Draft PRE (CH2M HILL, 1998; Table 5-2) did not include surface water and sediment data. Therefore it is recommended that a PRE be performed on the surface waters and sediments of Subparcel 3.8.

10.0 Subparcel 3.9: Golf Course Pond Outlet Ditch

10.1 Description

Subparcel 3.9, the golf course pond outlet ditch is a 700-foot concrete-lined channel designed in the 1940s as a storm-water runoff channel for the golf course pond (A.T. Kearney, Inc., January, 1990). The outlet ditch receives overflow from the pond and runoff from the golf course. The 0.19-acre channel is approximately 3 feet wide and 2 feet deep, and runs south from the pond to the facility boundary.

10.2 History of Subparcel Activities and Past Sampling Activities

10.2.1 Summary of Subparcel Activities

The outlet ditch to the golf course pond has always been used to contain intermittent overflow from the pond and for storm-water runoff from other parts of the Main Installation.

10.2.2 Sampling History

Samples in Subparcel 3.9 were collected during the Law Environmental (1990) RI investigation, during the EDRW, Inc. (1996) sediment sampling event, and as part of the SS Program.

Two surface water samples (SW10 and SW11) were collected in 1990, and one sediment sample (SE-16) was collected in 1996. Five surface soil samples (SS-52A through SS-52E), two soil borings (SB-52A and SB-52B), two surface water samples (SW-52A and SW-52B), and two sediment samples (SE-52A and SE-52B) were collected as part of the SS Program.

10.3 Findings

COPCs identified for Subparcel 3.9/SS 52 include dieldrin and benzo(a)pyrene, which have been identified by the BCT as sitewide COPCs and will be evaluated on a sitewide basis. Arsenic, chromium, and manganese exceed background and screening criteria in surface soils.

The PRE risk ratio estimates for Subparcel 3.9 indicate that industrial worker-based risk estimates are above 1 in a million risk levels, due to the presence of arsenic, dieldrin, and DDE/DDT. The highest risk is associated with arsenic, which is detected at two times the background level. Dieldrin also presents a risk ratio slightly above a level of 1 in a million.

10.4 Summary of Environmental Concerns

The systemic toxicity-based PRE ratios for Subparcel 3.9 exceeded a value of 1.0 due to the presence of manganese and chromium. Further risk assessment is recommended for SS 52.

10.5 Identified Data Gaps

Further evaluation is recommended for metals in surface soils, for comparison against background values and using existing data (CH2M HILL, March 1998).

10.6 Recommendations

In accordance with the Draft PRE (CH2M HILL, 1998; Table 5-2), further risk assessment is recommended for this subparcel. The BCT meetings (August, 1997) recommended classifying Subparcel 3.9 as CERFA Category 7. However, based on the results of the PRE, it is recommended to change the category to CERFA Category 6.

11.0 Subparcel 3.10: Area Near Golf Course 9th Hole

11.1 Description

Subparcel 3.10 is a former pistol range located immediately behind the current location of Building 271 and near the 9th hole of the golf course. The subparcel is 0.25 acre in size (DDMT, November 1997).

11.2 History of Subparcel Activities and Past Sampling Activities

11.2.1 Summary of Subparcel Activities

Subparcel 3.10 was used in the late 1940s as a pistol range. It is now part of the golf course.

11.2.2 Sampling History

One surface soil sample, A(3.10), was collected under the BRAC sampling program at Subparcel 3.10.

11.3 Findings

Arsenic in the surface soils at Subparcel 3.10 exceeded the BCT criteria of 20 mg/kg with a value of 101 mg/kg at A(3.10). Chromium exceeded the background value and the residential RBC for soil ingestion at A(3.10), with a value of 39.3 mg/kg.

Subparcel 3.10 was combined with Subparcel 2.5 when the PRE was conducted. The recommendation was for further evaluation of arsenic and dieldrin.

11.4 Summary of Environmental Concerns

Elevated concentrations of dieldrin and arsenic were detected at this subparcel.

11.5 Identified Data Gaps

Additional arsenic data are needed for this subparcel.

11.6 Recommendations

Additional risk evaluation is needed for arsenic at Subparcel 3.10.

12.0 Subparcel 3.11: Area East of Lake Danielson, Former Flame-thrower Test Area

12.1 Description

Located on the eastern side of the Main Installation, about 100 feet east of Lake Danielson, Subparcel 3.11 is a site formerly used to test flame-throwers with diesel fuels. Fire fighting techniques also were practiced at this site after surface ignition of the fuel. Subparcel 3.11 is now part of the golf course (CH2M HILL, March 1998). Subparcel 3.11 contains Screening Site 69.

12.2 History of Subparcel Activities and Past Sampling Activities

12.2.1 Summary of Subparcel Activities

Testing of flame-thrower fuels and practicing of fire-fighting techniques occurred at this site before it became part of the golf course.

12.2.2 Sampling History

Sampling associated with the SS Program is the only sampling that has occurred at Subparcel 3.11. Four surface soils samples (SS69A through SS69D) and two soil borings (SB69A and SB-69B) were collected at this subparcel.

12.3 Findings

Dieldrin and benzo(a)pyrene, at concentrations similar to those found elsewhere at DDMT, are the only COPCs identified at Subparcel 3.11. These COPCs have been identified by the BCT as sitewide COPCs and will be evaluated on a sitewide basis.

12.4 Summary of Environmental Concerns

Due to the absence of any contaminant levels above background, no risks or systemic toxicity ratios were estimated. Therefore no further action is recommended at Subparcel 3.11. However, additional data may be needed for the dieldrin and PAH sitewide risk evaluation.

12.5 Identified Data Gaps

Additional data may be needed for the dieldrin and PAH sitewide risk evaluation

12.6 Recommendations

In accordance with the Draft PRE (CH2M HILL, January 1998; Table 5-2), it is recommended that Subparcel 3.11 be reclassified from CERFA Category 7 to CERFA Category 3 and that no further action is necessary.

TAB

4.0

BRAC Parcel 4 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 4

1.1 Parcel Description

Parcel 4 is a 432,120-square-foot parcel in the southeastern/eastern corner of the Main Installation in OU-3 (see Figure 1). Parcel 4 consists of Buildings 251, 252, 253, 254, 256, 257, 260, 261, 263, 265, 270, 271, and 273.

Sampling has occurred at this parcel as part of the initial RIs at DDMT (Law Environmental, 1990) and as part of the BRAC, SS, and RI Sites Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling.

1.2 Summary of Environmental Concerns and Recommendations

Buildings at Parcel 4 that were potentially fumigated include Buildings 253, 257, and 263. All buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. In those buildings that were sampled, pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

ACM and LBP were environmental concerns or potential concerns at nearly all of the buildings, based on age of construction or actual test results. Sitewide concerns with dieldrin and PAH compounds in surface soil occurred at a few subparcels. The potential gasoline release at Building 257 (Subparcel 4.7) is a concern, as were arsenic and dieldrin in surface soil at that subparcel. Elevated PAHs and metals concentrations in samples from drainage collection sumps in Buildings 251 and 265 are a concern.

Four buildings were recommended to be classified as CERFA Category 1; Buildings 252, 263, 270, and 271. Building 260 is a Category 3, and Pad 267 and Building 273 are a Category 3 for industrial land use purposes. Buildings 253, 254, and 257 are Category 6, and Pad 267 and Building 273 are Category 6 for residential land use purposes. Buildings T256 and T261 are Category 7. CERFA Categories have not been assigned to Buildings 251 or 265.



TABLE 1
Analytes Investigated for Parcel 4
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	Herbicides	SW846 Method 8151
Soil	PNA's GC	SW846 Method 8100
Soil	pH	SW846 Method 9045
Soil	Total Petroleum Hydrocarbons (TPHs)	SW846 3550/9071/418.1
Soil	ASTM Particle Size	ASTM D422
Soil	Atterburg Limits	ASTM D4318
Soil	Percent Moisture	ASTM D2216
Soil	Alkalinity (CaCO ₃)	EPA 310.1
Soil	Cation Exchange Capacity	SW846 Method 9080
Soil	Total Organic Carbon	SW846 Method 9060

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

2.0 Subparcel 4.1: Physical Fitness Center, Building 252

2.1 Subparcel Description

Subparcel 4.1, measuring 0.19 acre, includes Building 252, the physical fitness center (DDMT, November 1997). This 8,455-square-foot facility was built in 1942 and is used for recreational purposes (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

This subparcel is used for recreational purposes.

2.2.2 Sampling History

No previous media sampling has occurred at Subparcel 4.1, but ACM was tested for.

2.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the base fitness center (Building 252) from earlier surveys (Woodward-Clyde, 1996). ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in this building; however testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

2.4 Summary of Environmental Concerns

ACM and LBP may be environmental concerns at Subparcel 4.1.

2.5 Identified Data Gaps

LBP was not specifically tested for in Building 252.

2.6 Recommendations

The BCT (Meeting Minutes, September 1997) recommended that the CERFA Category for this subparcel remain a Category 1.

3.0 Subparcel 4.2: Facility Installation Services, Building 270

3.1 Subparcel Description

The 0.33-acre Subparcel 4.2 houses Facility Installation Services (Building 270) (DDMT, November 1997). Once serving as a maintenance shop, this facility now is used for

administrative purposes. It was built in 1958 and has 14,400 square feet of space (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Activities at this subparcel initially included maintenance, but now Subparcel 4.2 is used for administrative purposes.

3.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

3.3 Findings

Storage of hazardous substances or petroleum products has not been documented at Subparcel 4.2, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the engineering building (Building 270) from earlier surveys (Woodward-Clyde, 1996). ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in Building 270, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM and LBP may be environmental concerns at Subparcel 4.2.

3.5 Identified Data Gaps

LBP was not specifically tested for at Building 270.

3.6 Recommendations

The BCT (Meeting Minutes, September 1997) recommended that the CERFA Category for this subparcel remain a Category 1.

4.0 Subparcel 4.3: Former Pro Shop, Building 271

4.1 Subparcel Description

Subparcel 4.3 is one of the smallest subparcels at 0.03 acre. This subparcel contains Building 271, the former pro shop (DDMT, November 1997). Built in 1958, this building is the site of the former golf course clubhouse; currently, it is used for administrative purposes. This building has 1,436 square feet of space (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building 271 is now used for administrative purposes, but in the past it was the golf course clubhouse.

4.2.2 Sampling History

No previous media sampling has occurred at Subparcel 4.3, but ACM was tested for.

4.3 Findings

Storage of hazardous substances or petroleum products has not been documented at this subparcel, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products.

ACM was identified in the former pro shop (Building 271) from earlier surveys (Woodward-Clyde, 1996). ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

ACM and LBP may be environmental concerns at Subparcel 4.3.

4.5 Identified Data Gaps

LBP was not specifically tested for in Building 271.

4.6 Recommendations

The BCT (Meeting Minutes, September 1997) recommended that the CERFA Category for this subparcel remain a Category 1.

5.0 Subparcel 4.4: Facility Engineer Maintenance Shop, Building 260

5.1 Subparcel Description

Building 260, the facility engineer maintenance shop, occupies Subparcel 4.4, a 0.15-acre area (DDMT, November 1997). This facility was constructed in 1952 and has 6,707 square feet of space used for maintenance activities. This facility also contains a satellite drum accumulation area and Safety-Kleen unit (Woodward-Clyde, 1996). Subparcel 4.4 includes CERCLA Site 30, paint spray booths, and Site 41, satellite drum accumulation area, which have been recommended for NFA under CERCLA.

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Building 260 is the location of proposed NFA Site 30, which consists of three paint spray booths located throughout the Installation. The booths have been in operation for an unknown period of time. Emissions from the areas are controlled by filters located on the back or side walls of the booths, which range in size from 8 x 10 feet to 24 x 10 feet. Paint from spraying operations passes through the filters, as a fan, located on the opposite side of the filter, forces air into a vent system.

Building 260 is also the location of proposed NFA Site 41, which consists of five satellite drum storage locations throughout the installation that have been used since 1985 to store drums of waste materials. The units vary in the number and size of drums they contain, but all units are located on concrete floors within buildings. Wastes stored in the Building 260 area include waste solvents, empty product containers, and solvent rags. The drums are maintained in good condition and the area is regulated under RCRA. All wastes collected from these areas are transported to the DRMO before offsite disposal (CH2M HILL, September 1994).

During the RFA visual inspection, staining was noted on the floor of the sign shop in this building (Woodward-Clyde, 1996).

5.2.2 Sampling History

No previous media sampling has occurred at Subparcel 4.4, but ACM was tested for.

Although no analytical data are available for this subparcel for NFA Site 30 or Site 41, the subparcel was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action.

5.3 Findings

ACM was identified in the paint shop (Building 260) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

A minimal level of risk exists because hazardous materials are handled in these units (NFA Site 41). These risks are controlled through the design and handling criteria regulated under RCRA. Because of the design and procedural controls, there is no significant risk to human health or the environment (CH2MHILL, September 1994).

No history or evidence of release has been identified at the sites of the paint booths (NFA Site 30). Because of the lack of hazardous or toxic materials released at the site and the pollution control equipment in use at the site (filters), there appears to be no significant risk to human health or the environment from the site.

5.4 Summary of Environmental Concerns

ACM in poor or friable condition is an environmental concern, and LBP may be a concern. Staining on the floor of the sign shop was noted in this building.

5.5 Identified Data Gaps

LBP was not specifically tested for in Building 260.

5.6 Recommendations

For NFA Sites 30 and 41, the recommendation for Subparcel 4.4 in the Draft NFA Report (CH2M HILL, September 1994) is that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the site is No Action under CERCLA. This alternative will consist of leaving the subparcel as is. No additional sampling or monitoring will be necessary, because the conditions at the subparcel are protective of human health and the environment.

Based on BCT recommendations (Meeting Minutes, September 1997), this subparcel will remain a CERFA Category 3.

6.0 Subparcel 4.5: Buildings T256 and T261 and the Surrounding Area

6.1 Subparcel Description

Subparcel 4.5 (3.2 acres) is made up of Buildings T256 and T261 and the surrounding area (DDMT, November 1997). Building T256 is a covered storage facility that was built in 1943 and has been used as a service station; it has 162 square feet of space. Building T261 is a vehicle storage facility used for vehicle storage and maintenance; this building was also built in 1942 but is larger than Building T256 at 6,249 square feet (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Vehicle storage and maintenance activities have occurred at Subparcel 4.5.

6.2.2 Sampling History

Three surface soil samples, SS-25, SS-37, and SS-50, were collected at this subparcel during the Law Environmental study (Law Environmental, 1990). Surface soil samples were also collected at Subparcel 4.5 during the RI Program, as part of RI Sites 58 and 59. The surface soil samples include, SS-59C through SS-59J, SS-58A through SS-58C, and SS-58I. Soil boring samples collected during the RI Program include SB-59A and SB-59-B.

Screening Sites associated with this subparcel include Sites 66, 67, and 68. The borings, SB-66A through SS-66D, SB-68A, and SB-68B, were collected under the SS Program as well. One surface soil sample, SS-66A, was included in the SS Program.

6.3 Findings

Although Buildings T256 and T261 were not included in the Asbestos Identification Survey (Woodward-Clyde, 1996), ACM may/may not be present based on the year of construction.

Although LBP was not specifically tested for in Buildings T256 or T261, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Although surface soils and soil borings may be physically located at Subparcel 4.5, because they were collected as a result of activities in specific buildings in Parcel 4, the findings and concerns will be discussed under the subparcel in which the building is located. Therefore, SS 66, Building 253, is discussed under Subparcel 4.11; SS 67, Building 257, is discussed under Subparcel 4.7; and SS 68, Building 263, is discussed under Subparcel 4.8. RI Sites 58 and 59, Pad 267, and Building 273 are discussed under Subparcels 4.9 and 4.10 respectively.

6.4 Summary of Environmental Concerns

ACM and LBP may be environmental concerns at this subparcel. Environmental concerns associated with sampling because of a building's activities are discussed under the subparcel in which that building belongs.

6.5 Identified Data Gaps

ACM and LBP were not tested for at Buildings T256 or T261.

6.6 Recommendations

Subparcel 4.5 will remain a CERFA Category 7, based on BCT recommendations (Meeting Minutes, September 1997).

7.0 Subparcel 4.6: Heating Fuel Storage, Building T254

7.1 Subparcel Description

The 1/4-acre Subparcel 4.6 is occupied by Building T254, heating fuel storage (DDMT, November 1997). This building has been used to store equipment and oil since it was constructed in 1944; it has 1,004 square feet of space (Woodward-Clyde, 1996).

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

During the visual inspection for the EBS (Woodward-Clyde, 1996), it was noted that POLs and antifreeze are stored in the building. Also, leaking drums and ground staining were observed inside the building. A 1,100-gallon gasoline tank was removed from the northwest corner of this building in December 1989 (Woodward-Clyde, 1996).

A tank outside the southwest corner of the building had a 5-gallon diesel spill that was reported on March 20, 1995. Absorbent was applied to the spill.

7.2.2 Sampling History

No previous media sampling has occurred at Subparcel 4.6, but ACM was tested for.

7.3 Findings

ACM was identified in the storage shed (Building T254) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

7.4 Summary of Environmental Concerns

ACM is an environmental concern and LBP may be a concern. Potential contamination from the leaks and stains may also be a concern. Observed leaks and stains may need further investigation.

7.5 Identified Data Gaps

LBP was not specifically tested for in Building T254. It has not been confirmed whether the materials stored in the building or adjacent tanks have caused environmental problems.

7.6 Recommendations

It is recommended (BCT Meeting Minutes, September 1997) that Subparcel 4.6 remain a CERFA Category 6, due to the ongoing UST removal in the fuel field.

8.0 Subparcel 4.7: Gas Station, Building 257

8.1 Subparcel Description

Subparcel 4.7 is also 1/4 acre in area. Building 257, a gas station, is located here (DDMT, November 1997). This station, built in 1942 with 264 square feet, is used for vehicle fueling operations (Woodward-Clyde, 1996).

8.2 History of Subparcel Activities and Past Sampling Activities

8.2.1 Summary of Subparcel Activities

Since 1942, fuel dispensing and storage have occurred at Subparcel 4.7. Antifreeze has also been stored in this subparcel. Fumigation in this building is suspected.

The four original steel USTs, installed in 1942 and 1951, were removed in 1986 (three tanks, two 12,000- and one 20,000-gallon tank) and in 1989 (one 2,580-gallon tank) and were replaced with 18,000- to 20,000-gallon fiberglass tanks in 1984. All tanks stored gasoline (leaded and unleaded). Additionally, two active 1,000-gallon ASTs, one for gasoline and one for diesel, are located at this subparcel (Woodward-Clyde, 1996).

8.2.2 Sampling History

Two 40-foot borings, SB-67A and SB-67B, were collected under the SS Program. Samples were collected at the surface and at 5-, 10-, 20-, and 40-foot depths. The SS Program also included two additional surface soil samples, SS-67A and SS-67B, collected from this subparcel.

8.3 Findings

COPCs at SS 67 include benzene and total xylenes in subsurface soils. These constituents indicate that a release of gasoline may have occurred at this site. The constituents were found in SB67A at depths up to 20 feet and were not found in the 40-foot sample or in surface soils or samples from SB67B.

Arsenic in Sample SS67A was reported at 25.1 and 29.2 mg/kg (duplicate analysis), which exceeds the background value. Arsenic was found in every surface soil sample and in the background samples. Dieldrin was found at a concentration of 0.056 mg/kg in Sample SS67B, which exceeds the screening criteria of 0.04 mg/kg (residential RBC for soil ingestion). Dieldrin is found sitewide at DDMT and will be addressed in an upcoming sitewide risk evaluation.

A PRE was performed for Subparcel 4.7 (SS 67) (CH2M HILL, January 1998). Because there are no RI or BRAC sites within this subparcel, risks are based on the SS data only. Carcinogenic and noncarcinogenic risks were calculated. Benzene and total xylene compounds found in subsurface soil samples from SB67A represent a potential threat to groundwater. These constituents were not found in surface soil, so there does not appear to be a direct exposure to workers at this site. However, the threat to groundwater requires further evaluation.

Carcinogenic chemicals identified at this site include arsenic, which exists at between 25 and 29.1 mg/kg compared to a background level of 20 mg/kg. The resulting risk ratio is a one-in-a-million level for a worker and a ten-in-a-million risk level for a resident.

The noncancer ratios from inorganic chemicals for this site are below a value of 1.0 for an industrial worker and slightly above 1.0 for a resident. No individual chemical exceeds the ratio of 1.0.

ACM was identified in the gas pump house (Building 257) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 257, at which fumigation was also suspected, there is no health-based concern due to air.

8.4 Summary of Environmental Concerns

Based on finding benzene and total xylenes at a 20-foot depth, the environmental concerns at Subparcel 2.7 include a potential gasoline release that may have occurred in the area from either the tanks or fuel piping. Arsenic—in the surface soils but not in the subsurface soils—is a concern. Dieldrin exceeds the residential RBC for soil ingestion and is a sitewide concern that will be addressed in an upcoming sitewide risk evaluation.

Although it has not been tested for, LBP may be a concern in Building 257, based on the age of construction.

8.5 Identified Data Gaps

Additional data are needed to evaluate the extent of the potential gasoline release at SS 67. Additional subsurface soil sampling with analyses of benzene, ethyl benzene, toluene, and total xylenes is recommended. Groundwater monitoring downgradient from this site may be needed if constituents are found in soil samples at the 40-foot depth (CH2M HILL, March, 1998).

LBP was not specifically tested for in Building 257.

8.6 Recommendations

Additional evaluation is needed at SS67 to characterize the extent of a potential gasoline release. Subsurface soil sampling is recommended. Groundwater monitoring also may be required. Potential risks associated with arsenic require further comparison of the background population with the data collected, but additional data collection is not required to perform this comparison (CH2M HILL, March, 1998).

Based on representative air sampling results, this building should be reclassified as CERFA Category 1. However, both the BCT recommendation (Meeting Minutes, September 1997) and the PRE recommendation (CH2M HILL, January 1998) indicate that this subparcel should remain a CERFA Category 6.

9.0 Subparcel 4.8: Vehicle Grease Rack, Building 263

9.1 Subparcel Description

Subparcel 4.8 is the smallest of the Parcel 4 subparcels, measuring 0.02 acre. Building 263, a vehicle grease rack, is located at this subparcel (DDMT, November 1997). This facility has been used since the 1940s as an attendants' room for dispensing petroleum products to vehicles. This facility has 800 square feet of space (Woodward-Clyde, 1996) and is surrounded on all sides by a large expanse of asphalt pavement. Subparcel 4.8 includes SS 68, POL Building 263.

9.2 History of Subparcel Activities and Past Sampling Activities

9.2.1 Summary of Subparcel Activities

This site historically has been used to store small containers of POLs. These materials are dispensed to the POL staff and are not used in the Building 263 area.

Fumigation may have occurred in this building (Woodward-Clyde, 1996).

9.2.2 Sampling History

As part of the investigation for SS68, subsurface soil samples were collected from two borings at depths of 5 to 6 feet and 9 to 10 feet. No surface soil samples were collected at this site because most of the surrounding area is paved. ACM has been tested for in this building.

9.3 Findings

No chemicals were detected at SS 68 above the background levels, and no COPCs were identified.

No surface soil sampling was conducted at this site because most of the surrounding area is paved. Therefore, no surface soils were collected, and no risks to human health from direct exposure are expected from this site. A PRE was not conducted at Subparcel 4.8.

This building was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than 1 percent. No further action is required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 263, at which fumigation was also suspected, there is no health-based concern due to air.

9.4 Summary of Environmental Concerns

LBP may be an environmental concern at Subparcel 4.8.

9.5 Identified Data Gaps

LBP was not specifically tested for in Building 263.

9.6 Recommendations

The BCT recommended (Meeting Minutes, September 1997) that this subparcel remain a CERFA Category 7 pending results of the air sampling. Based on representative air sampling results, this building should be reclassified as Category 1. The final PRE will also indicate that the CERFA Category should be changed to Category 1.

10.0 Subparcel 4.9: Pad 267, Former Building T267

10.1 Subparcel Description

Subparcel 4.9 measures 1.4 acres and currently contains Pad 267. This site is the former site of Building T267, pesticide shop, a 150- by 200-foot building that was used for storing and mixing pesticides and herbicides (DDMT, November 1997). This building was demolished in 1987 (Woodward-Clyde, 1996) and is now a paved parking lot. Subparcel 4.9 includes RI Site 58, pesticides, herbicides.

10.2 History of Subparcel Activities and Past Sampling Activities

10.2.1 Summary of Subparcel Activities

Building T-267 was formerly used for storage and mixing of pesticides and herbicides that were applied to the DDMT grounds by DDMT Entomology Division personnel. The dates of operation of the shop are unknown, but are estimated to have been from the 1940s until the mid-1980s. The Installation Assessment (conducted during March 1981) documented that rinse water from pesticide and herbicide spraying operations was dumped on the ground near the facility until 1980 (USATHMA, 1982). The specific location where rinse water was dumped is unknown.

10.2.2 Sampling History

Surface soil samples were collected to assess the horizontal extent of the potential soil contamination from past activities at the site. Although RI Site 58 is located at Subparcel 4.9, some of the surface soil samples associated with Site 58 were located and collected at Parcel 5. Nine surface soil samples were collected as part of this site investigation (SS58A through SS58I), but only five of the nine (SS58A through SS58C, SS58H, and SS58I) were located at Subparcel 4.9. Only these five are discussed here, and the remainder are discussed in the Parcel 5 report. No subsurface soil samples were collected during this sampling event.

10.3 Findings

Only one COPC was identified at this subparcel. Dieldrin was detected in the surface soil at SS58I at a concentration of 0.098J mg/kg, which exceeds both the background value and the residential RBC for soil ingestion.

A PRE was performed for Subparcel 4.9 (SS 68) (CH2M HILL, January 1998). Because there are no SS or BRAC sites within this subparcel, risks are based on the RI data only. Carcinogenic and noncarcinogenic risks were calculated. The carcinogenic risk ratio for an industrial worker is well below a risk level of 1 in a million. The risk ratio for a resident from dieldrin, in one of the nine samples collected at this site, is a risk level of 4 in a million.

There are no noncarcinogenic chemicals at this subparcel.

Thus, there are no significant health concerns for this subparcel under industrial land use conditions. The only COPC is dieldrin; however, the concentration is at 0.098J mg/kg, which is well below the identified critical concentration of 0.5 mg/kg. Therefore, no further action is recommended at Subparcel 4.9 (RI Site 58) under the industrial land use scenario. Further assessment is required under the residential land use scenario.

Because this building was demolished in 1987, information is unavailable on whether it contained ACM or LBP. Based on the age of construction, it is possible that it contained LBP.

10.4 Summary of Environmental Concerns

The only environmental concern at Subparcel 4.9 is dieldrin under the residential land use scenario.

10.5 Identified Data Gaps

Further assessment of dieldrin in the surface soils under the residential land use scenario is required.

LBP was not specifically tested for in Building T267 before its demolition.

10.6 Recommendations

The BCT recommended (Meeting Minutes, September 1997) that Subparcel 4.9 should remain a CERFA Category 7. However, based on the results of the draft PRE (CH2M HILL, January 1998), it was recommended that the CERFA Category be changed to Category 6, for residential land-use purposes, and to a Category 3, for industrial land-use purposes.

11.0 Subparcel 4.10: Mixing Area Shed, Building 273

11.1 Subparcel Description

Building 273 is a metal shed located on the 0.26-acre Subparcel 4.10. This shed, measuring 1,500 square feet, has been used for mixing golf course pesticides and herbicides and for storing MOGAS and fertilizers (DDMT, November 1997). It is unknown when this shed was constructed (Woodward-Clyde, 1996). This subparcel includes RI Site 59, pesticides, cleaners.

11.2 History of Subparcel Activities and Past Sampling Activities

11.2.1 Summary of Subparcel Activities

This 10- by 50-foot building, located north of the DDMT golf course, was reportedly used as a mixing area for golf course pesticide and herbicide spray operations. Exact dates of these operations are unknown but are believed to have occurred from the 1940s to the mid-1980s.

11.2.2 Sampling History

Two surface soil samples were collected at this site during the 1990 RI (Law Environmental, 1990). The samples detected VOCs, PAHs, and pesticides. The pesticide concentrations detected generally indicate that either minor spillage or disposal of pesticide rinse water may have occurred in this area.

As part of the investigation for RI Site 59, surface soil samples were collected from 10 locations (SB59A through SB59B and SS59C through SS59J) around the perimeter of Building T-273. Seven of the 10 sampling locations were beneath the asphalt pavement. Subsurface soil samples were collected from two locations (SB59A and SB59B), at depths of 3 to 5 feet and 8 to 10 feet.

11.3 Findings

No detections were found in the subsurface soil samples that were collected as part of the RI Site investigation.

Only one COPC was identified for this subparcel, based on the RI Site investigation (CH2M HILL, May 1997). Dieldrin was detected in the surface soil at SB59BI at a concentration of 0.13 mg/kg, which exceeds both the background value and the residential RBC for soil ingestion. At SS59E, dieldrin was detected at 0.58 mg/kg, which exceeds both background values and the residential and industrial RBC for soil ingestion.

However, elevated levels of some constituents were detected in the surface soil in the historical data collected during the 1990 RI (Law Environmental, 1990). For example, at SS37, arsenic (42 mg/kg), DDT (4 mg/kg), and dieldrin (1.4 mg/kg) were COPCs. At SS50, benzo(b)fluoranthene (1.1 mg/kg), DDE (4.3 mg/kg), DDT (3 mg/kg), dieldrin (3.8 mg/kg), heptachlor (1.1 mg/kg), and heptachlor epoxide (0.34 mg/kg) qualify as COPCs.

A PRE was performed for Subparcel 4.10 (SS 69), as reported in the Draft PRE (CH2M HILL, January 1998). Because there are no SS or BRAC sites within this subparcel, risks are based on the RI data only. Carcinogenic and noncarcinogenic risks were calculated. The carcinogenic risk ratio for an industrial worker is a risk level of 1 in a million. The risk ratio for a resident from dieldrin, in two of the 10 samples collected at this site, is a risk level of 19 in a million.

There are no noncarcinogenic chemicals at this subparcel.

Thus, the COPC at this subparcel is dieldrin, based on the RI data only. No other carcinogenic or noncarcinogenic ratios are exceeded. Further risk assessment is necessary for the residential land-use scenario, but no further action is necessary under the industrial land-use scenario.

Although this building (Building T273) was not included in the Asbestos Identification Survey (Woodward-Clyde, 1996), ACM may be present based on the estimated year of construction.

Although LBP was not specifically tested for in this building (Building T273), testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

11.4 Summary of Environmental Concerns

Dieldrin in the surface soils is a concern for the residential land-use scenario.

11.5 Identified Data Gaps

A PRE has not been conducted based on the 1990 RI investigation, which indicated additional COPCs. ACM has not been tested for at Building T273.

11.6 Recommendations

Based on the need for further risk assessment, the BCT recommended (Meeting Minutes, September 1997) that this subparcel remain a CERFA Category 7. Upon completion of the risk assessment, the draft PRE recommended (CH2M HILL, January 1998) this subparcel be changed to CERFA Category 6 for the residential land-use scenario and to a CERFA Category 3 for industrial land-use purposes.

12.0 Subparcel 4.11: Vehicle Maintenance Shop, Building 253

12.1 Subparcel Description

Subparcel 4.11 measures 0.22 acre and includes Building 253, a vehicle maintenance shop (DDMT, November 1997). Built in 1952 and measuring 9,600 square feet, this facility has been used to store 55-gallon drums of petroleum products (hydraulic oil), antifreeze, and a Safety-Kleen unit (Woodward-Clyde, 1996). This subparcel includes SS 66, POL Building 253.

12.2 History of Subparcel Activities and Past Sampling Activities

12.2.1 Summary of Subparcel Activities

This building, measuring about 50 by 125 feet, is located in the facility engineering maintenance yard. Operations at Building 253 consisted mainly of motor pool services (minor maintenance, oil changes, steam cleaning, cold-solvent degreasing, washing, and lubrication).

Additionally, a 5,000-gallon UST containing No. 4 fuel oil was located at this site. The UST was installed in 1952 and removed in July 1996 (Woodward-Clyde, 1996).

Building 253 is also the location of proposed NFA Site 40 (Safety-Kleen units). Site 40 consists of nine locations throughout the installation where the self-contained Safety-Kleen solvent parts

cleaning stations are located. The 20- to 40-gallon steel holding tanks, supported by steel legs, have been used in various locations since 1985. Safety-Kleen Corporation leases and maintains the units. (CH2M HILL, September 1994).

The Safety-Kleen units are used for carburetor and cold parts cleaning. New cleaning material contains 11.9 percent cresylic acids, 31.7 percent methylene chloride, and 81.3 percent ortho-dichlorobenzene. Used material generally contains various oils and greases from the parts themselves. Safety-Kleen handles the manifesting, transporting, and recycling of the used material.

This building may have been fumigated.

12.2.2 Sampling History

During the RI investigation (CH2M HILL, May 1997), one surface soil and three soil boring locations were sampled. Three biased soil borings were used to evaluate whether potential contaminants exist at the subparcel. Samples were collected at depths of zero to 12 inches and at approximately 5-, 10-, 20-, and 40-foot depths. A boring depth of 40 feet was selected because of releases that may have occurred from the UST previously located at the site. Extensive surface soil sampling was not conducted because the area mostly is covered with asphalt pavement.

ACM was tested for in this building.

In addition to the CH2M HILL RI, the subparcel was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action. Additionally, the FFA designates this subparcel as a No Further Action Site (CH2M HILL, September 1994).

12.3 Findings

PAH compounds in surface soil are the only COPCs identified for SS 66. The PAHs have been identified by the BCT as sitewide COPCs and will be evaluated on a sitewide basis.

A PRE was performed for Subparcel 4.11 (SS 66) (CH2M HILL, January 1998). Because there are no RI or BRAC sites within this subparcel, risks are based on the SS data only. Carcinogenic and noncarcinogenic risks were calculated. Carcinogenic risk ratios from individual chemicals within sample SS66A are below a value of 1 in a million for an industrial worker. However, total risk from all of the chemicals (mostly PAHs) is slightly above a 1 in a million risk level for both a resident and an industrial worker.

The noncarcinogenic (systemic) toxicity ratio is below a value of 1.0.

The only COPCs are PAHs in one of the surface soils. There are no systemic toxicity concerns at this subparcel. Therefore, no further action is recommended at this subparcel.

ACM was identified in the motor pool shop (Building 253) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 253, at which fumigation was also suspected, there is no health-based concern due to air.

A minimal level of risk exists because hazardous materials are handled in the Safety-Kleen units (NFA Site 40). These risks are controlled through the design and handling criteria regulated under RCRA. Because of the equipment design and procedural controls, there is no significant risk to human health or the environment (CH2MHILL, September 1994).

12.4 Summary of Environmental Concerns

The only concern at this subparcel is PAH compounds, and they will be evaluated on a sitewide basis.

12.5 Identified Data Gaps

LBP was not specifically tested for in this building. No other data gaps exist unless additional data are needed to support the risk evaluation for PAH compounds.

12.6 Recommendations

For NFA Site 40, recommendation for this subparcel in the Draft NFA Report (CH2M HILL, September 1994) is that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the subparcel is No Action under CERCLA. This alternative will consist of leaving Subparcel 4.11 as is. No additional sampling or monitoring will be necessary, because the conditions at the subparcel are protective of human health and the environment.

In accordance with representative air sampling results, Building 253 should be reclassified as CERFA Category 1. In accordance with the PAH levels in the surrounding soils, both the BCT (Meeting Minutes, September 1997) and the draft PRE (CH2M HILL, January 1998) recommended that the CERFA Category for this subparcel be changed from Category 7 to Category 6. Therefore the overall category remains a Category 6.

13.0 Subparcel 4.12: Thrift Shop, Building 251

13.1 Subparcel Description

Subparcel 4.12 contains Building 251, a thrift shop. Built in 1942, this facility has 8,001 square feet of space used to store dry goods and served as a small engine/equipment repair shop (Woodward-Clyde, 1996). The total subparcel size is 0.18 acre (DDMT, November 1997).

13.2 History of Subparcel Activities and Past Sampling Activities

13.2.1 Summary of Subparcel Activities

Building 251 has been used for storage and as a repair shop.

13.2.2 Sampling History

One surface soil sample, A(4.12), was collected during the BRAC investigation. According to the EBS Report (Woodward-Clyde, 1996), a visual inspection noted a sump/waste oil tank located inside the building. Sample A(4.12) was collected from the sump beneath a floor drain located toward the south end of Building 251. The sample was analyzed for SVOCs, TAL metals, and TPH Method 418.1 (CH2M HILL, April 1997).

13.3 Findings

Elevated concentrations of many metals and PAH compounds were noted from this sample. However, it may not be appropriate to call these constituents COPCs, since criteria have not been developed for sump material taken from inside a building. The criteria for both surface soils and aquatic sediments are also not entirely appropriate to apply to this situation.

A PRE was performed for Subparcel 4.12 on this sump material, as reported in the Draft PRE (CH2M HILL, January 1998). Because there are no SS or RI sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated. The resulting risk is above acceptable levels for residential and industrial worker scenarios of 1 in a million. The resulting risks for the sample are primarily from PAHs and elevated metals. Several of the metals are elevated well above background levels (e.g., lead at 7,130 mg/kg).

The noncarcinogenic PRE ratios are well above a value of 1.0 for both industrial worker and residential scenarios at Subparcel 4.12, from PAHs and metals.

In summary, Subparcel 4.12 has elevated risk ratios for the residential and industrial worker exposure scenarios, from PAHs and metals. The noncarcinogenic PRE ratios were well above a value of 1.0 for both industrial workers and residents at Subparcel 4.12. Therefore, PAHs and metals should be further evaluated at this subparcel.

ACM was identified in the thrift shop/storage building (Building 251) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Because these were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

13.4 Summary of Environmental Concerns

ACM was identified as an environmental concern, and LBP may be a concern. PAHs and metals also require further evaluation.

13.5 Identified Data Gaps

LBP was not specifically tested for in this building.

13.6 Recommendations

The BCT (Meeting Minutes, September 1997) recommended that a walk-through be performed to assess the presence of possible waste oil tanks or possible grease pits. The draft PRE

(CH2M HILL, January 1998) recommended further assessment of PAHs and metals at this subparcel. The CERFA Category has not been assigned for Subparcel 4.12.

14.0 Subparcel 4.13: Facility Engineer Maintenance Shop, Building 265

14.1 Subparcel Description

The 0.18-acre Subparcel 4.13 includes Building 265, a facility engineer maintenance shop (DDMT, November 1997). This shop was built in 1942, and its 8,001 square feet are used for engineering shops (Woodward-Clyde, 1996).

14.2 History of Subparcel Activities and Past Sampling Activities

14.2.1 Summary of Subparcel Activities

A visual inspection indicated that a floor drain inside the building is connected to the sanitary sewer (Woodward-Clyde, 1996).

14.2.2 Sampling History

One surface soil sample, A(4.13), was collected during the BRAC investigation. Sample A(4.13) was collected from a sump beneath a floor drain located toward the east side of Building 265. The sample was analyzed for SVOCs, TAL metals, and TPH Method 418.1 (CH2M HILL, April 1997).

14.3 Findings

Elevated concentrations of many metals and PAH compounds were noted from this sump material sample. However, it may not be appropriate to call these constituents COPCs, since criteria have not been developed for sump material taken from inside a building. The criteria for both surface soils and aquatic sediments are also not entirely appropriate to apply to this situation.

A PRE was performed for Subparcel 4.13 (CH2M HILL, January 1998). Because there are no SS or RI sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated. The resulting risk is above acceptable levels for residential and industrial worker scenarios of 1 in a million. The resulting risks for the sample are primarily from PAHs and elevated metals. Several of the metals are elevated well above background levels (e.g., lead at 6,220 mg/kg).

The noncarcinogenic PRE ratios are well above a value of 1.0 for both industrial worker and residential scenarios at Subparcel 4.13, from PAHs and metals.

In summary, Subparcel 4.13 has elevated risk ratios for the residential and industrial worker exposure scenarios, from PAHs and metals. The noncarcinogenic PRE ratios were well above a value of 1.0 for both industrial workers and residents at Subparcel 4.13. Therefore, PAHs and metals should be further evaluated at this subparcel.

ACM was identified in the shop building (Building 265) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical

damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

14.4 Summary of Environmental Concerns

ACM was identified as an environmental concern, and LBP may be a concern. PAHs and metals also require further evaluation.

14.5 Identified Data Gaps

LBP was not specifically tested for in this building. Further assessment of PAHs and metals is also suggested for Subparcel 4.13.

14.6 Recommendations

The BCT (Meeting Minutes, September 1997) recommended that a walk-through be performed to evaluate storm drains. No recommendation was provided at either the BCT meeting, or in the draft PRE regarding the appropriate CERFA Category. A CERFA Category has not been assigned for this subparcel. The draft PRE (CH2M HILL, January 1998) recommended that further assessment of PAHs and metals be performed at Subparcel 4.13.

TAB

50

BRAC Parcel 5 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 5

1.1 Parcel Description

Parcel 5 is an 87,170-square-foot parcel in the southeast portion of the Main Installation in OU-3 (see Figure 1). Parcel 5 consists of two subparcels with the following associated sites: Buildings T272 and 274.

Sampling has occurred at Parcel 5 as part of the initial RI at DDMT (Law Environmental, 1990). Additionally, sampling has occurred under the BRAC and RI Programs at this parcel.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, the environmental concerns at this parcel are ACM, LBP, and chemicals that exceed screening criteria in the surrounding surface soil. No subsurface soil samples were collected.

ACM was identified in Building 274; however, test results for Building T272 were negative for ACM. Both buildings may have been painted with LBP, as based on the early construction dates.

The COPCs detected at Parcel 5 are PCB-1260 and dieldrin, which were detected in Subparcel 5.2.

Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Findings and necessary additional sampling are discussed by subparcel below.

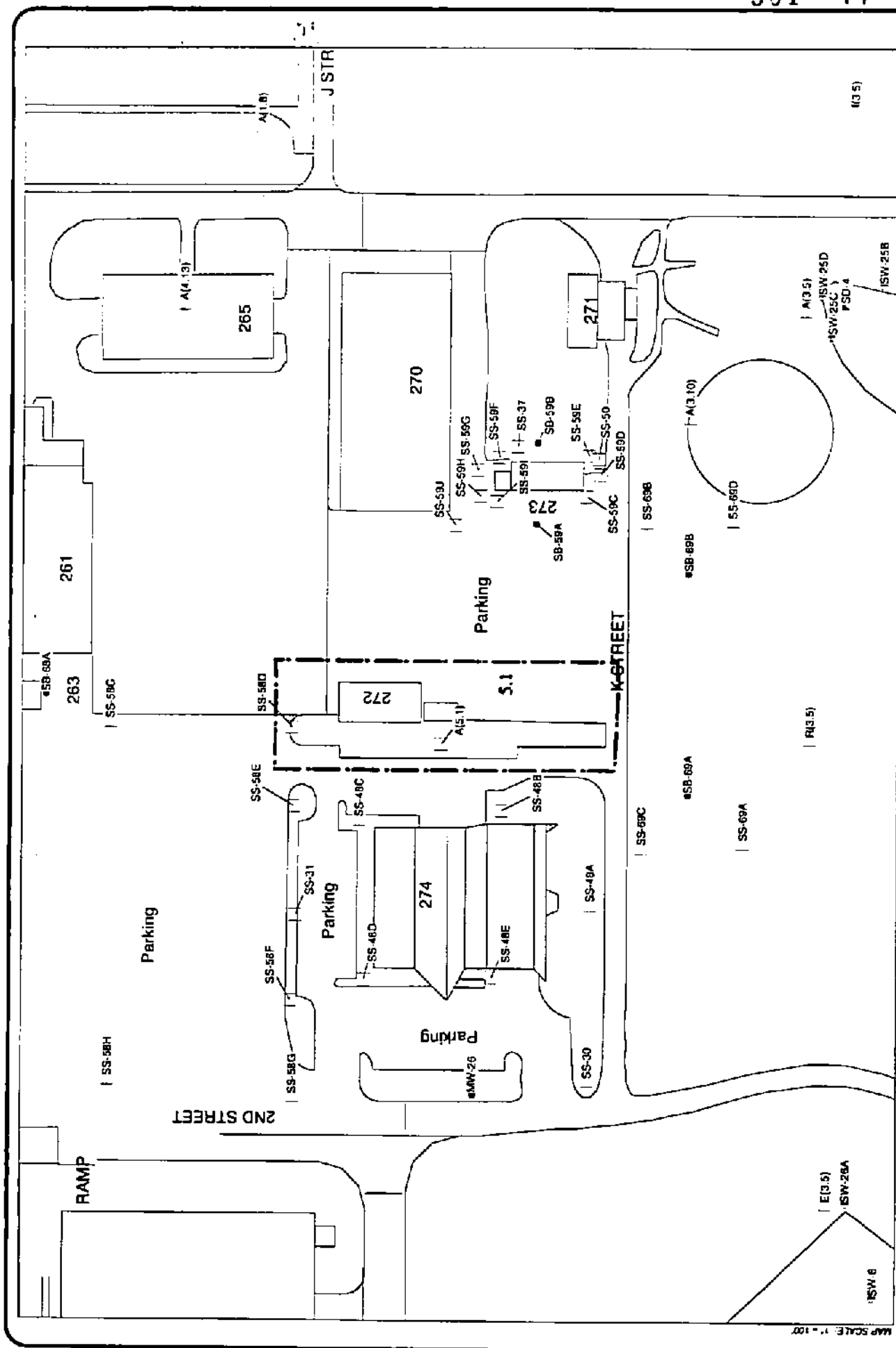
2.0 Subparcel 5.1: Building T272 and Surrounding Area

2.1 Description

This subparcel, measuring approximately 1/2 acre, includes Building T272 and the land area surrounding the buildings in Parcel 5 (DDMT, November 1997). Building T272 was built in 1942 and measures 1,440 square feet. This subparcel includes a standby generator that is used for emergency power (Woodward-Clyde, 1996).

Figure 1
PARCEL 5
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

MAP SCALE: 1" = 100'

1" = 10,000'

North Arrow

TABLE 1
Analytes Investigated for Parcel 5
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	Herbicides	SW846 Method 8151

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Building T272 is a lumber shed facility used for storing lumber. The soil surrounding the buildings in Parcel 5 has the potential for pesticide contamination as a result of routine pesticide application at the facility.

2.2.2 Sampling History

One RI surface soil sample (SS-58D) and one BRAC surface soil sample A(5.1) were collected at Subparcel 5.1.

2.3 Findings

Building T272 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

There were no screening criteria exceedances of any constituents in the surface soil samples collected at Subparcel 5.1. PRE results (CH2M HILL, January 1988) indicate that the carcinogenic risk ratio for an industrial worker and a resident are well below a risk level of 1 in a million. No noncarcinogenic chemicals were detected at this subparcel.

2.4 Summary of Environmental Concerns

Building T272 may have been painted with LBP.

2.5 Identified Data Gaps

LBP was not specifically tested for at this building.

2.6 Recommendations

In accordance with the PRE of the available analytical data (CH2M HILL, January 1998), there are no human health concerns at this subparcel. Subparcel 5.1 is considered CERFA Category 3 (BCT Meeting Minutes, September 1997).

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building T272.

3.0 Subparcel 5.2: Post Cafeteria, Building 274 and Surrounding Area

3.1 Description

Subparcel 5.2 is a 1.5-acre area that contains Building 274 and the area surrounding the building (DDMT, November 1997). Building 274 (measuring 13,500 square feet) is the post cafeteria, which has been its function since it was constructed in 1989.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 5.2 is associated with RI Site 48, the former PCB Transformer Area, including Building 274. Site 48 was the former storage location of at least two electrical transformers that were discovered during the Installation Assessment conducted in March 1981 (CH2M HILL, January 1998). Testing of the fluid from the transformers indicated less than 50 ppm of PCBs. Building 274, "J" Street Cafeteria, was constructed in 1989 after the transformer storage had ceased.

3.2.2 Sampling History

Five RI surface soil samples (SS48A, SS48B, SS48C, SS48D, and SS48E) were collected from the grassy area directly outside of Building 274. Three more RI surface soil samples (SS58E, SS58F, and SS58G) were collected in the parking lot just north of Building 274. Two surface soil samples (SS30 and SS31) were also collected during the Law Environmental (1990) investigation.

3.3 Findings

ACM was identified in the warehouse space (Building 274) from earlier surveys (Woodward-Clyde, 1996). ACM products were identified in non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

LBP was not specifically tested for in this building. However, Building 274 was constructed in 1989, after the use of LBP was discontinued, and it should not contain LBP. The RI Site 48 sample results detected elevated concentrations of PCB-1260 in three surface soil samples just outside of Building 274. The surface soil sample south of Building 274 detected an elevated concentration of dieldrin. The Law Environmental (1990) surface soil samples detected no exceedances. Two samples from Site 58, pesticides/herbicides Pad 267, (associated with Parcel 4) were collected from Parcel 5. The two RI Site 58 samples collected at Parcel 5 detected no exceedances of screening criteria.

3.4 Summary of Environmental Concerns

The environmental concerns at Subparcel 5.2 consist of surface soil contamination with PCBs due to previous activities involving transformers as well as ACM and LBP in the interior of Building 274.

The PRE results (CH2M HILL, January 1998) indicate that carcinogenic risk ratios for an industrial worker are below a risk level of one in a million and the residential exposure-based risk ratio was 15 in a million due to the presence of PCB-1260 and dieldrin. Dieldrin presents a slight risk for the residential exposure scenario; however, the levels do not exceed the critical value of 0.5 mg/kg. There were no noncarcinogenic ratios exceeding a value of one for either a residential or an industrial scenario.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building 274.

The extent of PCB-contaminated surface soil has not been evaluated.

3.6 Recommendations

Additional sampling is recommended at Subparcel 5.2 to evaluate the extent of PCB constituents in surface soil and to support a human health risk evaluation for the subparcel. Due to the detected concentrations of PCB, Parcel 5.2 is a CERFA Category 6 site. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

TAB

6.0

BRAC Parcel 6 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 6

1.1 Parcel Description

Parcel 6 is a 594,584-square-foot parcel in the central east part of the Main Installation in OU-3 (see Figure 1). Parcel 6 consists of Buildings 250, 349, 350, and the adjacent railroad tracks, which are discussed by subparcel below.

No sampling was performed prior to the BRAC characterization of 1996. Sampling under the BRAC Program has occurred in this parcel, but no Remedial Investigation or Screening Sites sampling has occurred in this parcel.

Table 1 summarizes the analytes investigated and the analysis methods used at this parcel. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, the environmental concerns at this site are ACM, LBP, and fumigation in the building interiors as well as contaminants in the surrounding surface soil that exceeded screening criteria. No subsurface soil samples were taken.

All buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. Pesticides (DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane) were detected in the buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

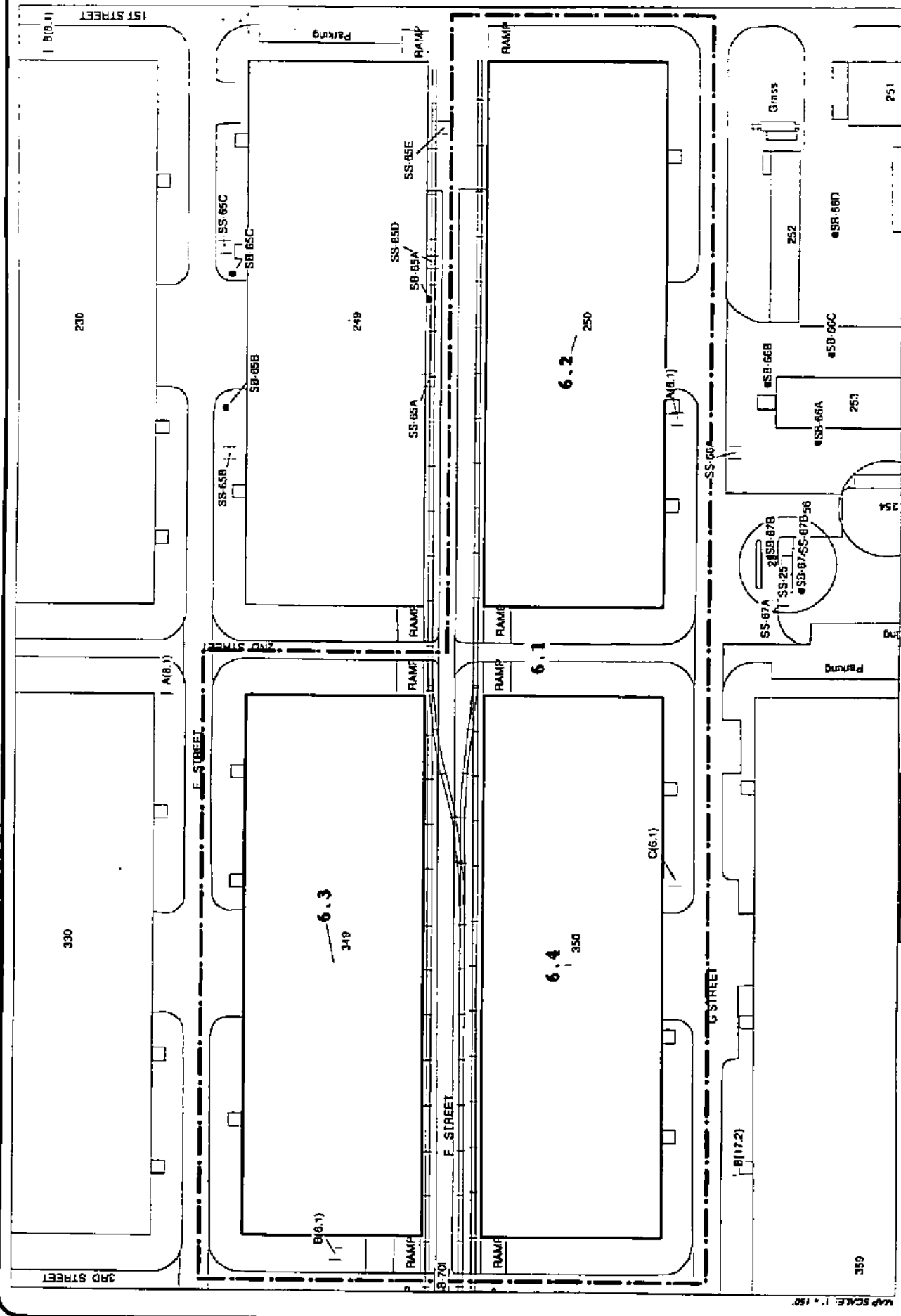
The environmental issues at this parcel consist of surface soil contamination as well as ACM and LBP in the building interiors. Dieldrin and PCBs at Subparcel 6.1 present a slightly elevated risk for the industrial scenario, and all of the chlorinated pesticides present a slightly elevated risk for the residential scenario. ACM products, both friable and non-friable, were detected in the buildings during previous surveys. Recommendations ranged from management to removal. LBP was assumed to be in the buildings on the basis of the construction age and findings from other parts of DDMT.

Buildings in this parcel that were potentially fumigated include Buildings 250, 349, and 350. Results of air sampling at Building 350 are considered representative of the other buildings. Results indicate that health-based criteria were not exceeded, and therefore these buildings can now be placed into Category 1.

Based on Table 5-2 of the Draft PRE (CH2M HILL, January 1998), the BCT Meetings (September 1997), and the results of air sampling, it is recommended that Subparcel 6.1 be recategorized as

Figure 1
PARCEL 6
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

1" = 150.000'

N
W
E
S

TABLE 1
Analytes Investigated for Parcel 6
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Notes: ¹ Includes surface soil, subsurface soil, and sediment samples.		

a CERFA Category 6, while Subparcels 6.2, 6.3, and 6.4 be recategorized as CERFA Category 1. Table 2 summarizes the analytical methodologies that will be used on the proposed samples. Necessary additional sampling is discussed by subparcel below.

2.0 Subparcel 6.1: Area Surrounding Buildings 250, 349, and 350

2.1 Description

Subparcel 6.1 measures 4.4 acres and consists of the area surrounding Buildings 250, 349, and 350. The subparcel includes ramps and railroad tracks (DDMT, November 1997).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

According to DDMT personnel interviews, the surface soils surrounding buildings at the installation may contain pesticides because of routine pesticide application at the facility. In addition, this subparcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP (Woodward-Clyde, 1996).

2.2.2 Sampling History

Previous sampling in this subparcel only occurred under the BRAC Program. Three surface soil samples—A(6.1), B(6.1), and C(6.1)—were collected and analyzed for pesticides and PCBs. This subparcel contains one Level 1 immunoassay sample point (# 47) which was used to estimate PAH concentrations in surface soil. This data point was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

2.3 Findings

One COPC was found in the surface soil at this site. PCB 1260 was detected in sample A(6.1) at 2.3 mg/kg, which exceeds both the background value and the residential RBC for soil ingestion. Dieldrin was detected in all three samples at concentrations that exceeded the background values, both residential and industrial RBCs for soil ingestion, and the groundwater protection values.

A PRE was performed for Subparcel 6.1, as reported in the Draft Preliminary Risk Evaluation (CH2M HILL, January 1988). Because there are no RI or SS sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk is above 1 in a million (10^{-6}) for the residential scenario and is within the acceptable range for an industrial worker exposure. The estimated risk is primarily from dieldrin and PCBs. Although other chlorinated pesticides were detected, none present risk ratios above 1 in a million. Dieldrin concentrations in these samples ranged between 0.38 and 1.4 mg/kg, which is elevated above the critical value in two of the three samples. PCBs were detected in one sample.

There are no noncarcinogenic chemicals in the BRAC samples from Subparcel 6.1.

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

In summary, dieldrin and PCBs at Subparcel 6.1 present a slightly elevated risk for the industrial scenario, and all of the chlorinated pesticides present a slightly elevated risk for the residential scenario. There are no noncarcinogenic PRE ratios above acceptable industrial use levels at Subparcel 6.1. This site should be further evaluated for dieldrin and PCBs by further defining the extent of distribution and conducting a focused risk evaluation.

2.4 Summary of Environmental Concerns

Dieldrin and PCBs are environmental concerns at this subparcel.

2.5 Identified Data Gaps

A focused risk evaluation is needed for dieldrin and PCBs in surface soil.

2.6 Recommendations

In accordance with the results of the Draft PRE (CH2M HILL, January 1998), this site should be further evaluated for dieldrin and PCBs by further defining the extent of distribution and conducting a focused risk evaluation. The Draft PRE (Table 5-2) recommended that this subparcel be reclassified from CERFA Category 7 to Category 6.

3.0 Subparcel 6.2: General Purpose Warehouse, Building 250

3.1 Description

Subparcel 6.2 measures 2.8 acres and includes Building 250, which is a general purpose warehouse used to store bulk textile goods. This warehouse has 120,000 square feet of space and was built in 1942. Also, forklifts have operated around this facility (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

During the visual inspection by Woodward-Clyde (1996), staining and acid leaks from batteries in the forklift area were noted. It is also suspected that the building may have been fumigated

3.2.2 Sampling History

No previous media sampling has taken place in this subparcel.

3.3 Findings

ACM products, identified in this warehouse from earlier surveys (Woodward-Clyde, 1996), were found in poor or friable condition as a result of physical damage or natural deterioration. Because these were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. ACM products identified as non-friable and/or in fair to good condition can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Since the limited air sampling is representative of Building 250, at which fumigation was also suspected, there is no health-based concern due to air.

3.4 Summary of Environmental Concerns

ACM is an environmental concern and LBP may be an environmental concern at this subparcel.

3.5 Identified Data Gaps

Testing for LBP at this particular building has not occurred.

3.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of this building.

The BCT recommended (September 1997) that this subparcel remain a CERFA Category 7 pending results of air sampling. The air sampling results indicated that this subparcel can now be classified as CERFA Category 1.

In accordance with representative air sampling results, Building 250 should be reclassified as Category 1.

4.0 Subparcel 6.3: General Purpose Warehouse, Building 349

4.1 Description

Subparcel 6.3 also measures 2.8 acres and includes a 120,000-square-foot warehouse. This general purpose warehouse (Building 349) was built in 1942 and is used for bulk food storage (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

This general purpose warehouse may have been fumigated (Woodward-Clyde, 1996).

4.2.2 Sampling History

Sampling has not occurred in this subparcel.

4.3 Findings

ACM products, identified in this warehouse from earlier surveys (Woodward-Clyde, 1996), were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. ACM products identified as non-friable and/or in fair to good condition can be managed through a comprehensive operations and

maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Limited air sampling was performed at Building 350, where fumigation was suspected. Air sampling results showed that pesticides were two orders of magnitude below the OSHA and NIOSH standards for Building 350. This sampling is considered to be representative of conditions in the building, and the results show acceptable air quality within the building for the industrial worker.

4.4 Summary of Environmental Concerns

ACM is an environmental concern and LBP may be an environmental concern in this subparcel.

4.5 Identified Data Gaps

Testing for LBP at this particular building has not occurred.

4.6 Recommendations

(XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of this building.

The BCT recommended (September 1997) that this subparcel remain a CERFA Category 7 pending results of air sampling. The air sampling results indicated that this subparcel can now be classified as CERFA Category 1.

In accordance with representative air sampling results, Building 349 should be reclassified as Category 1.

5.0 Subparcel 6.4: General Purpose Warehouse, Building 350

5.1 Description

Subparcel 6.4, like Subparcels 6.2 and 6.3, includes a general purpose warehouse (Building 350) used to store glue boards and pheromone traps. This 120,000-square-foot warehouse measures 2.8 acres and was built in 1942 (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

During the visual inspection by Woodward-Clyde (1996), staining and acid leaks from the batteries in the forklift area were noted. In addition, this building may have been fumigated.

5.2.2 Sampling History

No previous media sampling has occurred in this subparcel.

5.3 Findings

ACM products, identified in this warehouse from earlier surveys (Woodward-Clyde, 1996), were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. ACM products identified as non-friable and/or in fair to good condition can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Limited air sampling was performed at Building 350, where fumigation was suspected. Air sampling results showed that pesticides were two orders of magnitude below the OSHA and NIOSH standards for Building 350. This sampling is considered to be representative of conditions in the building, and the results show acceptable air quality within the building for the industrial worker.

5.4 Summary of Environmental Concerns

ACM is an environmental concern and LBP may be an environmental concern in this subparcel.

5.5 Identified Data Gaps

Testing for LBP at this particular building has not occurred.

5.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of this building.

The BCT recommended (September 1997) that this subparcel remain a CERFA Category 7 pending results of air sampling. The air sampling results indicated that this subparcel can now be classified as CERFA Category 1.

In accordance with representative air sampling results, Building 350 should be reclassified as Category 1.

TAB

7.0

BRAC Parcel 7 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 7

1.1 Parcel Description

Parcel 7 is a 190,791-square-foot parcel in the east-central part of the Main Installation in OU-3 (see Figure 1). Parcel 7 consists of one subparcel with the following associated sites: Building 249 and the adjacent railroad tracks.

Sampling has occurred in this parcel as part of the SS Program.

Table 1 summarizes the analytes investigated at Parcel 7 and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

Buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized into Category 1, as a result of air sampling in representative buildings. Pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

Building 249 potentially was fumigated. Results of representative air sampling indicate that health-based criteria were not exceeded, and therefore this building can now be placed into CERFA Category 1.

Elevated concentrations of PAHs and pesticides (DDE and DDT) were detected in the surface soil at Parcel 7. Because of the risks associated with PAHs in surface soils near the railroad tracks, a further risk evaluation is recommended. DDE and DDT will be addressed as part of an upcoming sitewide risk evaluation.

Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Findings and necessary additional sampling are discussed by subparcel below.

2.0 Subparcel 7.1: Area Surrounding General Purpose Warehouse, Building 249

2.1 Description

Subparcel 7.1 is 1.5 acres in size and consists of the area surrounding Building 249 in Parcel 7 (DDMT, November 1997).

TABLE 1
Analytes Investigated for Parcel 7
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	Zinc	SW846 Method 6010B

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The area surrounding Building 249 is associated with SS 65: XXCC-3, Building 249. Building 249 formerly was used as a storage facility for clothing treated with impregnite, a chemical used as a preventive to the effects of chemical warfare agents on skin. The impregnite (XXCC-3) was produced by mixing CC-2—a chemical produced by E.I. DuPont de Nemours during the 1940s and 1950s—with ZnO. CC-2 (sym. Dichlor-bis(2,4,6 trichlorophenyl)urea), a labile (unstable) organic compound, indicates the complexity with analytical measurement because of the compound's instability. No known releases of XXCC-3 have occurred at this site. (CH2M HILL, September 1995)

In accordance with the BCP Report (DDMT, November 1997), the soil surrounding Building 249 has the potential to contain pesticides due to routine application.

2.2.2 Sampling History

Five surface soil samples (SS-65A through SS-65E) and three soil borings (SB-65A through SB-65C) were collected during the SS Program at Subparcel 7.1.

2.3 Findings

Elevated PAH concentrations were found in the surface soil at SS 65. Sample locations on the southern side of Building 249, where the railroad tracks are located, had PAHs ranging from 10 to 65 mg/kg. Sample locations on the northern side of Building 249, away from the railroad tracks, typically were below the screening criteria except for benzo(a)pyrene, which was found at concentrations less than 0.2 mg/kg. PAH compounds did not exceed the groundwater protection criteria in the subsurface soil samples.

Other COPCs detected at SS 65 in the surface soils were cadmium, DDE, and DDT. These COPCs were detected in one SS sample, SS-65E, which is located south of Building 249 near the railroad tracks.

2.4 Summary of Environmental Concerns

Results of the PRE for Subparcel 7.1 (CH2M HILL, January 1998) indicate that carcinogenic risk ratios for an industrial worker are 400 in one million, and the residential risk ratios are 2,000 in one million, which are both above a risk level of one in a million. The risks are primarily due to PAHs in the surface soil associated with railroad tracks. The noncarcinogenic ratios were below a value of one for an industrial worker, but were exceeded for a residential receptor due to the presence of PAHs.

2.5 Identified Data Gaps

There are no identified data gaps, although additional information may be needed for the PAH and pesticide sitewide risk evaluation.

2.6 Recommendations

Further risk evaluation of PAHs and pesticides, using existing data (without additional sampling data), is recommended for Subparcel 7.1. In addition, the grounds surrounding

Building 249 will remain as a CERFA Category 6 due to the PAH levels associated with the samples along the railroad tracks (BCT Meeting Minutes, September 1997).

Note that elevated concentrations of PAH compounds found in the surface soil at Subparcel 7.1 are also found sitewide at DDMT, although at lower concentrations, and are attributed to railroad operations. DDE and DDT are found in surface soil sitewide at DDMT as a result of historical routine pesticide application. Therefore, these constituents (PAHs, DDE, and DDT) will be addressed in an upcoming sitewide risk evaluation.

3.0 Subparcel 7.2: General Purpose Warehouse, Building 249

3.1 Description

Subparcel 7.2, measuring 2.8 acres, contains Building 249, a general purpose warehouse and security desk (DDMT, November 1997). This facility was built in 1942 and has 120,000 square feet of space.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Building 249 is used for base supply storage and has also been used to store clothing treated with impregnite (XXCC-3) in the past (Woodward-Clyde, 1996). The building may have been fumigated but no data exist for verification. Air sampling to assess the impact of fumigation was conducted in other buildings known to have been fumigated (DDMT, November 1997).

A battery acid spill was reported on April 15, 1993, at the north dock of Building 249. The exact location of the spill is unknown (DDMT, November 1997).

3.2.2 Sampling History

No previous media sampling has occurred at Subparcel 7.2, but ACM was tested for.

3.3 Findings

ACM was identified in the warehouse space (Building 249) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Because these were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented.

Air sampling was conducted in a number buildings (Buildings 319, 329, 330, 429, 737 and 835) known to have been fumigated or possibly fumigated. Pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. Because the limited air sampling is representative of Building 249, at which fumigation was also suspected, there is no health-based concern due to air.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

The environmental concerns of this subparcel are ACM and LBP in the building interior, and soil contamination surrounding the building.

ACM was identified in Building 249 and the building may have been painted with LBP due to its early construction date.

Results of the PRE for soils surrounding Subparcel 7.2 (CH2M HILL, January 1998) indicate that carcinogenic risk ratios for an industrial worker are 400 in one million, and the residential risk ratios are 2,000 in one million, which are both above a risk level of one in a million. The risks are primarily due to PAHs in the surface soil associated with railroad tracks.

The noncarcinogenic ratios were below a value of one for an industrial worker, but were exceeded for a residential receptor due to the presence of PAHs.

3.5 Identified Data Gaps

LBP was not specifically tested for at Building 249.

3.6 Recommendations

In accordance with representative air sampling results, Building 249 should be classified as CERFA Category 1.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 249.

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TAB

8.0

BRAC Parcel 8 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 8

1.1 Parcel Description

Parcel 8 is a 799,765-square-foot parcel in the northeast portion of the Main Installation in OU-3 (see Figure 1). Parcel 8 consists of five subparcels with the following associated sites: Buildings 229, 230, 329, and 330 and the adjacent railroad tracks.

Sampling has occurred at this parcel as part of the SS Sampling Program and the BRAC Sampling Program in 1996 through 1997.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

All buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. In those buildings that were sampled, pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected). However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. Buildings in this parcel that were potentially fumigated include Buildings 229, 230, 329, and 330. Results of representative air sampling indicate that health-based criteria were not exceeded and therefore these buildings can now be placed into Category 1.

Elevated concentrations of dieldrin were detected in the surface soil at Parcel 8. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

ACM was found in all buildings (Buildings 229, 230, 329 and 330 located within Parcel 8 in poor and/or friable condition. In addition, it is assumed that all buildings in Parcel 8 may have been painted with LBP based on the early construction dates.

Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Findings and necessary additional sampling are discussed by subparcel below.

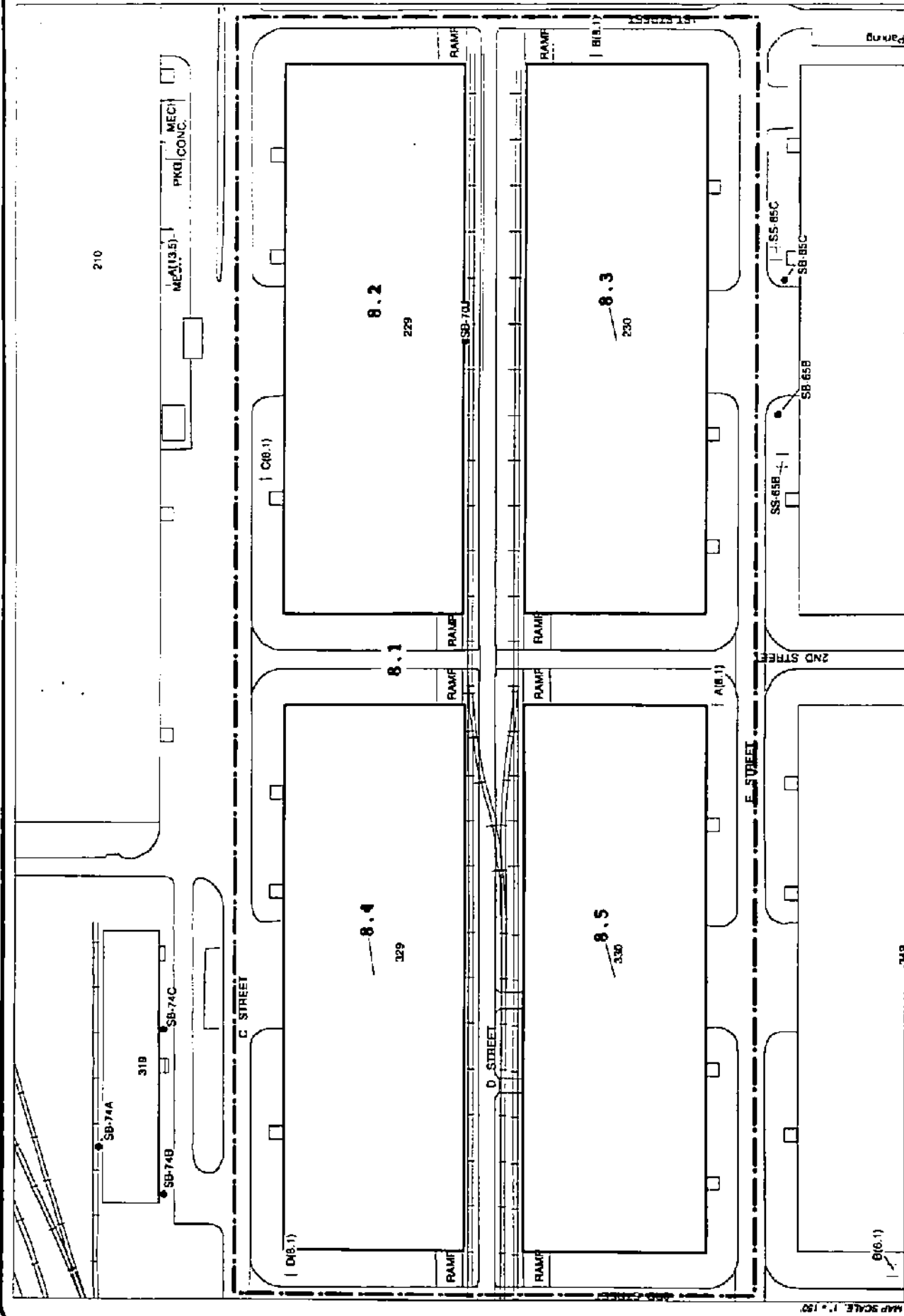
2.0 Subparcel 8.1: Area Surrounding Buildings in Parcel 8

2.1 Description

Subparcel 8.1 is 6.4 acres and includes the area surrounding the buildings in Parcel 8 and also the railroad tracks (DDMT, November 1997).

Figure 1
PARCEL 8
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

1" = 100' 0"

MAP SCALE: 1" = 150'

TABLE 1

Analytes Investigated for Parcel 8

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The area surrounding the buildings in Parcel 8 has the potential for pesticide contamination (DDMT, November 1997). Furthermore, the railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Surface soil samples, A(8.1), B(8.1), C(8.1), and D(8.1), were collected at Subparcel 8.1 under the BRAC Program. One soil boring, SB-70J, was collected during the SS Program.

This subparcel contains Level 1 immunoassay sample points (51 Immunoassay and 52 Immunoassay) which were used to estimate PAH concentrations in surface soil. This data was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

2.3 Findings

Dieldrin—the only COPC detected at Subparcel 8.1—was detected during the BRAC sampling event in three surface soil samples. These samples were collected south of Building 330, north of Building 229, and east of Building 230. The one boring collected—just south of Building 229 near the railroad tracks during the SS Program—did not detect any exceedances of screening criteria.

2.4 Summary of Environmental Concerns

Dieldrin was detected at concentrations exceeding the RBC for residential and industrial scenarios and the groundwater protection criteria.

2.5 Identified Data Gaps

There are no identified data gaps at this subparcel.

2.6 Recommendations

Subparcel 8.1 will remain CERFA Category 7 pending resolution of the dieldrin detections in the three surface soil samples collected at this subparcel (BCT Meeting Minutes, September 1997). A sitewide evaluation of pesticides (including dieldrin) in surface soils is planned.

3.0 Subparcel 8.2: General Purpose Warehouse, Building 229

3.1 Description

Building 229, a general purpose warehouse, is included in Subparcel 8.2. This warehouse was built in 1942 and has 120,000 square feet of space (Woodward-Clyde, 1996). The total subparcel size is 2.8 acres (DDMT, November 1997).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Building 229 is used to store food (Woodward-Clyde, November 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, to assess the impact of fumigation.

3.2.2 Sampling History

No previous media sampling has occurred at Subparcel 8.2, but ACM was tested for.

3.3 Findings

ACM was identified in the warehouse space (Building 229) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP. Because the limited air sampling is representative of Building 229, at which fumigation was also suspected, there is no health-based concern due to air.

3.4 Summary of Environmental Concerns

There are no environmental concerns at Subparcel 8.2.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building 229.

3.6 Recommendations

In accordance with representative air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 229.

4.0 Subparcel 8.3: General Purpose Warehouse, Building 230

4.1 Description

Subparcel 8.3, like Subparcel 8.2, is 2.8 acres in size and includes a general purpose warehouse, Building 230 (DDMT, November 1997). This 120,000-square-foot facility was built in 1942 (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building 230 is used to store clothing (Woodward-Clyde, November 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, to assess the impact of fumigation.

4.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

4.3 Findings

ACM was identified in the warehouse space (Building 230) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor of friable condition as a result of physical damage or natural deterioration. Because these conditions were considered a potential health hazard to personnel, restricted access was recommended to the areas with ACM in poor condition until a proper abatement or removal plan is implemented.

Because the limited air sampling is representative of Building 230, at which fumigation was also suspected, there is no health-based concern due to air.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

There are no known environmental concerns at Subparcel 8.3.

4.5 Identified Data Gaps

LBP was not specifically tested for in Building 230.

4.6 Recommendations

In accordance with representative air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 8.3 to assess the extent of LBP in or on the outside of Building 230.

5.0 Subparcel 8.4: General Purpose Warehouse, Building 329

5.1 Description

The 2.8-acre Subparcel 8.4 contains another general purpose warehouse, Building 329 (DDMT, November 1997). Building 329 was also built in 1942 and measures 120,000 square feet (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Building 329 is used to store clothing (Woodward-Clyde, November 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in Building 329 to assess the potential impact of fumigation.

5.2.2 Sampling History

Several air samples—329-1 through 329-5, and 329-3-1—were collected in Building 329. Tests for ACM were also conducted.

5.3 Findings

ACM was identified in the warehouse space (Building 329) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

The pesticides detected in Building 329 during air sampling were DDE and DDT. The detected concentrations were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. However, the building was empty during sampling with no activity other than the sample collection. The data obtained from the air sampling program should be viewed as a baseline that could potentially increase with increased activity.

5.4 Summary of Environmental Concerns

Air sampling results indicate that there are no health-based concerns at Subparcel 8.4.

5.5 Identified Data Gaps

LBP was not specifically tested for in Building 329.

5.6 Recommendations

In accordance with air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 329.

6.0 Subparcel 8.5: General Purpose Warehouse, Building 330

6.1 Description

Subparcel 8.5 measures 2.8-acres and contains the last general purpose warehouse (Building 330) in Parcel 8. Building 330 was built in 1942 and has 120,000 square feet of space (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Building 330 is used to store clothing (Woodward-Clyde, November 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in Building 330 to assess the potential impact of fumigation.

6.2.2 Sampling History

Air samples—330-17, 330-17A, 330-17B, 330-4A, and 330-13A—were all collected in Building 330.

6.3 Findings

ACM was identified in the warehouse space (Building 330) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

The pesticides detected in Building 330 during air sampling were DDE and DDT. The detected concentrations were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. However, the building was empty during sampling with no activity other than the sample collection. The data obtained from the air sampling program should be viewed as a baseline that could potentially increase with increased activity.

6.4 Summary of Environmental Concerns

Air sampling results indicate that there are no health-based concerns at Subparcel 8.5.

6.5 Identified Data Gaps

LBP was not specifically tested for in Building 330.

6.6 Recommendations

In accordance with air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 330.

TAB

9.0

BRAC Parcel 9 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 9

1.1 Parcel Description

Parcel 9 is a 795,387-square-foot parcel in the central part of the Main Installation in OU-3 (see Figure 1). Parcel 9 consists of five subparcels with the following associated sites: Buildings 429, 430, 449, and 450 and the adjacent railroad tracks.

Sampling has occurred at this parcel as part of the BRAC and SS Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

Buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. Pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

Buildings in this parcel that were potentially fumigated include Buildings 429, 430, 449, and 450. Results of representative air sampling indicate that health-based criteria were not exceeded and therefore these buildings can now be placed into CERFA Category 1.

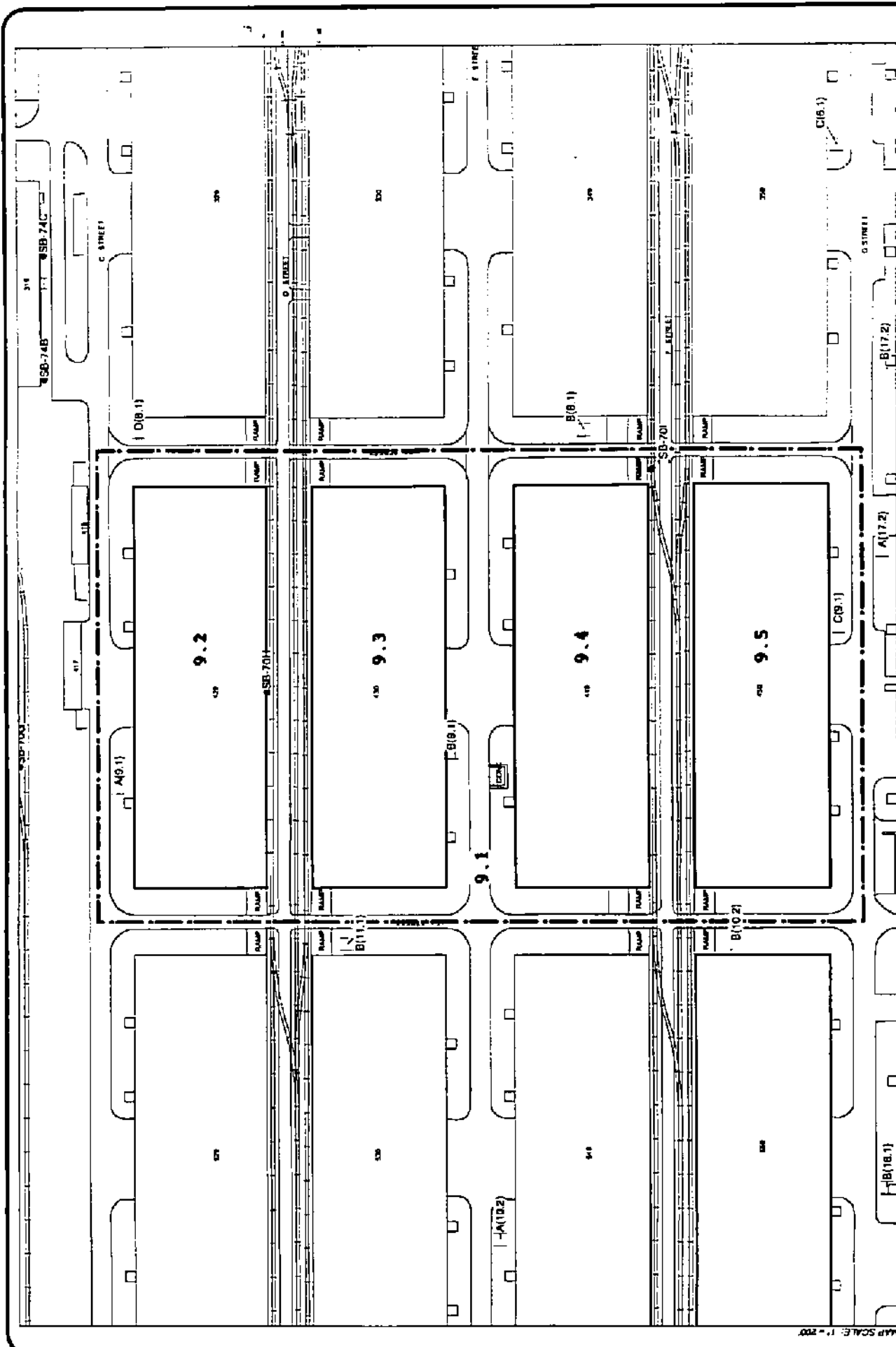
Elevated concentrations of dieldrin were detected in the surface soil at Parcel 9. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

ACM was found in all buildings (Buildings 429, 430, 449, and 450) located within Parcel 9 in poor and/or friable condition. In addition, it is assumed that all buildings in Parcel 9 may have been painted with LBP based on the early construction dates.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

Figure 1
PARCEL 9
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

1" = 10,000'

MAP SCALE: 1" = 200'

MAP SCALE: 1" = 200'

TABLE 1

Analytes Investigated for Parcel 9

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

301 115

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.0 Subparcel 9.1: Area Surrounding Buildings in Parcel 9

2.1 Description

Subparcel 9.1 measures 6.3 acres and includes the area surrounding the buildings in Parcel 9 (DDMT, November 1997). Subparcel 9.1 also contains railroad tracks.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The area surrounding buildings in Parcel 9 has the potential for pesticide contamination (DDMT, November 1997). Furthermore, the railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Three surface soil samples, A(9.1), B(9.1), and C(9.1), were collected at Subparcel 9.1 during the BRAC Program. Two soil borings, SB-70H and SB-70I, were collected in this subparcel under the SS Program.

This subparcel contains Level 1 immunoassay sample points (48 Immunoassay and 53 Immunoassay) which were used to estimate PAH concentrations in surface soil. This data was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

2.3 Findings

Dieldrin was detected at elevated concentrations in all three surface soil samples during the BRAC sampling event. The surface soil samples were collected north of Building 429, south of Building 430, and south of Building 450.

The two boring samples collected near the railroad tracks, just south of Building 429 and just southeast of Building 449, did not detect any COPCs. However, detected lead concentrations exceeded the groundwater protection value at depths of 3 to 10 feet.

2.4 Summary of Environmental Concerns

Dieldrin was detected at concentrations exceeding the RBC for residential and industrial scenarios and for groundwater protection.

2.5 Identified Data Gaps

There are no identified data gaps for Subparcel 9.1.

2.6 Recommendations

Subparcel 9.1 will remain CERFA Category 7 pending resolution of the dieldrin detections in the three BRAC surface soil samples (BCT Meeting Minutes, September 1997). Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

3.0 Subparcel 9.2: General Purpose Warehouse, Building 429

3.1 Description

The 2.8-acre Subparcel 9.2 contains Building 429, a general purpose warehouse (DDMT, November 1997). Built in 1942, this warehouse has 120,000 square feet of space (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Building 429 is used to store clothing (Woodward-Clyde, November 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in Building 429 to assess the potential impact of fumigation.

3.2.2 Sampling History

Air samples 429-17B, 429-14, 429-13A, 429-14CO, 429-13B, and 429-18A were collected at Building 429.

3.3 Findings

ACM was identified in the warehouse space (Building 429) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

The pesticides heptachlor, DDE, DDT, alpha-chlordane, and gamma-chlordane were detected in Building 429 during air sampling. The detected concentrations were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. However, the building was empty during sampling with no activity other than the sample collection. The data obtained from the air sampling program should be viewed as a baseline that could potentially increase with increased activity.

3.4 Summary of Environmental Concerns

ACM was identified in Building 429 in poor and/or friable condition. Removal of the ACM should be conducted in a timely manner. The building also may have been painted with LBP.

3.5 Identified Data Gaps

LBP was not specifically tested for in this building.

3.6 Recommendations

In accordance with air sampling results, Building 429 should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 9.2 to assess the extent of LBP in or on the outside of Building 429.

4.0 Subparcel 9.3: General Purpose Warehouse, Building 430

4.1 Description

Subparcel 9.3, which is 2.8 acres in area, consists of Building 430 (DDMT, November 1997). This building is another general purpose warehouse built in 1942; it has a total of 120,000 square feet (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building 430 is used to store clothing and compasses (Woodward-Clyde, November 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, to assess the impact of fumigation.

During the EBS visual inspection, it was observed that staining had occurred as a result of acid leaks from batteries in the forklift area (DDMT, November 1997).

4.2.2 Sampling History

No previous media sampling has occurred at Subparcel 9.3, but ACM was tested for.

4.3 Findings

ACM was identified in the warehouse space (Building 430) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 430, at which fumigation was also suspected, there is no health-based concern due to air.

4.4 Summary of Environmental Concerns

ACM was identified in Building 430 in poor and/or friable condition. Removal of the ACM should be conducted in a timely manner. The building also may have been painted with LBP.

4.5 Identified Data Gaps

LBP was not specifically tested for in Building 430.

4.6 Recommendations

In accordance with representative air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 9.3 to assess the extent of LBP in or on the outside of Building 430.

5.0 Subparcel 9.4: General Purpose Warehouse, Building 449

5.1 Description

Subparcel 9.4, approximately 2.8 acres in size, includes another general purpose warehouse, Building 449 (DDMT, November 1997). This facility was also built in 1942 and has 120,000 square feet (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Building 449 is used to store bulk food (Woodward-Clyde, 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, to assess the impact of fumigation.

5.2.2 Sampling History

No previous media sampling has occurred at Subparcel 9.4, but ACM was tested for.

5.3 Findings

ACM was identified in the warehouse space (Building 449) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 449, at which fumigation was also suspected, there is no health-based concern due to air.

5.4 Summary of Environmental Concerns

ACM was identified in Building 449 in poor and/or friable condition. Removal of the ACM should be conducted in a timely manner. The building also may have been painted with LBP.

5.5 Identified Data Gaps

LBP was not specifically tested for in Building 449.

5.6 Recommendations

In accordance with representative air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 9.4 to assess the extent of LBP in or on the outside of Building 449.

6.0 Subparcel 9.5: General Purpose Warehouse, Building 450

6.1 Description

Subparcel 9.5 is like other subparcels in Parcel 9. It measures 2.8 acres and includes a general purpose warehouse, Building 450 (DDMT, November 1997). This warehouse was built in 1942 and has 120,000 square feet of space (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Building 450 is used to store clothing (Woodward-Clyde, 1996). The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, to assess the impact of fumigation.

6.2.2 Sampling History

No previous media sampling has occurred at Subparcel 9.5, but ACM was tested for.

6.3 Findings

ACM was identified in the warehouse space (Building 450) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 450, at which fumigation was also suspected, there is no health-based concern due to air.

6.4 Summary of Environmental Concerns

ACM was identified in Building 450 in poor and/or friable condition. Removal of the ACM should be conducted in a timely manner. The building also may have been painted with LBP.

6.5 Identified Data Gaps

LBP was not specifically tested for in Building 450.

6.6 Recommendations

In accordance with representative air sampling results, this building should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 9.5 to assess the extent of LBP in or on the outside of Building 450.

TAB

10.0

BRAC Parcel 10 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 10

1.1 Parcel Description

Parcel 10 is a 788,919-square-foot parcel in the central part of the Main Installation in OU-3 and OU-4 (see Figure 1). Parcel 10 consists of six subparcels with the following associated sites: Buildings 549, 550, 649, 650, and the adjacent railroad tracks.

Sampling has occurred at Parcel 10 as part of the BRAC and SS Programs. Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for Parcel 10.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 10 are building contamination (with ACM, LBP, and/or pesticides from fumigation) and soil contamination. ACM was identified in Buildings 549, 550, 649, and 650 in poor and/or friable condition. Abatement or removal of the ACM products was recommended to be performed in a timely manner. Furthermore, based on the early construction dates of the four buildings (Pre-1978), they may have been painted with LBP.

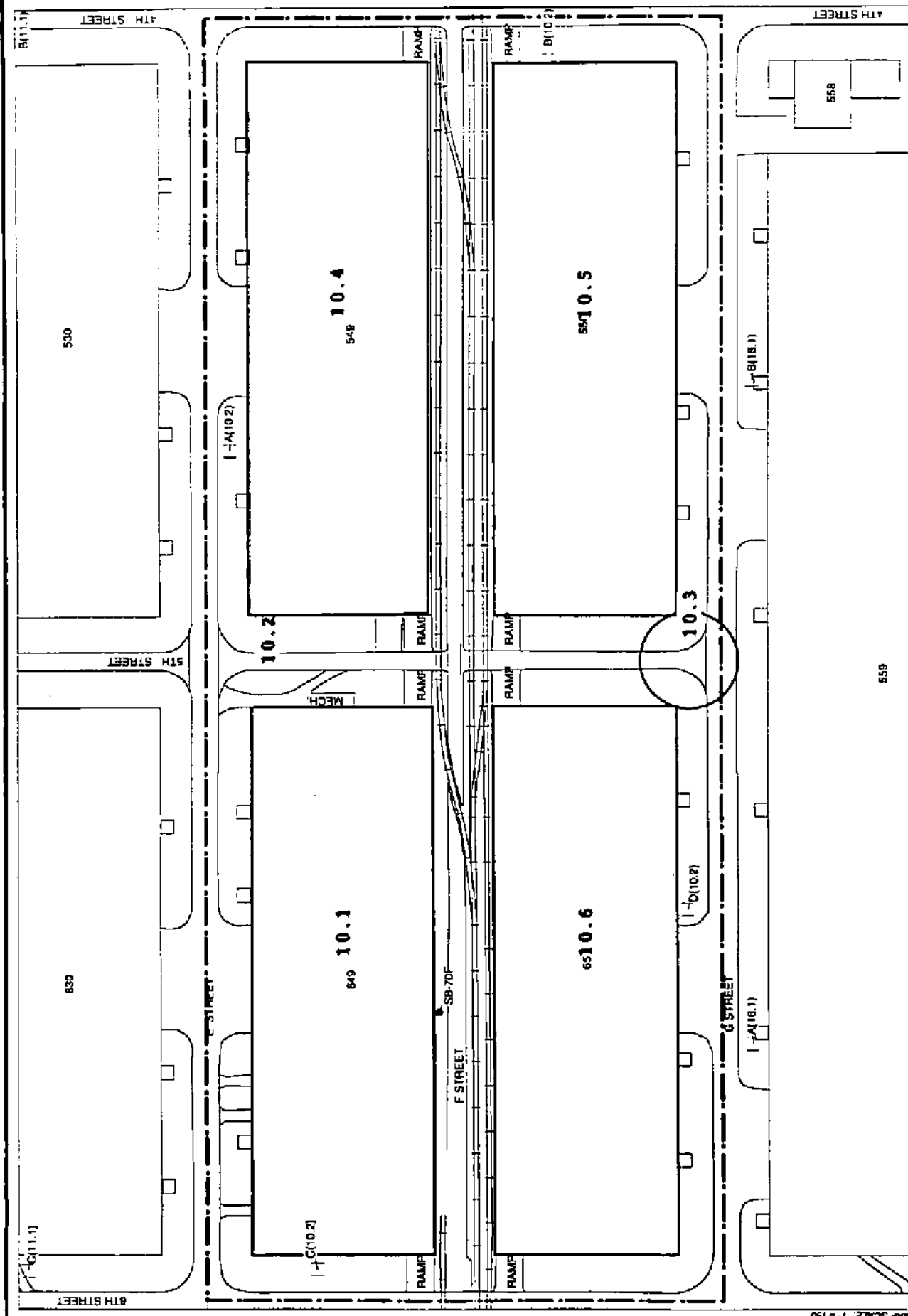
All buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings (Buildings 319, 329, 330, 429, 737, and 835). In those buildings that were sampled, pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

Buildings at Parcel 10 that were potentially fumigated include Buildings 549, 550, and 650. Results of representative air sampling indicate that health-based criteria were not exceeded and these buildings can now be placed into CERFA Category 1.

Dieldrin is the COPC detected in the surface soil at Parcel 10. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation. No COPCs were detected in the subsurface soil at Parcel 10.

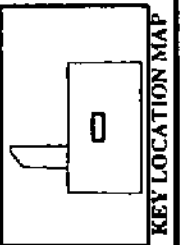
The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

Figure 1
PARCEL 10
Sampling Locations
Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



1" = 10,000'

MAP SCALE: 1" = 150'

Parcel 10 map

TABLE 1

Analytes Investigated for Parcel 10

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹includes surface soil, subsurface soil, and sediment samples.

301 125

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.0 Subparcel 10.1: General Purpose Warehouse, Building 649

2.1 Description

Subparcel 10.1 measures 2.8 acres and includes Building 649, a general purpose warehouse (DDMT, November 1997). This 120,000-square foot warehouse was built in 1953 and is used by Federal Express. It has been used in the past for general storage (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 10.1 is associated with a 1-gallon hydraulic fluid spill reported inside of Building 649 on August 11, 1995 (DDMT, November 1997). In addition, leaking containers of paint, lubricating oil, insecticide, and other oils were reported outside of Building 649 on May 16, 1990 (DDMT, November 1997). The precise locations of the spills are unknown.

2.2.2 Sampling History

No previous media sampling has occurred at Subparcel 10.1, but ACM was tested for.

2.3 Findings

ACM was identified in the warehouse space (Building 649) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

2.4 Summary of Environmental Concerns

ACM was identified in Building 649, and the building may have been painted with LBP.

2.5 Identified Data Gaps

LBP was not specifically tested for in Building 649.

2.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 10.1 to assess the extent of LBP in or on the outside of Building 649.

Subparcel 10.1 is classified as CERFA Category 3.

3.0 Subparcel 10.2: Land Area Surrounding Parcel 10

3.1 Description

The 8.7-acre Subparcel 10.2 is the largest of the subparcels in Parcel 10. It consists of the land area surrounding buildings in Parcel 10, which also contains railroad tracks (DDMT, November 1997).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The area surrounding the buildings in Subparcel 10.2 has the potential to contain pesticides as a result of routine applications. In addition, the railroad tracks at Subparcel 10.2 were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

3.2.2 Sampling History

Four surface soil samples, A(10.2), B(10.2), C(10.2), and D(10.2), were collected at this subparcel during the BRAC Program. One soil boring, SB-70F, was collected under the SS Program.

Subparcel 10.2 also contains Level 1 immunoassay sample points (49 Immunoassay and 50 Immunoassay), which were used to estimate PAH concentrations in surface soil. These data were used to select 10 SS 70/71 soil boring locations near railroad tracks for further investigation across the Main Installation.

3.3 Findings

Pesticides (DDE and DDT) and dieldrin were detected in the surface soil surrounding the buildings in Parcel 10. Dieldrin was detected in the BRAC sampling data at concentrations that exceed the groundwater protection value, the residential and industrial risk-based criteria values, and the background value. Nevertheless, dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

The boring sample collected near the railroad tracks detected concentrations of DDE and DDT, but not dieldrin. The detected DDE and DDT concentrations did not exceed screening criteria or background values. In summary, no COPCs were detected in the boring samples.

The PRE results (CH2M HILL, January 1998) based on BRAC sampling data indicate that carcinogenic risk ratios are greater than one in a million from the presence of dieldrin. Noncarcinogenic chemicals were not detected in the BRAC samples collected at Subparcel 10.2.

3.4 Summary of Environmental Concerns

In summary, dieldrin in the surface soil at Subparcel 10.2 presents a slightly elevated risk for the residential and industrial scenario, with levels above the critical value of 0.5 mg/kg.

3.5 Identified Data Gaps

Additional data may be needed for the upcoming dieldrin sitewide risk evaluation.

3.6 Recommendations

The BCT recommends that Subparcel 10.2 remain a CERFA Category 7 due to the presence of dieldrin (BCT Meeting Minutes, September 1997).

4.0 Subparcel 10.3: Land Area Between General Purpose Warehouses, Buildings 550 and 650

4.1 Description

Subparcel 10.3 is 1/4 acre in size and includes the land area between Buildings 550 and 650 (both of which are general purpose warehouses) (DDMT, November 1997).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 10.3 is associated with a battery acid and hydraulic fluid spill of unknown quantity reported on March 18, 1993 (DDMT, November 1997).

4.2.2 Sampling History

No previous media sampling has occurred at Subparcel 10.3.

4.3 Findings

Sampling at this subparcel has not been conducted to determine the presence of constituents in the soil that potentially resulted from the hydraulic fluid and battery acid spills.

4.4 Summary of Environmental Concerns

Subparcel 10.3 is associated with a spill of hydraulic fluid and battery acid. Data have not been collected to assess whether environmental concerns exist at this subparcel.

4.5 Identified Data Gaps

Two surface soil samples are needed for Subparcel 10.3.

4.6 Recommendations

The BCT (Meeting Minutes, September 1997) recommends collecting two samples from Subparcel 10.3 to test for the constituents appropriate to hydraulic fluid and battery acid. Subparcel 10.3 is classified as CERFA Category 7.

5.0 Subparcel 10.4: General Purpose Warehouse, Building 549

5.1 Description

Subparcel 10.4 spans 2.8 acres and includes Building 549, a general purpose warehouse (DDMT, November 1997). This warehouse was built in 1942 and has 120,000 square feet of space used for general storage (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Subparcel 10.4 is associated with a fumigation chamber located in the west side of Building 549. The building may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, in order to assess the impact of fumigation.

5.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

5.3 Findings

ACM was identified in the warehouse space (Building 549) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in Building 549, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 549, at which fumigation was also suspected, there is no health-based concern due to air.

5.4 Summary of Environmental Concerns

ACM was identified in Building 549, and the building may have been painted with LBP.

5.5 Identified Data Gaps

LBP was not specifically tested for in this building.

5.6 Recommendations

In accordance with representative air sampling results, Building 549 should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 10.4 to assess the extent of LBP in or on the outside of Building 549.

6.0 Subparcel 10.5: General Purpose Warehouse, Building 550

6.1 Description

Like Subparcel 10.4, the 2.8-acre Subparcel 10.5 contains one general purpose warehouse, Building 550 (DDMT, November 1997). This warehouse was also built in 1942, has 120,000 square feet of space, and is used for general storage (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Subparcel 10.5 is associated with acid leaks from batteries in the fork lift area at Building 550. In addition, Building 550 may have been fumigated, but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, in order to assess the impact of fumigation.

6.2.2 Sampling History

No previous media sampling has occurred at Subparcel 10.5, but ACM was tested for.

6.3 Findings

ACM was identified in the warehouse space (Building 550) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in Building 550, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Because the limited air sampling is representative of Building 550, at which fumigation was also suspected, there is no health-based concern due to air.

6.4 Summary of Environmental Concerns

ACM was identified in Building 550, and the building may have been painted with LBP.

6.5 Identified Data Gaps

LBP was not specifically tested for in Building 550.

6.6 Recommendations

In accordance with representative air sampling results, Building 550 should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 10.5 to assess the extent of LBP in or on the outside of Building 550.

7.0 Subparcel 10.6: General Purpose Warehouse, Building 650

7.1 Description

The 2.8-acre Subparcel 10.6 contains the last general purpose warehouse (Building 650) in Parcel 10 (DDMT, November 1997). This 120,000-square-foot warehouse was built in 1942 and is used to store clothing (Woodward-Clyde, 1996).

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

Subparcel 10.6, Building 650, may have been fumigated, but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, in order to assess the impact of fumigation.

7.2.2 Sampling History

No previous media sampling has occurred at Subparcel 10.6, but ACM was tested for.

7.3 Findings

Because the limited air sampling is representative of Building 650, at which fumigation was also suspected, there is no health-based concern due to air.

ACM was identified in the warehouse space (Building 650) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

7.4 Summary of Environmental Concerns

ACM was identified in Building 650, and the building may have been painted with LBP.

7.5 Identified Data Gaps

LBP was not specifically tested for in this building.

7.6 Recommendations

In accordance with representative air sampling results, Building 650 should be reclassified as CERFA Category 1. Furthermore, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 10.6 to assess the extent of LBP in or on the outside of Building 650.

TAB

11.0

BRAC Parcel 11 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 11

1.1 Parcel Description

Parcel 11 is a 602,447-square-foot parcel in the north central part of the Main Installation in OUs 3 and 4 (see Figure 1). Parcel 11 consists of Buildings 529, 530, 630, and the adjacent railroad tracks. A description of each subparcel and its associated sites is discussed below.

Sampling under the BRAC Program has occurred in this parcel, but no SS or RI sampling occurred in this parcel.

Table 1 summarizes the analytes investigated and the analysis methods used at this parcel. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, potential environmental concerns at this parcel are ACM and LBP in the building interiors as well as contaminants in the surrounding surface soils that exceeded screening criteria. Dieldrin in surface soils is the only COPC in this parcel.

All buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. Pesticides (DDT, DDE, heptachlor, alpha-chlordane and gamma-chlordane) were detected in the buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

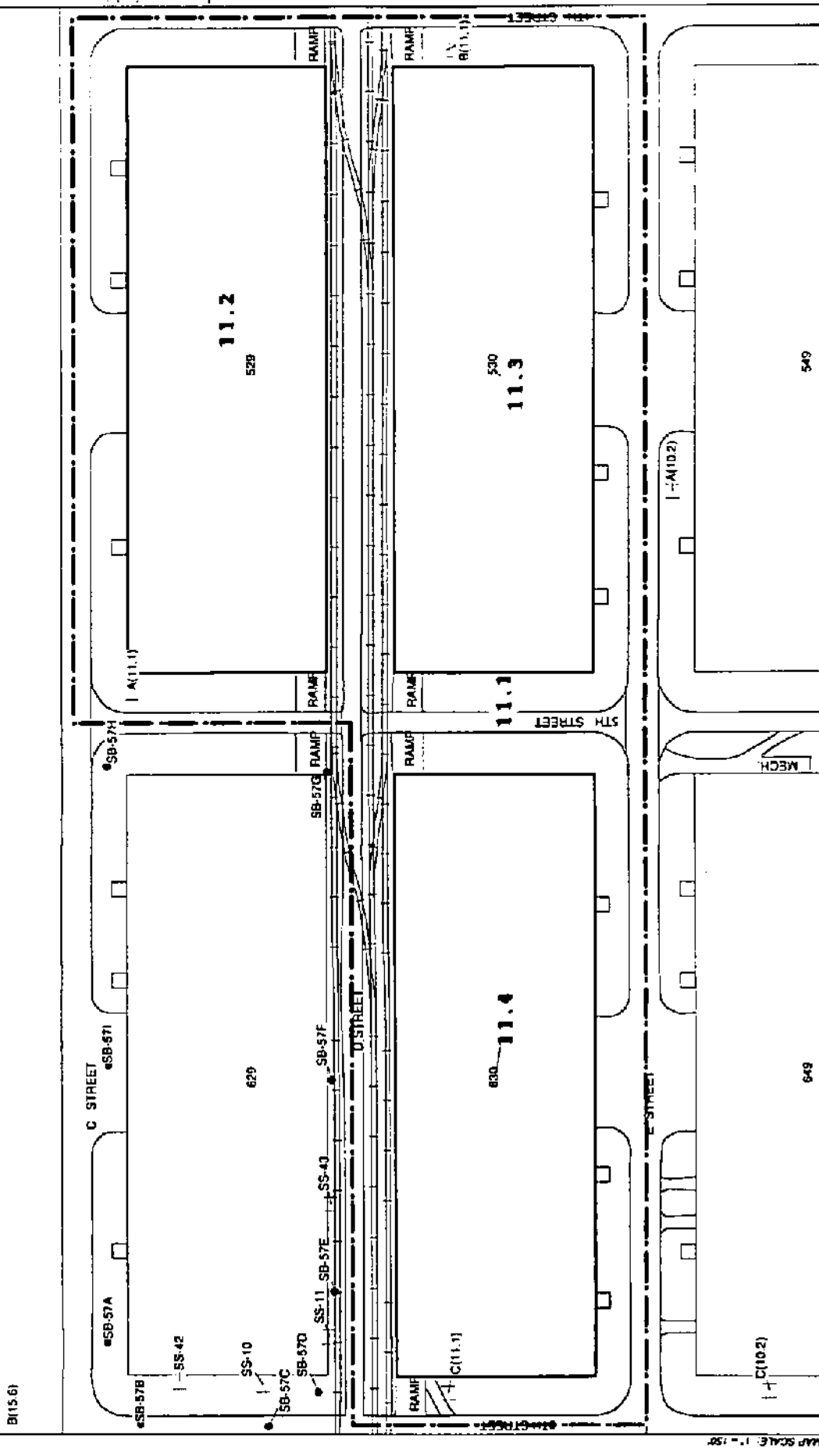
The following sections discuss findings at each subparcel of Parcel 11. Sample-specific PRE calculations are available for some subparcels.

The environmental issues at this parcel consist of surface soil contamination and ACM and LBP in the building interiors.

ACM was identified in all three buildings in this parcel during a previous survey. ACM products were identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. ACM was also identified from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition based on physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Based on the age of construction and findings from other parts of DDMT, LBP was assumed to be in all buildings located in Parcel 11.

Figure 1
PARCEL 11
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

1" = 10,000'

MAP SCALE: 1" = 150'

TABLE 1
Analytes Investigated for Parcel 11
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

Buildings in this parcel that were potentially fumigated include Buildings 529, 530, and 630. Buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. Dieldrin in surface soils at Subparcel 11.1 presents slightly elevated risk for the residential and industrial scenarios, with levels above the critical value of 0.5 mg/kg.

2.0 Subparcel 11.1: Area Surrounding Buildings 529, 530, and 630

2.1 Description

This subparcel measures 4.6 acres and is composed of the land surrounding the buildings in MDRA Parcel 11. Subparcel 11.1 also contains railroad tracks (DDMT, November 1997).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

This subparcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP. DDMT personnel interviews indicated that the surface soils surrounding the buildings at the installation have the potential for pesticide contamination (Woodward- Clyde, 1996).

2.2.2 Sampling History

Three surface soil samples were taken from this subparcel as part of the BRAC Program—A(11.1), B(11.1), and C(11.1). Sampling was performed to provide information about the presence of pesticides and PCBs in surface soil. This subparcel contains Level 1 immunoassay sample points (# 54 and #55 Immunoassay) which were used to estimate PAH concentrations in surface soil. These data were used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

2.3 Findings

Because there are no RI or SS sites within this parcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk, primarily from dieldrin, is above acceptable levels for residential and industrial worker scenarios of 1 in a million (10^{-6}). Although other chlorinated pesticides DDE/DDT were detected, risk ratios were well below 1 in a million. Dieldrin concentration in these samples ranged between 0.98 and 3.4 mg/kg, which is above the critical value of 0.5 mg/kg.

There are no noncarcinogenic chemicals in the BRAC samples from Parcel 11.

In summary, dieldrin at Subparcel 11.1 presents slightly elevated risk for the residential and industrial scenarios, with levels above the critical value of 0.5 mg/kg. There are no noncarcinogenic PRE ratios above the acceptable land-use scenario (industrial) at Subparcel 11.1. Therefore, dieldrin should be further evaluated at this subparcel.

2.4 Summary of Environmental Concerns

2.5 Identified Data Gaps

Additional information about dieldrin in surface soils is required.

2.6 Recommendations

During the BCT Workshop in September 1997, recommendations were made (1) for further assessment of dieldrin in this subparcel and (2) for categorizing this subparcel as CERFA Category 7. In accordance with the dieldrin risk assessment, the Draft PRE (CH2M HILL, January 1998; Table 5-2) recommended recategorizing this subparcel from CERFA Category 7 to Category 6.

3.0 Subparcel 11.2: General Purpose Warehouse, Building 529

3.1 Description

Subparcel 11.2 measures 2.8 acres and contains Building 529, a general purpose warehouse that is used to store clothing. This warehouse was built in 1942 and has 120,000 square feet of space (DDMT, November 1997; Woodward- Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The Visual Site Inspection (Woodward- Clyde, 1996) indicated staining as well as potential contamination resulting from battery acid leads in the fork lift area. In addition, storage of antifreeze, fire-fighting foam, and photographic chemicals was observed in the west end of the building. This building may have been fumigated.

3.2.2 Sampling History

No sampling events were conducted at this subparcel.

3.3 Findings

ACM was identified from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition based on physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Because the limited air sampling is representative of Building 529—where fumigation is also suspected—there is no health-based concern due to air.

3.4 Summary of Environmental Concerns

3.5 Identified Data Gaps

Testing for LBP has not occurred at Building 529.

3.6 Recommendations

During the September 1997 BCT workshop, the BCT recommended that this subparcel remain a CERFA Category 7 pending air sampling. As a result of subsequent air sampling conducted in 1998 in representative buildings, those buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized as Category 1.

4.0 Subparcel 11.3: General Purpose Warehouse, Building 530

4.1 Description

Like Subparcel 11.2, Subparcel 11.3 measures 2.8 acres and contains Building 530, a general purpose warehouse that is used to store clothing. This warehouse was built in 1942 and has 120,000 square feet of space (DDMT, November 1997; Woodward Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

This general purpose warehouse may have been fumigated.

4.2.2 Sampling History

No sampling events were conducted at this subparcel.

4.3 Findings

ACM was identified from earlier surveys (Woodward- Clyde, 1996). ACM products were found in poor or friable condition based on physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Because the limited air sampling is representative of Building 530—where fumigation is also suspected—there is no health-based concern due to air.

4.4 Summary of Environmental Concerns

4.5 Identified Data Gaps

Testing for LBP has not occurred at Building 530.

4.6 Recommendations

During the September 1997 BCT workshop, the BCT recommended that this subparcel remain a CERFA Category 7 pending air sampling. As a result of subsequent air sampling conducted in 1998 in representative buildings, those buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized as Category 1.

5.0 Subparcel 11.4: General Purpose Warehouse, Building 630

5.1 Description

Like Subparcels 11.2 and 11.3, Subparcel 11.4 measures 2.8 acres and contains Building 630, a general purpose warehouse that is used to store clothing. This warehouse was built in 1942 and has 120,000 square feet of space (DDMT, November 1997; Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

This general purpose warehouse may have been fumigated.

5.2.2 Sampling History

No sampling events were conducted at this subparcel.

5.3 Findings

ACM was identified from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition based on physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Because the limited air sampling is representative of Building 630—where fumigation is also suspected—there is no health-based concern due to air.

5.4 Summary of Environmental Concerns

5.5 Identified Data Gaps

Testing for LBP has not occurred at Building 630.

5.6 Recommendations

During the August and September 1997 BCT workshop, the BCT recommended that this subparcel remain a CERFA Category 7 pending air sampling. As a result of subsequent air sampling conducted in 1998 in representative buildings, those buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized as Category 1.

TAB

12.0

301 141

BRAC Parcel 12 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 12

1.1 Parcel Description

Parcel 12 is a 193,644-square-foot parcel in the north-central portion of the Main Installation in OU-4 (see Figure 1). Parcel 12 consists of two subparcels with the following associated sites: Building 629 and the adjacent railroad tracks.

Sampling has occurred at Parcel 12 as part of the initial RIs at DDMT (Law Environmental, 1990) and as part of the CH2M HILL RI Program.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 12 are building contamination (with ACM, LBP, and/or pesticides from fumigation) and soil contamination. ACM was identified in Building 629 in poor and/or friable condition. Abatement or removal of the ACM products was recommended to be performed in a timely manner. Furthermore, based on the early construction date of the building, it may have been painted with LBP.

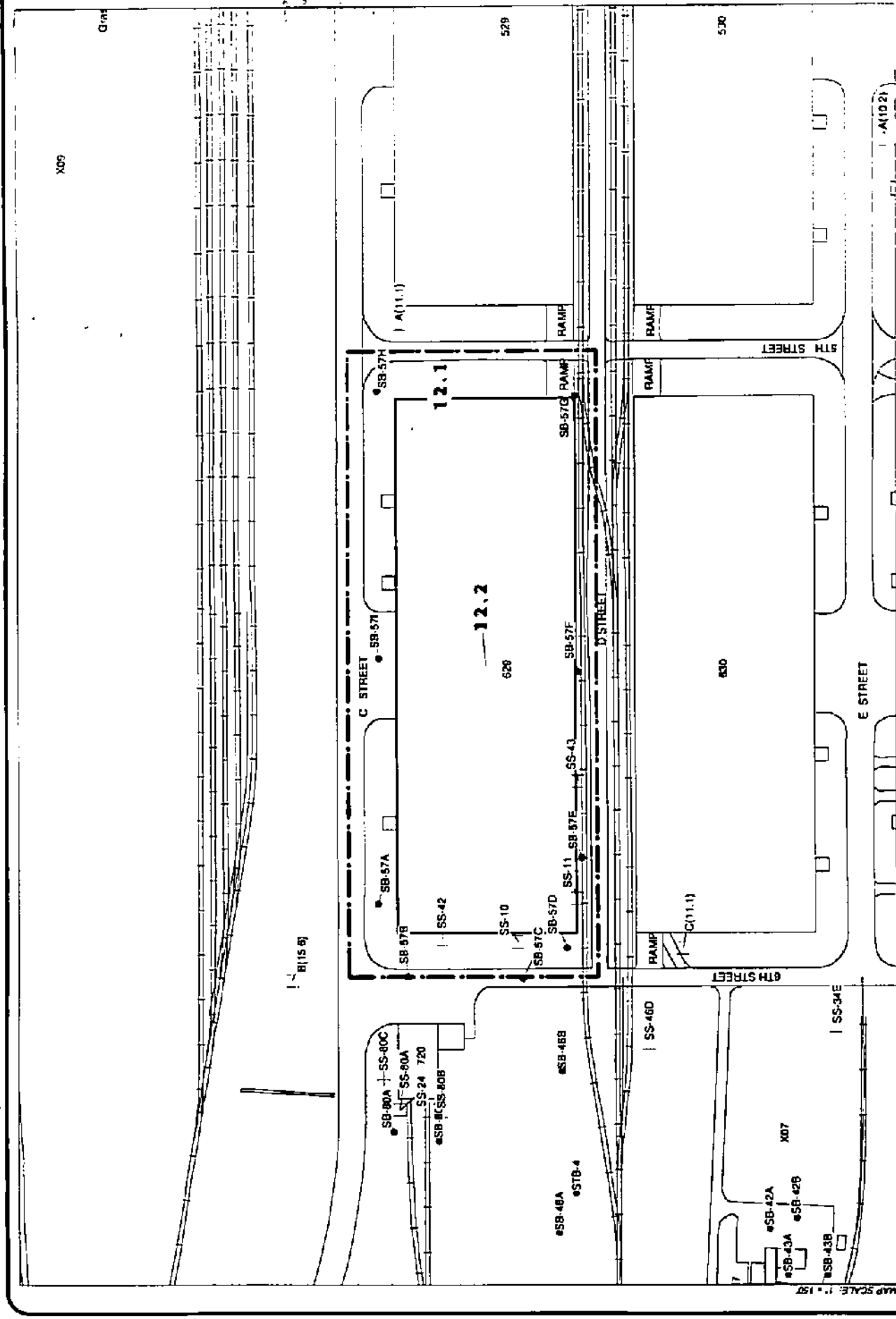
As a result of air sampling in representative buildings, all buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized as CERFA Category 1. In those buildings that were sampled, pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. Buildings at Parcel 12 that were potentially fumigated include Building 629. Results of representative air sampling indicate that health-based criteria were not exceeded, and therefore this building can now be placed into CERFA Category 1.

The COPCs detected in the soil of Parcel 12 include dieldrin, PAH compounds, antimony, arsenic, cadmium, chromium, copper, chrysene, pyrene, DDE, DDT, alpha-chlordane, gamma-chlordane, heptachlor epoxide, and nickel. Dieldrin and PAHs are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation. No COPCs were detected in the subsurface soil at Parcel 12.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental

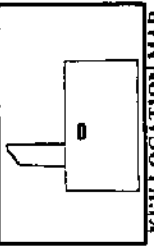
Figure 1
PARCEL 12
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- ▣ Sediment Sampling Locations
- ▬ Parcel Boundary
- ▬ Sub-Parcel Boundary



KEY LOCATION MAP

MAP SCALE: 1" = 150'

PARCEL 12

TABLE 1
Analytes Investigated for Parcel 12
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides GC	SW846 Method 8081
Soil	PNA's GC	SW846 Method 8100

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 12.1: Area Surrounding Buildings in Parcel 12

2.1 Description

Subparcel 12.1, measuring 1.7 acres, includes the land area surrounding the buildings in Parcel 12, which also contains railroad tracks (DDMT, November 1997).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The surface soil in Subparcel 12.1 is associated with RI Site 57, Building 629, the former hazardous materials storage building. Building 629 was used to store DDT, herbicides, solvents, oxidizers, and toxic/corrosive materials. During the RI Site 57 sampling event, surface and subsurface soil samples were collected to assess potential contaminant concentrations in the soil surrounding Building 629.

Subparcel 12.1 is also associated with railroad tracks that have historically been sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Surface soil samples were collected at Subparcel 12.1 during the Law Environmental investigation. These samples include SS-10, SS-11, SS-42, and SS-43. Samples were also collected during the RI Program; all of the RI samples collected were soil borings. The nine RI samples consist of SB-57A through SB-57I.

2.3 Findings

The COPCs detected in the surface soil include PAH compounds—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene—antimony, arsenic, chromium, chrysene, DDE, DDT, alpha-chlordane, cadmium, copper, dieldrin, gamma-chlordane, heptachlor epoxide, and nickel. No COPCs were detected in the subsurface soil; however, lead was detected in concentrations that exceeded the groundwater protection value.

The PAH compounds and dieldrin detected in the surface soil are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation. Pesticides are found in the surface soil throughout the Main Installation as a result of routine application.

The concentrations of metals (including arsenic, chromium, copper, nickel, and cadmium) that exceeded background and screening criteria values were detected in the previous investigation conducted by Law Environmental in 1990. The more recent sampling detected no exceedances of metals.

The PRE results (CH2M HILL, January 1998) indicate that carcinogenic risk ratios were within one in a million for an industrial worker; but, the ratio was exceeded for a residential receptor due to the presence of DDE and DDT just southwest of Building 629 near the railroad tracks.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

The noncarcinogenic ratios were below a value of one for both industrial and residential receptors.

2.4 Summary of Environmental Concerns

There are elevated concentrations of PAHs and organic compounds in the soils at the west side of Building 629. Further risk evaluation is necessary for Subparcel 12.1.

2.5 Identified Data Gaps

Additional surface soil samples are needed. Two surface soil samples should be collected on the west side of Building 629, one should be collected on the north side, and one on the south side. Each of the four sample locations should be biased toward possible waste handling or waste release areas (BCT Meeting Minutes, September 1997).

Additional data may be needed for the upcoming dieldrin and PAH sitewide risk evaluation.

2.6 Recommendations

The BCT recommends that Subparcel 12.1 remain as CERFA Category 7 pending results of the additional surface soil sampling. The surface soil on the west end of Building 629 is a potential early removal candidate pending the outcome of the soil sampling (BCT Meeting Minutes, September 1997).

3.0 Subparcel 12.2: General Purpose Warehouse, Building 629

3.1 Description

The 2.8-acre Subparcel 12.2 consists of Building 629, a general purpose warehouse (DDMT, November 1997). This warehouse was built in 1942 and has 120,000 square feet of space used for clothing storage and receiving (Woodward-Clyde, 1996). Building 629 was used to store DDT, herbicides, solvents, oxidizers, and toxic/corrosive materials.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 12.2 is associated with Building 629. A 6-gallon nitric acid spill was reported inside Building 629 on April 23, 1990 (DDMT, November 1997). Additional past spills inside of this building include an unknown amount of hydrofluoric acid.

Building 629 may have been fumigated but no data exist for verification (DDMT, November 1997). Air sampling was conducted in other buildings known to have been fumigated, in order to assess the impact of fumigation.

Furthermore, during the RI Site 57 sampling event, surface and subsurface soil samples were collected to assess potential contaminant concentrations in the soil surrounding Building 629. (Refer to Section 2.3 for Findings.)

3.2.2 Sampling History

No previous media sampling has occurred at Subparcel 12.2, but ACM was tested for.

3.3 Findings

ACM was identified in the warehouse space (Building 629) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Because the limited air sampling is representative of Building 629, at which fumigation was also suspected, there is no health-based concern due to air.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM was identified in Building 629, and the building may have been painted with LBP.

Other environmental concerns are associated with the soils surrounding Building 629. The soil at the west end of Building 629 may be a potential early removal candidate due to elevated concentrations of PAHs and organic compounds (BCT Meeting Minutes, September 1997).

3.5 Identified Data Gaps

LBP was not specifically tested for in Building 629.

3.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 12.2 to assess the extent of LBP in or on the outside of Building 629.

In accordance with representative air sampling results, Building 629 should be reclassified as Category 1.

TAB

13.0

BRAC Parcel 13 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 13

1.1 Parcel Description

Parcel 13 is a 449,078-square-foot parcel in the northeast corner of the Main Installation in OU-4 (see Figure 1). Parcel 13 consists of five subparcels with the following associated sites: Buildings 210, 211, Gate No. 23 (Building 23), Gate No. 24 (Building 24), and Gate No. 25 (Building 25) as well as the adjacent railroad tracks.

Sampling has occurred at Parcel 13 as part of the BRAC Program.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns for Parcel 13 are ACM and LBP in the building interiors as well as surface soil contamination. Specific concerns were identified as: ACM was identified in Buildings 23 and 210; Buildings 23, 24, 25, and 210 may have been painted with LBP; and dieldrin was detected in the surrounding surface soil.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 13.1: Sentry Station Gate No. 23

2.1 Description

Subparcel 13.1 measures less than 0.01 acre and includes Sentry Station Gate No. 23, which is used as a sentry post (DDMT, November 1997). This gate was built in 1942 and has 67 square feet of space (Woodward-Clyde, 1996).

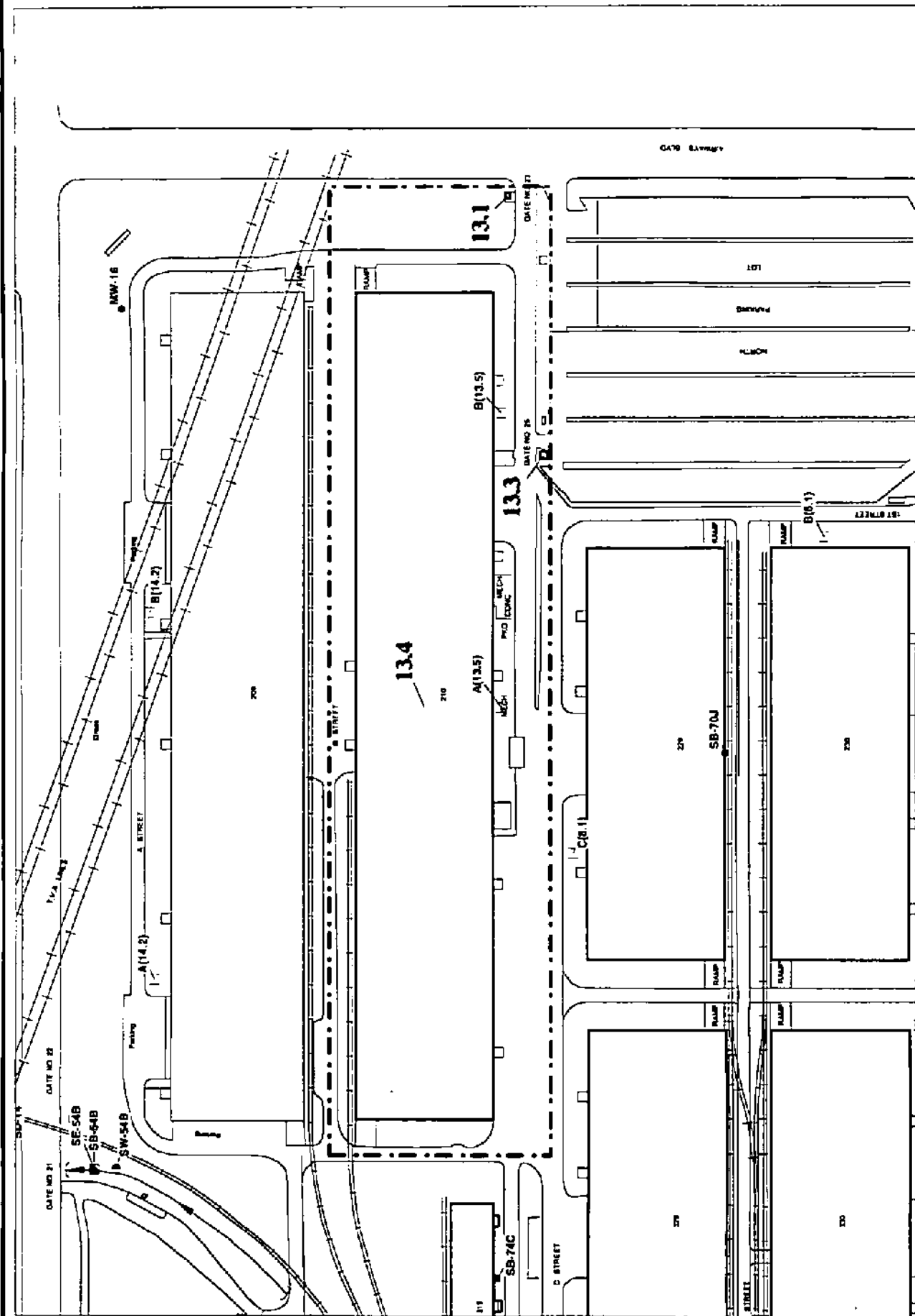
2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

There has been no report of hazardous materials or petroleum products storage at Sentry Station Gate No. 23; nor has there been report of release or migration from an adjacent property of hazardous materials or petroleum products (DDMT, November 1997).

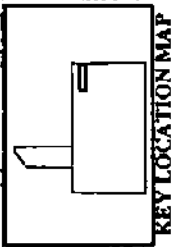
Figure 1
PARCEL 13
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- - - Sub-Parcel Boundary



1" = 10,000'

MAP SCALE: 1" = 200'

Parcel 13

TABLE 1
Analytes Investigated for Parcel 13
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Notes: ¹ Includes surface soil, subsurface soil, and sediment samples.		

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2.2 Sampling History

No previous media sampling has occurred at Subparcel 13.1, but ACM was tested for.

2.3 Findings

ACM was identified in Building 23 from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in the sentry post building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

2.4 Summary of Environmental Concerns

ACM was identified in the sentry post building, which also may have been painted with LBP.

2.5 Identified Data Gaps

LBP was not specifically tested for in the sentry post building.

2.6 Recommendations

The BCT recommends that Subparcel 13.1 remain as CERFA Category 1 (BCT Meeting Minutes, September 1997). If renovation or demolition is planned for the sentry post building, urgent removal of the ACM would be required.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 13.1 to assess the extent of LBP in or on the outside of the sentry post building.

3.0 Subparcel 13.2: Sentry Station Gate No. 24

3.1 Description

The 0.01-acre Subparcel 13.2 also includes a gate (DDMT, November 1997). Sentry Station Gate No. 24 was built in 1961 and has 100 square feet of space used as a sentry post (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

There has been no report of hazardous materials or petroleum products storage at Sentry Station Gate No. 24; nor has there been report of release or migration from an adjacent property of hazardous materials or petroleum products (DDMT, November 1997).

3.2.2 Sampling History

No previous media sampling has occurred at Subparcel 13.2, but ACM was tested for.

3.3 Findings

The sentry post building was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

The sentry post building may have been painted with LBP.

3.5 Identified Data Gaps

LBP was not specifically tested for in this building.

3.6 Recommendations

Subparcel 13.2 should be classified as CERFA Category 1. XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of the sentry post building.

4.0 Subparcel 13.3: Sentry Station Gate No. 25

4.1 Description

Subparcel 13.3, which is very similar to Subparcel 13.2, measures 0.01 acre and includes a gate, Sentry Station Gate No. 25 (DDMT, November 1997). This gate, which is used as a sentry post, was also built in 1961 and includes 100 square feet of space (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

There has been no report of hazardous materials or petroleum products storage at Sentry Station Gate No. 25; nor has there been report of release or migration from an adjacent property of hazardous materials or petroleum products (DDMT, November 1997).

4.2.2 Sampling History

No previous media sampling has occurred at Subparcel 13.3, but ACM was tested for.

4.3 Findings

The sentry post building was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. LBP was not specifically tested for in this building. However, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

The sentry post building may have been painted with LBP.

4.5 Identified Data Gaps

LBP was not specifically tested for in this building.

4.6 Recommendations

The BCT recommends that Subparcel 13.3 remain as CERFA Category 1 (BCT Meeting Minutes, September 1997). XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of the sentry post building.

5.0 Subparcel 13.4: Warehouse/Office Space, Building 210

5.1 Description

The 5.5-acre Subparcel 13.4 includes Building 210, an administration and computer center and general purpose warehouse (DDMT, November 1997). Built in 1942 this 240,000-square-foot facility is used for offices and storage. At one time, a small photography developing laboratory was located here (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Building 210 is the location of proposed NFA Site 41 (satellite drum accumulation areas). Site 41 consists of five satellite drum storage locations throughout the installation that have been used since 1985 to store drums of waste materials. The units vary in the number and size of drums they contain, but all units are located on concrete floors within buildings. Building 210 contains one unit, and the stored wastes include waste solvents, empty product containers, and solvent rags. The drums and areas are maintained in good condition and are regulated. All wastes collected in these areas are transported to the DRMO before offsite disposal (CH2M HILL, September 1994).

5.2.2 Sampling History

No previous media sampling has occurred at Subparcel 13.5, but ACM was tested for.

Although no analytical data are available for this subparcel as Site 41, the subparcel was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action.

5.3 Findings

ACM was identified in Building 210 from earlier surveys (Woodward-Clyde, 1996).

ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Because these conditions were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. Although LBP was not specifically tested for in

Building 210, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

5.4 Summary of Environmental Concerns

A minimal level of risk exists because the hazardous materials in these units (NFA Site 41) are controlled through the design and handling criteria regulated under RCRA. Because of these design and procedural controls, there is no significant risk to human health or the environment (CH2MHILL, September 1994).

5.5 Identified Data Gaps

LBP was not specifically tested for in Building 210.

5.6 Recommendations

The recommendation for NFA Site 41 in the Draft NFA Report (CH2M HILL, September 1994) is that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the site is No Action under CERCLA. This alternative will consist of leaving the subparcel as is. No additional sampling or monitoring will be necessary, because the conditions at Subparcel 13.4 are protective of human health and the environment.

The BCT recommends classifying this subparcel as CERFA Category 2 (BCT Meeting Minutes, September 1997). Furthermore, restricted access to the areas in Building 210 with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 13.4 to assess the extent of LBP in or on the outside of Building 210.

6.0 Subparcel 13.5: Building 211 and Areas Surrounding the Buildings in Parcel 13

6.1 Description

Subparcel 13.5 has 3.9 acres of space and includes Building 211 and the surrounding land area (DDMT, November 1997). This 988-square-foot facility built in 1988 is used for battery backup power for DRMS (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

This subparcel consists of Building 211 and the areas surrounding the buildings in Parcel 13. According to DDMT personnel, the surface soil that surrounds the buildings has the potential to contain pesticides as a result of routine application (DDMT, November 1997). In addition, Subparcel 13.5 contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing pentachlorophenol PCP.

6.2.2 Sampling History

Sampling efforts at this subparcel include two surface soil samples, A(13.5) and B(13.5), collected under the BRAC Program.

This subparcel also contains one Level 1 immunoassay sample point of seventy (69 Immunoassay) which were used to estimate PAH concentrations in surface soil. This data was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

6.3 Findings

Building 211 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. LBP was not specifically tested for in Building 211. However, this building was constructed in 1988, after the use of LBP was discontinued, and therefore should not contain LBP.

Dieldrin was detected in the BRAC surface soil samples at concentrations that exceeded the background and residential risk based criteria. The PRE results (CH2M HILL, January 1998) indicate that the carcinogenic risk ratio is below one in a million for the industrial worker, but is above one in a million for the residential receptor due to the presence of dieldrin. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation. No noncarcinogenic chemicals were detected in the BRAC samples.

6.4 Summary of Environmental Concerns

In summary, dieldrin presents slightly elevated risks for the residential and industrial scenarios. However, the detected concentrations of dieldrin were below the critical value of 0.5 mg/kg.

6.5 Identified Data Gaps

There are no known data gaps for Subparcel 13.5. Additional data may be needed for the sitewide dieldrin risk evaluation.

6.6 Recommendations

No further evaluation is recommended for this subparcel. However, the BCT recommends that this subparcel remain as CERFA Category 7 due to the dieldrin issue (BCT Meeting Minutes, September 1997).

TAB

14.0

BRAC Parcel 14 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 14

1.1 Parcel Description

Parcel 14 is a 540,274-square-foot parcel in the northeast corner of the Main Installation in OU-4 (Figure 1). Parcel 14, which consists of Building 209 and the adjacent railroad tracks, is discussed by subparcel below.

Sampling under the BRAC Program has occurred, but no SS or RI sampling has occurred in this parcel.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, potential environmental concerns at this parcel are ACM and LBP in the building interior and concentrations of dieldrin in the surrounding surface soils that exceed screening criteria.

The environmental concerns at this parcel consist of surface soil contamination and ACM and LBP in the building interiors.

Dieldrin at Subparcel 14.2 presents slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. Therefore, a focused evaluation of dieldrin should be conducted at this subparcel.

ACM products, in poor or friable condition, were found in both subparcels during previous surveys. Restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. LBP was assumed to be in the buildings as based on the age of construction and findings from other parts of DDMT.

Subparcel 14.1 should remain a CERFA Category 1, while Subparcel 14.2 should be reclassified as a CERFA Category 6. Table 2 summarizes the analytical methodologies that will be used on the proposed samples. Necessary additional sampling is discussed by subparcel below.

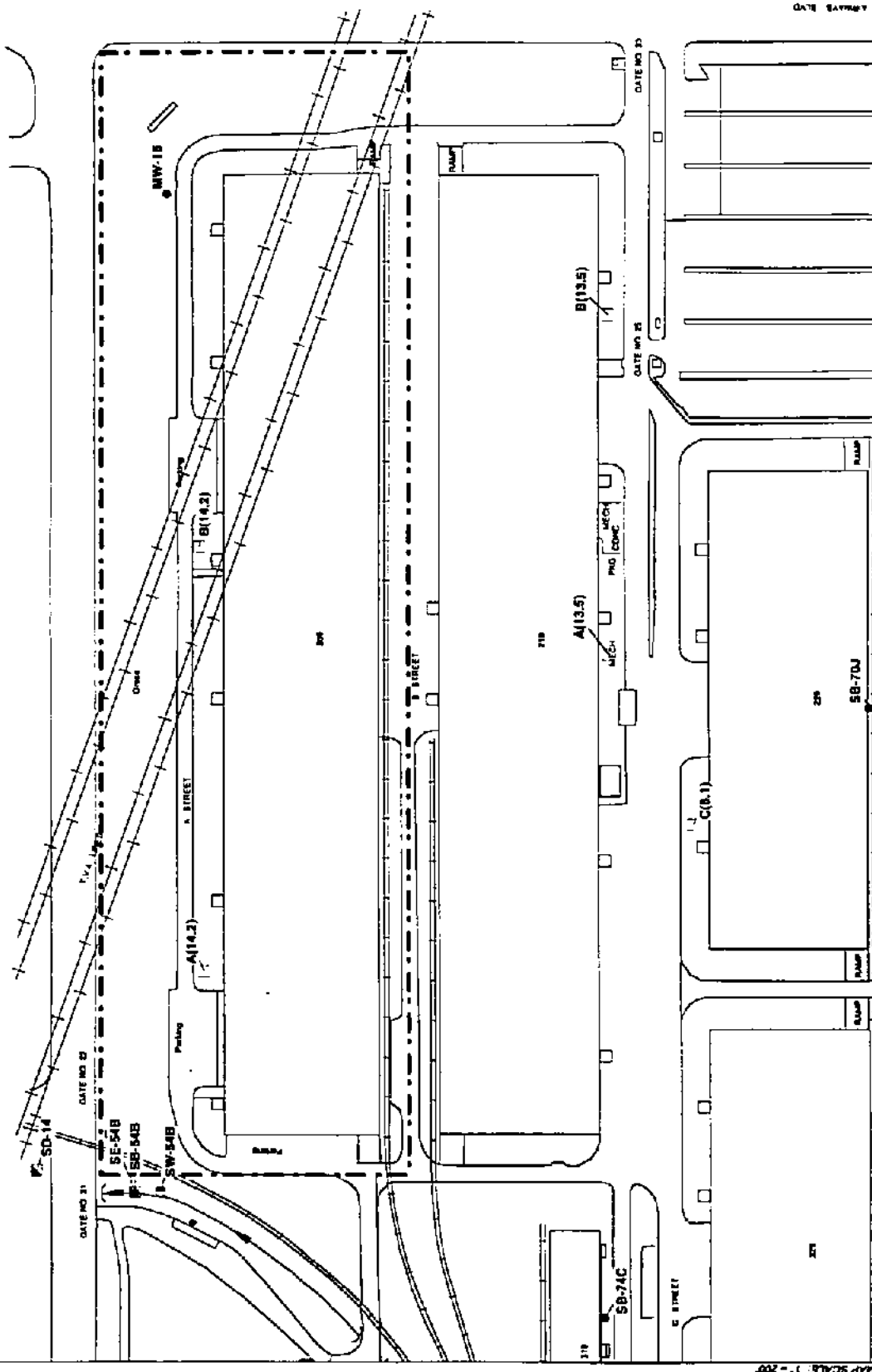
2.0 Subparcel 14.1: Gate 22 Sentry Station

2.1 Description

This subparcel, occupying less than 0.01 acre, is associated with Sentry Station Gate 22. This gate was built in 1942 and measures 67 square feet (Woodward-Clyde, 1996).

Figure 1
PARCEL 14
Sampling Locations

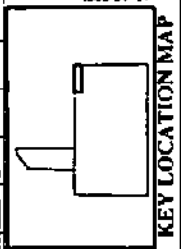
Defense Distribution Depot Memphis, TN



MAP SCALE: 1" = 200'

LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

1" = 10,000'

TABLE 1

Analytes Investigated for Parcel 14

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

This subparcel is used for entrance and exit through Gate 22.

2.2.2 Sampling History

No previous sampling has occurred at this subparcel.

2.3 Findings

No storage of hazardous substances or petroleum products has been documented, nor has there been a reported release or migration of hazardous substances or petroleum products from an adjacent property (Woodward-Clyde, 1996).

ACM was identified in Building 22 from earlier surveys (Woodward-Clyde, 1996).

ACM products were found in poor or friable condition as based on physical damage or natural deterioration. Because these were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

2.4 Summary of Environmental Concerns

2.5 Identified Data Gaps

No data gaps were identified for this subparcel; however, LBP was not specifically tested in this building.

2.6 Recommendations

A recommendation was made—during the BCT Meetings in fall 1997—that Subparcel 14.1 should be classified as CERFA Category 1. No additional sampling is proposed.

3.0 Subparcel 14.2: Building S209, Administrative/General Purpose Warehouse and Surrounding Areas

3.1 Description

Subparcel 14.2, measuring 10.5 acres, is made up of Building S209 and the area surrounding the buildings in MDRA Parcel 14 (BCP, 1997). Building S209 is an administrative/general purpose warehouse not currently in use, although it was used for general storage in the past.

This warehouse was built in 1942 and measures 240,000 square feet (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

This subparcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP. DDMT personnel interviews indicate the potential for pesticide contamination in the surface soils.

In addition, this subparcel is associated with a 12,000-gallon heating oil tank that was located outside of Building 209, but was removed in July 1994. No documented release has been associated with this tank (Woodward-Clyde, 1996). According to the Draft Final BCP Plan (DDMT, November, 1997), two additional 500-gallon tanks were located on the north side of Building 209—one for heating oil and one for blower blow-down water. Both were installed in 1942 and removed in July 1995.

3.2.2 Sampling History

Two surface soil samples were taken in this subparcel as part of the BRAC Program—A(14.1) and B(14.1). Sampling was performed to provide information about the presence of pesticides and PCBs in surface soil. This subparcel contains one Level 1 immunoassay sample point (# 70) which was used to estimate PAH concentrations in surface soil. This data point was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

3.3 Findings

Because there are no RI or SS sites within this parcel; risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk, primarily from dieldrin, is slightly above acceptable levels for residential and within the range for the industrial worker scenarios of 1 in a million (10^{-6}). Although other chlorinated pesticides, DDT and chlordane, were detected, risk ratios were well below 1 in a million. Dieldrin concentrations in these samples ranged between 1.0 and 1.3 mg/kg, which are above the critical value of 0.5 mg/kg.

There are no noncarcinogenic chemicals in the BRAC samples from Subparcel 14.

In summary, dieldrin at Subparcel 14.2 presents slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. There are no noncarcinogenic PRE ratios above the acceptable land use scenario (industrial) at Subparcel 14.2. Therefore, a focused evaluation of dieldrin should be conducted at this subparcel.

Earlier surveys (Woodward-Clyde, 1996) identified ACM in the warehouse/office space of Building S209. ACM products were found in poor or friable condition as based on physical damage or natural deterioration. Because these were considered a potential health hazard to personnel, restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented.

Although LBP was not specifically tested in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

3.4 Summary of Environmental Concerns

3.5 Identified Data Gaps

Testing for LBP has not occurred at Building S209.

3.6 Recommendations

In accordance with the dieldrin risk assessment, the Draft PRE (CH2M HILL, January 1998; Table 5-2), recommended recategorizing this subparcel from CERFA Category 2 to CERFA Category 6.

TAB

150

BRAC Parcel 15 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 15

1.1 Parcel Description

Parcel 15 is a 2,727,748-square-foot parcel in the north central part of the Main Installation in OU-4 (see Figure 1). Parcel 15 consists of six subparcels with the following associated sites: Buildings 301, 304, 305, 306, 307, 308, 309, 319, 416, 417, 701 and 702, the open storage areas X09, Y10 and Y50, and the adjacent railroad tracks.

Sampling has occurred at Parcel 15 as part of the initial RIs at DDMT (Law Environmental, 1990). In addition, sampling under the BRAC and the SS Programs has occurred at this parcel.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In summary, the environmental concerns at Parcel 15 are ACM and LBP in the building interiors as well as soil or surface water contamination.

ACM was identified in Buildings S309, T416, T417, and S702. Furthermore, all four buildings may have been painted with LBP based on their early construction dates. ACM was not identified in Building 304 but the building may or may not contain LBP (the construction date of the building is unknown and tests for LBP were not conducted).

The COPCs detected at Parcel 15 include antimony; arsenic; dissolved arsenic; cadmium; chromium; copper; lead; DDD; DDT; DDE; PAH compounds; 1,1,2,2-tetrachloroethane; dieldrin; TCDD equivalent; trichloroethene; and PCP.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 15.1: Sentry Station Gate No. 15

2.1 Description

Subparcel 15.1 measures less than .01 acre and consists of the Sentry Station Gate No. 15 (DDMT, November 1997). This sentry station was built in 1979 and measures 196 square feet (Woodward-Clyde, 1996).

301 168

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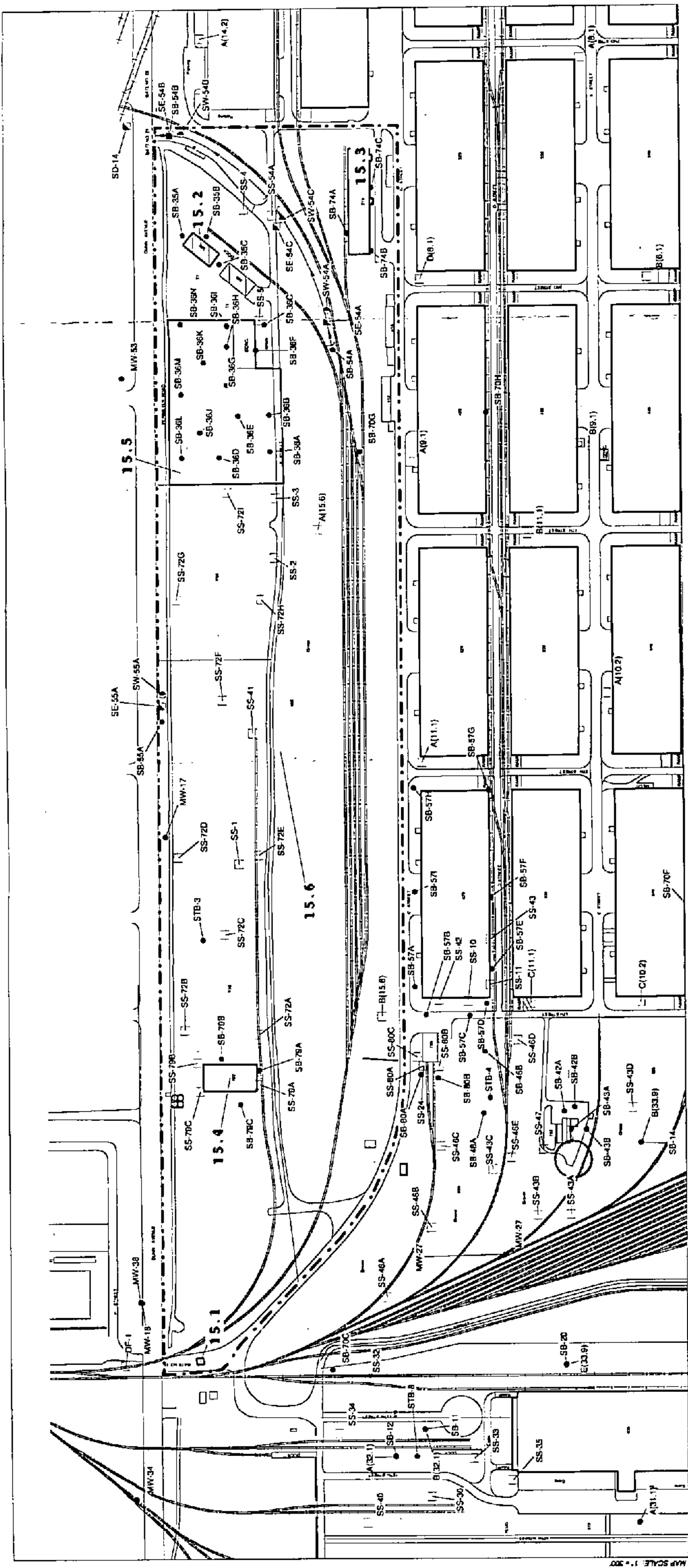
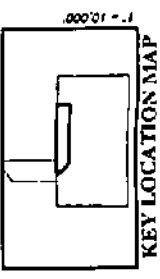


Figure 1
PARCEL 15
Sampling Locations
Defense Distribution Depot Memphis, TN



- LEGEND**
- Surface Soil Sampling Locations
 - Soil Boring Sampling Locations
 - Surface Water Sampling Locations
 - Sediment Sampling Locations
 - Parcel Boundary
 - Sub-Parcel Boundary

TABLE 1
 Analytes Investigated for Parcel 15
 Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Dioxins/Furans	CLP-SOW DFLM1.1
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	PNA's GC	SW846 Method 8100
Surface Water	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Surface Water	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Surface Water	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	TAL Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	TCL Pesticides GC	SW846 Method 8081
Surface Water	TCL Dioxins/Furans	CLP-SOW DFLM1.1

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

301 171

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Sentry Station Gate No. 15 is used as a sentry post. Storage of hazardous substances or petroleum products has not been reported, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products (Woodward-Clyde, 1996).

2.2.2 Sampling History

No previous media sampling has occurred at Subparcel 15.1, but ACM was tested for.

2.3 Findings

ACM was identified in the guard station Building from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. LBP was not specifically tested for in the guard station building. However, the building was constructed in 1979, after the use of LBP was discontinued, and it should not contain LBP.

2.4 Summary of Environmental Concerns

The environmental concerns at this subparcel are ACM and LBP in the building interior.

2.5 Identified Data Gaps

LBP was not specifically tested for in this building.

2.6 Recommendations

ACM was identified in the guard station building. If renovation or demolition is planned, urgent removal of the ACM would be required. Subparcel 15.1 is classified as CERFA Category 1 (BCT Meeting Minutes, September 1997).

3.0 Subparcel 15.2: Warehouse/Storage, Building 308

3.1 Description

Subparcel 15.2 measures approximately 0.01 acre and consists of Building 308. This building was built in 1944 and contains 540 square feet of space (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 15.2 is associated with SS 35, DRMO Building 308 (DDMT, November 1997). Building 308 is a roofed, tin-sided shed with a concrete floor. It consists of a 2-foot-high concrete berm and foundation on all four sides with 3-inch concrete or asphalt dikes at the entrances (CH2M HILL, March 1998). Wastes are segregated and stored on pallets.

Building 308 consists of DRMO storage for hazardous waste and batteries. Samples at SS 35 were collected outside of Building 308. The area outside of Building 308 is geographically associated with Subparcel 3.6 (which includes all areas surrounding buildings in Parcel 15), but findings from the SS sampling event will be discussed under this subparcel chapter.

3.2.2 Sampling History

Building 308 was tested for ACM. In addition, the following borings were collected from around the building during the SS 35 sampling event: SB35A, SB35B and SB35C. Furthermore, a surface soil sample (SS4) was collected about 100 feet downslope from and to the southeast of this screening site during the Law Environmental RI.

3.3 Findings

ACM was identified in the warehouse/storage (Building 308) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in Building 308, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

COPCs for SS 35, the area surrounding Building 308, include arsenic in the surface soil and total chromium and lead in the subsurface soils. The Law Environmental sample detected arsenic at 33 mg/kg, which exceeds the background-based BCT criteria of 20 mg/kg. The more recent samples, which are closer to Building 308, show that arsenic concentrations in surface soil at SS 35 are below screening criteria. Both chromium and lead levels in the subsurface soil are similar to the range of background levels.

3.4 Summary of Environmental Concerns

In general, the environmental concerns at Subparcel 15.2 are ACM and LBP in the interior of Building 308 interior, and soil contamination. ACM was identified in the building, which also may have been painted with LBP.

Screening Site 35 does not exhibit waste accumulation-related contamination. Low levels of the metals arsenic, chromium, and lead appear to be naturally occurring based on the surface and subsurface soil data (CH2M HILL, March 1998).

Carcinogenic and noncarcinogenic risks for SS 35, DRMO Building 308, are presented in the Draft PRE (CH2M HILL, January 1998). There are no carcinogenic chemicals above background at this site. The noncarcinogenic ratios for an industrial worker and a residential receptor were below a value of one. In accordance with the PRE evaluation, SS 35 does not pose a human health concern for workers or residents.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building 308. In addition, re-sampling is needed near sample SS4 to confirm elevated arsenic levels observed during historical sampling.

3.6 Recommendations

No Further Action is necessary for this subparcel. The Draft PRE (CH2M HILL, January 1998; Table 5-2) suggests that this subparcel can be reclassified to CERFA Category 3 from the BCT recommendation of a Category 7. XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 15.2 to assess the extent of LBP in or on the outside of Building 308.

4.0 Subparcel 15.3: Hazardous Waste Storage, Building 319

4.1 Description

Building 319, a DRMO hazardous waste storage building, is part of the 0.41-acre Subparcel 15.3 (DDMT, November 1997). Built in 1942, Building 319 measure 18,000 square feet and is used to store alcohol and other flammable toxics (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building 319 contains flammables and toxics. A spill was reported on November 18, 1991, inside of Building 319, but absorbent was applied to clean up the spill (DDMT, November 1997).

Building 319 is associated with SS 74, flammables and toxics (West End Building 319). The screening site is the area where loading and unloading of flammable materials was conducted; samples were collected just outside of the building. The samples collected during the screening site sampling event are geographically located in Subparcel 3.6 (the area surrounding the buildings in Parcel 15) but will be discussed here in Subparcel 15.3.

4.2.2 Sampling History

Screening site borings (SB74A, SB74B, and SB74C) are associated with this subparcel and were collected just outside of Building 319. Six air samples, 319-1 through 319-6, were collected within Building 319 at Subparcel 15.3.

4.3 Findings

ACM was identified in the Inflammable materials storehouse (Building 319) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

COPCs for SS 74, the area surrounding Building 319, include chromium and lead in the subsurface soil at 3- to 20-foot depths. Subsurface soils normally have slightly elevated lead and chromium levels, which are due to natural soil formations at these depths. As indicated in the Draft PRE (CH2M HILL, January 1998), there are no carcinogenic risk ratios above 1 in a

million for industrial and residential scenarios. The noncarcinogenic ratios were also below a value of 1.0 for both the industrial and residential scenarios.

4.4 Summary of Environmental Concerns

The environmental concerns at Subparcel 15.3 are ACM and LBP in the building interior. The surface soil surrounding Building 319 is free of site-related contamination.

4.5 Identified Data Gaps

LBP was not specifically tested for in this building.

4.6 Recommendations

No Further Action is recommended for Subparcel 15.3. The Draft PRE suggests that this subparcel can be reclassified to a CERFA Category 3 (CH2M HILL, January 1998; Table 5-2) from the BCT recommendation of a Category 7.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 15.3 to assess the extent of LBP in or on the outside of Building 319.

5.0 Subparcel 15.4: Hobby Shop, Building S702

5.1 Description

The Hobby Shop, Building S702, is located at Subparcel 15.4, which measures 0.28 acres (DDMT, November 1997). This building, currently unused, was formerly used to store fuels, other petroleum products, and other miscellaneous liquids. The Hobby Shop was built in 1941 and measures 12,000 square feet (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Building S702 is associated with SS 79, fuels, miscellaneous liquids, wood, and paper. The screening site is located adjacent to Building 702 in an area where activities such as materials storage, and loading and unloading were conducted. The samples collected during the sampling event were taken just outside of the building. The samples are geographically located in Subparcel 15.6 (the area surrounding the buildings in Parcel 15) but will be discussed here in Subparcel 15.4.

5.2.2 Sampling History

Twenty-foot soil borings (SB79A, SB79B, and SB79C) were selected to investigate potential leaching/percolation releases to surface soil during the screening site sampling event. Three SS surface soil samples (SS79A, SS79B, and SS79C) were also collected.

5.3 Findings

ACM was identified in Building S702 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

COPCs identified for SS 79, which is associated with Subparcel 15.4, include arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chromium, dieldrin, and lead. Dieldrin and PAH compounds, which have been identified by the BCT as sitewide COPCs, will be evaluated in an upcoming sitewide risk evaluation.

The COPCs detected in the surface soil were from Sample SS79A, which was collected at the adjacent railroad tracks just south of Building 702. The COPCs detected in the subsurface soils were from Samples SB79A and SB79C, of which SB79A is located south of Building 702 near the railroad tracks and SB79C is located west of Building 702.

5.4 Summary of Environmental Concerns

In summary, the environmental concerns at this subparcel are ACM and LBP in the building interior, and soil contamination. ACM was identified in Building S702, and the building may have been painted with LBP due to its early construction date.

An elevated concentration of chromium (140 mg/kg) was detected in the subsurface soil Sample SB79C at the 18- to 20-foot depth interval. Typical chromium concentrations in soils at this depth at other DDMT locations range up to 40 mg/kg. Samples from SB79C at the surface, 6-foot, and 10-foot depths ranged from 23.8 to 39.1 mg/kg and are considered to be naturally occurring. Samples from the two other nearby borings at this site (SB79A and SB79B) at the 18- to 20-foot depth had chromium concentrations of 39.9 and 32.3 mg/kg, respectively. Therefore, it is not likely that the 140 mg/kg value is related to contamination migrating from the surface. Additional sampling is needed to confirm the elevated concentration of chromium at this depth. If the chromium remains elevated in this additional sample, groundwater sampling for metals may be necessary (CH2M HILL, March 1998).

5.5 Identified Data Gaps

Additional subsurface soil sampling is needed near Sample SB79C. Building 319 was not tested for LBP.

5.6 Recommendations

The BCT Meeting Minutes (September 1997) report that Building S702 is being demolished and recommend that a risk assessment be performed to determine that No Further Action is required at this subparcel, thus, categorizing this subparcel as CERFA Category 1. The Draft PRE suggests reclassifying Subparcel 15.4 to CERFA Category 7 (CH2M HILL, January 1998; Table 5-2) from the BCT recommendation of a Category 1. Furthermore, it is expected that once a risk assessment is performed, the subparcel will be classified Category 3. Confirmation of the elevated chromium concentration in the subsurface soil is needed to establish whether groundwater is potentially impacted by metals.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 15.4 to assess the extent of LBP in or on the outside of Building S702.

6.0 Subparcel 15.5: Screening Sites 36, 37, 38, and 39

6.1 Description

Subparcel 15.5, measuring 3.3 acres, is an area in Parcel 15 made up of the DRMO Hazardous Waste Concrete Storage Pad (SS 36), the DRMO Hazardous Waste Gravel Storage Pad (SS 37), the DRMO Damaged/Empty Lubricant Container Area (SS 38), and the DRMO Damaged/Empty Hazardous Materials Drum Storage Area (SS 39) (DDMT, November 1997). Screening Site 36 has a concrete pad that measures 300 by 60 feet, and SS 37 has a gravel pad measuring 800 by 200 feet; both of these sites have been operating since 1966. Screening Site 38 and SS 39 have been used for an unknown period of time. Screening Site 39 is composed of two areas separated by 30 yards (Woodward-Clyde, 1996).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Screening Sites 36 through 39 are open storage areas. SS 36 (concrete area) and SS 37 (gravel area) were used as hazardous waste storage pads; SS 38 was used to store hazardous materials drums; and SS 39 was used to store lubricant containers (DDMT, November 1997). Overall, most of the area was used to store hazardous materials until shipment to a licensed hazardous waste disposal facility (CH2M HILL, March 1998).

6.2.2 Sampling History

A total of thirteen soil borings were collected at Subparcel 15.5 during the SS Program. The borings SB-36A and SB-36B, and SB-36D through SB-36N were collected in Subparcel 15.5. Two other samples—SS boring SB-36C and the Law Environmental sample, SS-5—were collected just outside the geographical boundary of Subparcel 15.5.

6.3 Findings

The COPCs identified during the SS sampling event were metals (arsenic, chromium, antimony, lead, cadmium, and copper), DDT, and 1,1,2,2-tetrachloroethane. PAHs were detected in the historical sample, SS5, but more recent sampling at boring SB36C indicates that PAHs are no longer occurring at this location. Generally higher concentrations of the COPCs detected at Sample SS5 were not reflected in the more recent sampling events.

Arsenic was detected in surface soils at all locations sampled within Subparcel 15.5. Total chromium was found throughout the subparcel at all depths, with the greatest concentration of chromium consistently occurring at the 18- to 20-foot depth. Low levels of PAH compounds are found in the historical surface soil sample and will be addressed on a facility-wide basis as part of an upcoming risk evaluation.

6.4 Summary of Environmental Concerns

As indicated in the Draft PRE (CH2M HILL, January 1998), the risk ratio for an industrial worker was 7 in a million; the risk ratio for a residential receptor was 64 in a million.

The carcinogenic risks are due to the presence of arsenic in soil samples. The noncarcinogenic ratio was below a value of one for an industrial worker and above a value of one for the residential receptor due to the presence of low levels of inorganic chemicals, chromium, copper, nickel, antimony, lead, and zinc.

Chlorinated solvents were detected in the subsurface soils north of the concrete pad between Perimeter Road and the pad. Groundwater quality within and downgradient of Subparcel 15.5 should be further evaluated for the presence of chlorinated solvents.

6.5 Identified Data Gaps

Groundwater at the subparcel should be sampled to evaluate whether the chlorinated solvents have migrated to the regional aquifer.

6.6 Recommendations

Potential risks associated with arsenic require further comparison of the background population with the data collected. Groundwater at and downgradient from this subparcel should be monitored. The BCT recommends that this subparcel be classified as a CERFA Category 6 and that the soil should be removed (BCT Meeting Minutes, September 1997). The Draft PRE suggests that this subparcel be reclassified to CERFA Category 7 (CH2M HILL, January 1998; Table 5-2) from the BCT recommendation of a Category 6. Furthermore, it is expected that once a risk assessment is performed, Subparcel 15.5 will be CERFA Category 3.

7.0 Subparcel 15.6: Buildings 301, 304, 305, 306, 307, S309, T416, T417, 701, and Surrounding Areas

7.1 Description

At 43.8 acres, Subparcel 15.6 is the largest of the Parcel 15 subparcels and consists of Buildings 301 (Scale House), 304 (Switch Station), 305 (Concrete Storage DRMO Yard), 306 (Concrete Storage DRMO Yard), 307 (DRMO Load and Unload Deck), S309 (DRMO Storage), T416 (Installation Services Warehouse), T417 (Installation Services Warehouse), 701 (Pump House), and surrounding areas (DDMT, November 1997). These surrounding areas include open storage areas X09, Y10, and Y50 (which includes the former Y60 open storage area) and the adjacent railroad tracks. Building S309 was built in 1944 and is 540 square feet in size. Both Buildings T416 and T417 were built in 1943; Building T416 has 2,600 square feet, and Building T417 has 3,120 square feet. No construction or size information is available for Buildings 301, 304, 305, 306, 307, 701, and open storage areas X09, Y10, and Y50 (Woodward-Clyde, 1996).

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

Subparcel 15.6 is associated with SS 54 (DRMO East Stormwater Runoff Canal), SS 55 (DRMO North Stormwater Runoff Area), and SS 72 (Waste Oil (PDO Yard) Surface Application for Dust Control). SS 54 and SS 55 are canals that collect the stormwater runoff from the DRMO yard

and other DDMT facilities. SS 72 is an area where waste oil containing PCP was used for dust control (DDMT, November 1997).

In addition, the following activities are associated with this subparcel: spills of dark liquid were observed on the concrete pad just south of Building 702 and west of Building 629 during the EBS visual inspection; a 4,000-gallon heating oil tank was removed from the outside of Building 319 in July 1994; and a 30-gallon spill of solvent was reported just south of Building 309 on December 2, 1991 (DDMT, November 1997).

Subparcel 15.6 is also associated with railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

7.2.2 Sampling History

Six surface soil samples (SS-1 through SS-5 and SS-41) and one boring (STB-3) were collected at this subparcel under the Law Environmental remedial investigation. Screening Site soil borings collected at this subparcel include SB-79A through SB-79C, SB-36C, SB-35A through SB-35C, SB-54A and SB-54B, SB-74A through SB-74C, SB-55A, and SB-70G. Screening Site surface soil samples collected at this subparcel include SS-79A through SS-79C, SS-72A through SS-72I, and SS-54A. The Screening Site Program also included the surface water samples SW-54A through SW-54-C and SW-55A. Sediment samples collected under the SS Program include SE-54A through SE-54C and SE-55A. Two BRAC surface soil samples, A(15.6) and B(15.6), were also collected at this subparcel.

Subparcel 15.6 contains Level 1 immunoassay sample points (56 Immunoassay through 68 Immunoassay) which were used to estimate PAH concentrations in surface soil. These data were used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

7.3 Findings

Building 304

Building 304 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. The year of construction for Building 304 is unknown, and therefore LBP may or may not be present.

Building S309

ACM was identified in Building S309 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in Building S309, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Building T416

ACM was identified in Building T416 from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in Building T416, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Building T417

ACM was identified in Building T417 from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in Building T417, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Screening Site 54—DRMO East Stormwater Runoff Canal

SS 54 is a cement lined stormwater ditch. Potential historical releases have been investigated by sampling soils underneath the cement lining as well as by collecting surface water after a rain event. In accordance with the data collected so far, low levels of historically used organo-chlorine pesticides were detected in the soils of the ditch. Their concentrations are similar to those found elsewhere at the Main Installation. Many of the organic constituents that were found are at concentrations similar to background levels.

The COPCs at SS 54 include arsenic, dieldrin, and TCDD equivalent for surface soils; lead in subsurface soils; dissolved arsenic and DDT in surface water; and lead, DDT, DDD, and DDE in sediments. Dieldrin is a sitewide COPC and will be evaluated on a sitewide basis.

The PRE results (CH2M HILL, January 1998) indicate that the carcinogenic risk ratio for an industrial worker is 7.5 in a million and the residential scenario is 67 in a million, due to the presence of arsenic. The noncarcinogenic ratio for an industrial worker is below a value of 1.0 and for a residential receptor is slightly above a value of 1.0, mostly from the presence of lead and other metals.

Screening Site 55—DRMO North Stormwater Runoff Area

The COPCs at SS 55 include lead, DDT, and PCP in surface water and DDD, DDE, DDT, and dioxins/furans in sediments and surface soil. There are no COPCs for subsurface soil.

The ditch was sampled during a rain event. Detected concentrations were compared with sediment and surface water criteria protective of aquatic life, which is a conservative evaluation of the data. The dioxins and furans in surface soils, surface water, and sediments are similar to background levels. Lead was detected in all sampling media but only the surface water concentrations exceeded the background and screening criteria value. DDD, DDE, and DDT exceeded screening criteria in the surface water and sediment samples. PCP was only detected in the surface water. The PCP and pesticides detected in the surface water could be from suspended soil particulates.

Screening Site 72—Waste Oil (PDO Yard) Surface Application for Dust Control

The SS 72 samples were collected near the railroad tracks in the open storage area Y10. Additional samples were collected in the open storage area Y50.

The COPCs detected at SS 72 include arsenic, chromium, lead, and cadmium. The PRE results (CH2M HILL, January 1998) indicated that the carcinogenic industrial and residential risk

ratios are greater than 10^{-6} due to the elevated concentrations of arsenic. Noncarcinogenic risk ratios are less than one.

Open Storage Area X09

Two BRAC surface soil samples were collected in open storage area X09. The PRE results based on the sample data (CH2M HILL, January 1998) indicate that the carcinogenic risk ratio for an industrial worker and residential receptor is above one in a million due to the presence of dieldrin in one of the samples, A(15.6). Noncarcinogenic contaminants were not detected.

7.4 Summary of Environmental Concerns

In summary, the environmental concerns at Subparcel 15.6 are ACM and LBP in the building interiors and soil or surface water contamination. ACM was identified in Buildings S309, T416, and T417. Furthermore, all three buildings may have been painted with LBP based on their early construction dates. ACM was not identified in Building 304 but the building may or may not contain LBP (the construction date of the building is unknown, and tests for LBP were not conducted).

For SS 54, low levels of metals, chlorinated pesticides, and dioxins were detected in soils beneath the cement lining of the canal at concentrations similar to surface soils. Stormwater contained arsenic, DDT, and DDE that could be from the soil particulates in the surface water sample. Because of the lack of organic contaminants, there are no significant risks to human health at this site.

For SS 55, low levels of historically used pesticides and ambient atmospheric deposition dioxins and furans were detected in surface soils. Stormwater and sediment samples collected during the rain events indicated the presence of the same constituents at concentrations similar to the soil samples. The detected DDT and dioxins/furans were above aquatic life protection based criteria. However, detected concentrations of each constituent are low and similar to those detected elsewhere on the base as well as background.

For SS 72, there are no organic contaminants of concern. The observed inorganic chemicals are naturally occurring, are nutritionally essential, and are within the same range as background concentrations. Thus, there are no significant human health concerns from related site contamination. However, there are slight risks at SS 72 due to the presence of elevated concentrations of arsenic.

7.5 Identified Data Gaps

LBP was not specifically tested for in Buildings 304, S309, T416, and T417.

7.6 Recommendations

No Further Action is recommended for SS 54 and SS 55. The BCT recommends classifying Subparcel 15.6 as CERFA Category 7 due to the presence of dieldrin (BCT Meeting Minutes, September 1997). The Draft PRE suggests that this subparcel be reclassified to CERFA Category 3 (CH2M HILL, January 1998; Table 5-2) from the BCT recommendation of a Category 7.

It is recommended that a risk assessment be performed to determine that No Further Action is required for SS 72. XRF testing, wipe testing, paint chip sampling, or soil testing may be

necessary at Subparcel 15.6 to assess the extent of LBP in or on the outside of Buildings 304, S309, T416, and T417.

TAB

16.0

BRAC Parcel 16 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 16

1.1 Parcel Description

Parcel 16 is a 395,177-square-foot parcel in the center of the Main Installation, in OU-3 (see Figure 1). Parcel 16 consists of two subparcels and the following associated sites: Buildings S558 (a concrete pad) and S559 (a general purpose warehouse) and the adjacent railroad tracks.

No sampling was performed before the BRAC characterization of 1996; however, sampling under the BRAC Program has occurred at Parcel 16. No SS or RI sites are present, and no RI and SS sampling have been performed at this parcel.

Table 1 summarizes the analytes investigated at Parcel 16 and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, the environmental concerns at this site are ACM, LBP, and fumigation in the building interiors as well as contaminants that exceeded screening criteria in the surrounding surface soil. No subsurface soil samples were taken.

All buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. Pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in the buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

The environmental concerns at this parcel consist of surface soil contamination and ACM and LBP in the building interiors.

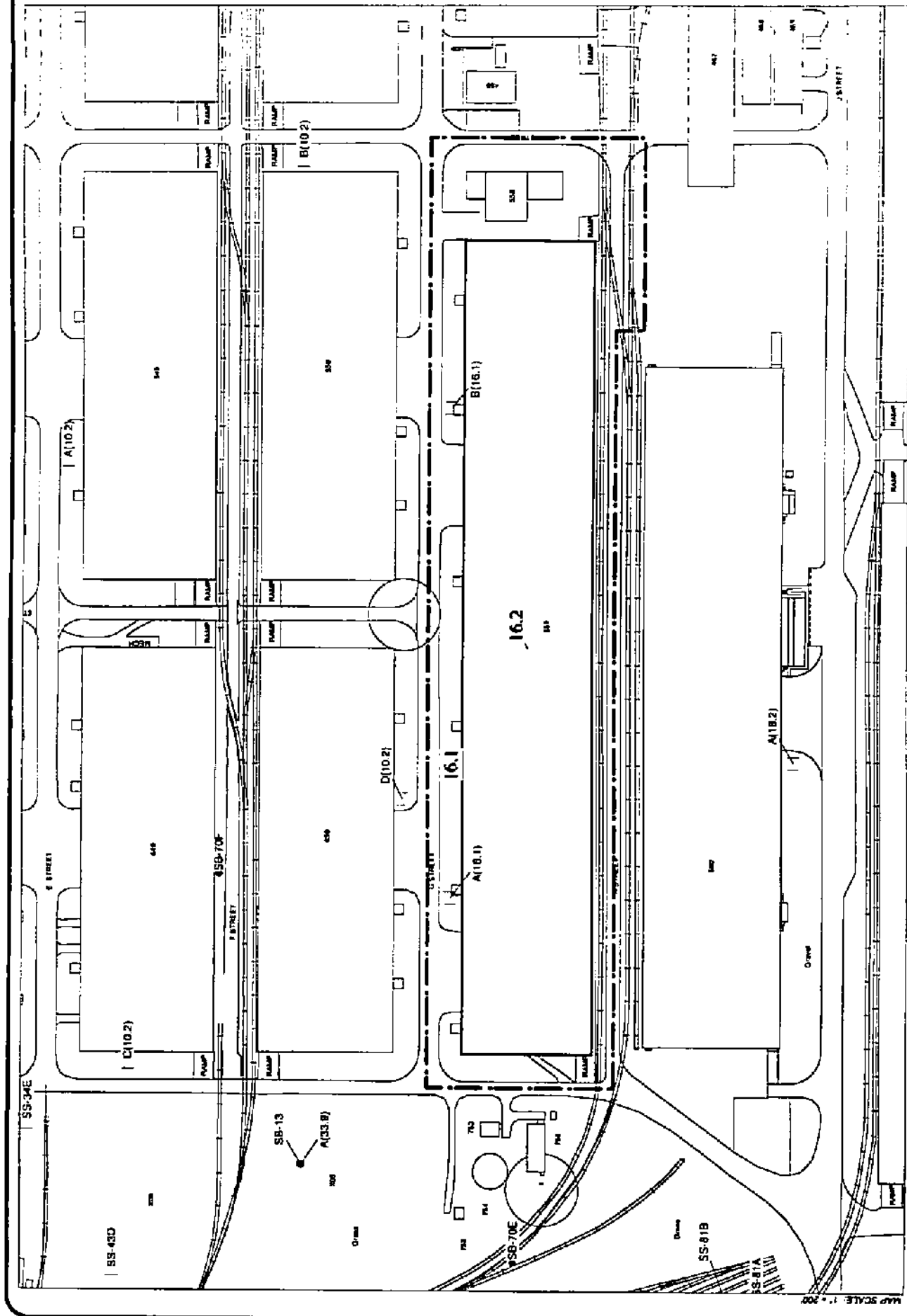
Dieldrin at Subparcel 16.1 presents a slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. Therefore, a focused evaluation of dieldrin should be conducted at this subparcel.

In Parcel 16, Building 559 potentially was fumigated. Results of representative air sampling indicate that health-based criteria were not exceeded, and therefore these buildings can now be placed into CERFA Category 1.

In accordance with the results of the Draft PRE (CH2M HILL, 1998; Table 5-2), the BCT Meetings (September, 1997), the Draft Final BCP (DDMT, November, 1997), and the results of air sampling, Subparcel 16.2 is a CERFA Category 1, and Subparcel 16.1 changes to a

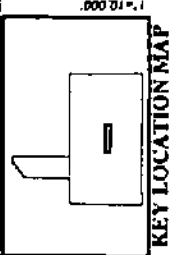
Figure 1
PARCEL 16
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

MAP SCALE: 1" = 200'

Parcel 16 map

TABLE 1

Analytes Investigated for Parcel 16

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:
¹Includes surface soil, subsurface soil, and sediment samples.

Category 6. Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Necessary additional sampling is discussed by subparcel below.

2.0 Subparcel 16.1: Outdoor Area and Railroad Tracks

2.1 Description

Subparcel 16.1 is a 2.8-acre area that includes the land surrounding the buildings in MDRA Parcel 16, which includes railroad tracks (DDMT, November, 1997).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The surface soils surrounding buildings at the installation may contain pesticides as a result of routine pesticide application at the facility. In addition, Subparcel 16.1 contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Sampling at Subparcel 16.1 was performed to provide information on the presence of pesticides and PCBs in surface soil. BRAC surface soil samples A(16.1) and B(16.1) were collected at this subparcel. This subparcel contains one Level 1 immunoassay sample point (# 43) which was used to estimate PAH concentrations in surface soil. This data point was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

2.3 Findings

One COPC was found in the surface soil at Subparcel 16.1. Dieldrin was detected in sample A(16.1) at 0.19 mg/kg and in sample B(16.1) at 1.3 mg/kg. These detections exceed the background value, the residential and industrial RBC for soil ingestion, and the groundwater protection value.

The PRE performed for Subparcel 16.1 (CH2M HILL, January, 1988) reported that because there are no SS or RI sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk, primarily from dieldrin, is slightly above for the residential scenario and within the range for the industrial worker scenario of 1 in a million (10^{-6}). Although other chlorinated pesticides, DDT, and chlordane were detected, the risk ratios were well below 1 in a million. Dieldrin concentrations in the two samples were 0.19 mg/kg and 1.3 mg/kg; the latter sample exceeds the critical value of 0.5 mg/kg.

No noncarcinogenic chemicals exceeded screening level concentrations in the BRAC samples from Subparcel 16.1.

2.4 Summary of Environmental Concerns

In summary, dieldrin at Subparcel 16.1 presents a slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. There are no

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

noncarcinogenic PRE ratios above acceptable land use levels (industrial) at Subparcel 16.1. Therefore, a focused evaluation of dieldrin should be conducted at this subparcel.

2.5 Identified Data Gaps

Additional information may be necessary to complete the focused evaluation of dieldrin in this subparcel.

2.6 Recommendations

The BCT Meetings (September, 1997) recommendation for Subparcel 16.1 was that it should be classified as CERFA Category 7. However, in accordance with the results of the PRE, the category is changed to CERFA Category 6, primarily due to the dieldrin concerns.

3.0 Subparcel 16.2: General Purpose Warehouses, Building S558 and Building S559

3.1 Description

Subparcel 16.2, measuring 5.5 acres, consists of Buildings S558 and S559 (DDMT, November 1997). Building S558 is a 48,000-square-foot concrete pad that used to be the location of a general purpose warehouse. Building S559 is a general purpose warehouse that is currently empty but was formerly used to store clothes and miscellaneous equipment. Built in 1942, this structure has 240,000 square feet of storage space (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Building S559 may have been fumigated (DDMT, November, 1997).

3.2.2 Sampling History

Building S559 was tested for ACM.

3.3 Findings

ACM was identified in Building S559 from earlier surveys (Woodward-Clyde, 1996). ACM products were identified in non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM was identified in Building S559. Also, the building may have been painted with LBP.

3.5 Identified Data Gaps

LBP was not specifically tested for in this building.

3.6 Recommendations

During the BCT Meetings (September 1997), it was recommended that air sampling be performed. In accordance with representative air sampling results, Building S559 should be reclassified as CERFA Category 1.

TAB

170

BRAC Parcel 17 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 17

1.1 Parcel Description

Parcel 17 is a 448,439-square-foot parcel in the east central part of the Main Installation in OU-3 (Figure 1). Parcel 17 consists of Buildings 359 and P459 as well as the area surrounding the buildings and a standby generator.

No sampling was performed before the BRAC characterization of 1996. Sampling under the BRAC Program has occurred in this parcel, but no RI or SS sampling has occurred at Parcel 17—because there are no RI or SS sites present.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, the environmental concerns at Parcel 17 are ACM, LBP, and fumigation in the building interiors as well as contaminants that exceeded screening criteria in the surrounding surface soil. No subsurface soil samples were collected.

All buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. In those buildings that were sampled, pesticides—DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane—were detected. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

Dieldrin at Subparcel 17.2 in one sample presents slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. Therefore, a focused evaluation of dieldrin should be conducted at this subparcel.

ACM was not tested for in Building 459. ACM was identified in the medical warehouse (Building 359) from earlier surveys (Woodward-Clyde, 1996) and was found in poor or friable condition. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

LBP was assumed not to be in Building 459 and was assumed to be in Building 359, based on the respective age of construction.

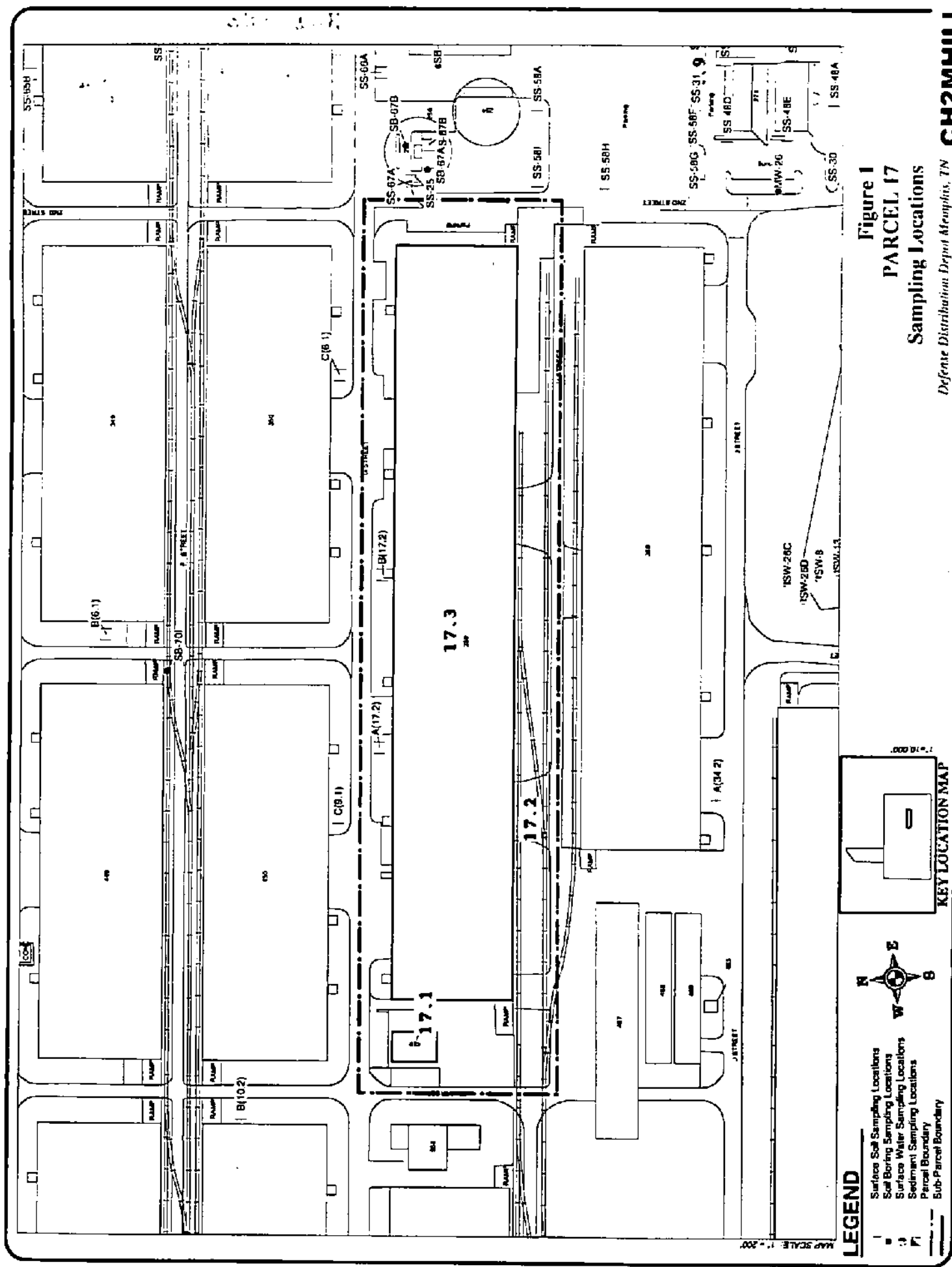


TABLE 1

Analytes Investigated for Parcel 17

Defense Distribution Depot, Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

Buildings in Parcel 17 that were potentially fumigated include Building 359. Results of representative air sampling indicate that health-based criteria were not exceeded and therefore this building can now be placed into CERFA Category 1.

In accordance with the results of the Draft PRE (CH2M HILL, 1998; Table 5-2), the BCT meetings (September, 1997), the Draft Final BCP (DDMT, November, 1997), and the results of air sampling, Subparcels 17.1 and 17.3 are classified as CERFA Category 1, and Subparcel 17.2 changes to a Category 6. Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Necessary additional sampling is discussed by subparcel below.

2.0 Subparcel 17.1: Facility Training, Building 459

2.1 Description

Subparcel 17.1 is a 0.09-acre subparcel that consists of Building 459, training facility (DDMT, November, 1997). This building, measuring 4,000 square feet, was built in 1990 and primarily houses classrooms. Before the building was constructed, Subparcel 17.1 was used as a parking lot (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 17.1 has been used as a training facility.

2.2.2 Sampling History

No previous sampling has occurred at this subparcel.

2.3 Findings

Storage of hazardous substances or petroleum products has not been documented, nor has there been release or migration from an adjacent property of hazardous substances or petroleum products (Woodward-Clyde, 1996).

The training facility (Building 459) was not included in the Asbestos Identification Survey (Woodward-Clyde, 1996). It was designated "NA," meaning that it may be destroyed as indicated in the EBS (Woodward-Clyde, 1996). However, current plans are for it to be moved (personal communication, Denise Cooper, DDMT, April, 1998).

Based on a post-1978 construction date, it is assumed that LBP is not present in this building.

2.4 Summary of Environmental Concerns

Building 459 may contain ACM, although based on the type of building and the probable date of construction, it is unlikely to contain ACM.

2.5 Identified Data Gaps

ACM and LBP have not been tested for at this building.

TABLE 2
 Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 8010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.6 Recommendations

According to the Draft Final BCP (DDMT, November, 1997), no remediation is necessary for this subparcel, and this subparcel should remain CERFA Category 1.

3.0 Subparcel 17.2: Outdoor Area and Standby Generator

3.1 Description

Subparcel 17.2, measuring 3.7 acres, is associated with the area surrounding the buildings in Parcel 17 (DDMT, November, 1997). It includes a standby generator that is used for emergency power (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The surface soils surrounding buildings at the installation may contain pesticides as a result of routine pesticide application at the facility. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

Subparcel 17.2 is also associated with the following tanks:

- A 12,000-gallon and a 500-gallon fuel oil tank that were located at Building 359 and were closed in place in July 1994 and September 1995, respectively (Storage Tank Survey, The Pickering Firm, Inc., 1993 as cited in Woodward-Clyde, November, 1996).
- A 1,000-gallon fuel oil tank and a 500-gallon diesel tank that were located at Building 359, but were removed in 1993 (Storage Tank Survey, The Pickering Firm, Inc., 1993 as cited in Woodward-Clyde, November, 1996).
- A 12,000-gallon and a 500-gallon fuel oil tank that were located at Building 359, but were removed in 1993 (Storage Tank Survey, The Pickering Firm, Inc., 1993 as cited in Woodward-Clyde, November, 1996).

No documented releases are associated with these tanks, and no evidence was found of disposal or migration of hazardous substances or petroleum products from an adjacent property.

3.2.2 Sampling History

Sampling under the BRAC Program was performed to provide information on the presence of pesticides and PCBs in surface soil. Two surface soil samples, A(17.2) and B(17.2), were collected near the northeast and northwest portions of Building 359. This subparcel contains one Level 1 immunoassay sample point (# 45) which was used to estimate PAH concentrations in surface soil. This data point was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

3.3 Findings

One COPC was found in the surface soil at this site. Dieldrin was detected in Sample A (17.2) at 3.3 mg/kg, which exceeds the background value, the residential and industrial RBC for soil ingestion, and the groundwater protection value.

A PRE performed for Subparcel 17.2 (CH2M HILL, January 1988) reported that because there are no SS or RI sites within this subparcel, risks are based on the BRAC data only. The risk ratio and the systemic toxicity ratios were calculated, and the resulting risk, primarily from dieldrin, is slightly above for residential and within the range for the industrial worker scenario of 1 in a million (10^6). Although other chlorinated pesticides, DDE/DDT, were detected, the risk ratios were well below 1 in a million. Dieldrin concentration in one of the samples was 3.3 mg/kg, which is above a critical value of 0.5 mg/kg.

There are no noncarcinogenic chemicals in the BRAC samples from Subparcel 17.2.

3.4 Summary of Environmental Concerns

In summary, dieldrin at Subparcel 17.2 in one sample presents slightly elevated risk for the residential exposure scenario, with levels above the critical value of 0.5 mg/kg. There are no noncarcinogenic PRE ratios above acceptable land use levels (industrial) at Subparcel 17.2. Therefore, a focused evaluation of dieldrin should be conducted at this subparcel.

3.5 Identified Data Gaps

Additional information may be necessary to complete the focused evaluation of dieldrin in this subparcel.

3.6 Recommendations

The BCT Meetings recommendation (fall 1997) for this subparcel was that it should be classified as CERFA Category 7. However, in accordance with the results of the PRE, the category is changed to CERFA Category 6, primarily due to the dieldrin concerns in surface soil.

4.0 Subparcel 17.3: Building 359

4.1 Description

Subparcel 17.3, at 5.5 acres, is the largest of the Parcel 17 subparcels. Building 359, a general purpose warehouse (DDMT, November 1997), is located here. This warehouse has 240,000 square feet of space used to store medical supplies, caustic soda, historical USTs, and sodium chloride. Built in 1942, Building 359 formerly housed a boiler and was used to store hazardous materials (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building 359 is used for storage of medical waste (medical supplies with expired shelf life), sodium chloride, and petroleum products. An out-of-service incinerator is located in this building. This general storage building was fumigated (Woodward-Clyde, 1996).

On August 27, 1993, a sulfuric acid spill was reported in Section 2 of Building 359. The quantity of material spilled is unknown.

The expired medical supplies storage area, located near the center of Building 359 and consisting of a concrete-floored storage bay approximately 50 feet by 30 feet, is a proposed NFA site under the Federal Facilities Agreement. The storage area is used to store expired-shelf-life medical supplies in their original containers, on pallets or shelves throughout the unit, until transported or disposed of. The site was evaluated during the RFA in 1990, and it was concluded that no remedial actions are necessary for the protection of human health or the environment (CH2M HILL, September 1994).

No "red bag" medical waste has been stored in this building. Some "red bag" wastes were generated by the Health Clinic, which was located on the western end of the building. These wastes would have consisted mainly of tongue depressors and possibly syringes (for allergy or insulin shots), and were disposed of at a local landfill (personal communication, Denise Cooper/DDMT, April, 1998).

4.2.2 Sampling History

No previous sampling has occurred at Subparcel 17.3. This subparcel contains one Level 1 immunoassay sample point (# 46) which was used to estimate PAH concentrations in surface soil. This data point was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

4.3 Findings

Because the limited air sampling is representative of Building 359, at which fumigation was also suspected, there is no health-based concern due to air.

ACM was identified in the medical warehouse (Building 359) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition based on physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner.

Although LBP was not specifically tested for in Building 359, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

In accordance with the results of the RFA conducted in 1990, the potential for release from all pathways was low, and Subparcel 17.3 was designated for NFA. No remedial actions are necessary for the protection of human health or the environment.

4.4 Summary of Environmental Concerns

Building 359 is contaminated with ACM and may have been painted with LBP.

4.5 Identified Data Gaps

LBP was not specifically tested for in this building. Otherwise, there are no data gaps for Building 359.

4.6 Recommendations

During the BCT Meetings (September 1997), air sampling was recommended. In accordance with representative air sampling results, Building 359 should be reclassified as CERFA Category 1.

The recommended remedial alternative for Subparcel 17.3 (CH2M HILL, September 1994) is NFA under CERCLA.

TAB

18.0

BRAC Parcel 18 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 18

1.1 Parcel Description

Parcel 18 is a 358,600-square-foot parcel in the center of the Main Installation in OU-3 (see Figure 1). Parcel 18 consists of two subparcels with the following associated sites: Building 560 as well as the surrounding area and adjacent railroad tracks.

No sampling was performed before the BRAC characterization of 1996. Sampling under the BRAC Program has occurred at Parcel 18, but no RI or SS sampling has occurred at this parcel.

Table 1 summarizes the analytes investigated at Parcel 18 and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

No environmental concerns are known at this parcel. The surface soil sample showed no contamination; ACM was not identified in Building 560; and Building 560 is probably not contaminated with LBP, based on its construction date.

2.0 Subparcel 18.1: General Purpose Warehouse, Building 560

2.1 Description

This 4.0-acre subparcel includes Building 560, general purpose warehouse (DDMT, November 1997). This warehouse was constructed in 1990 and has 174,665 square feet of space used to store medical and general supplies (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

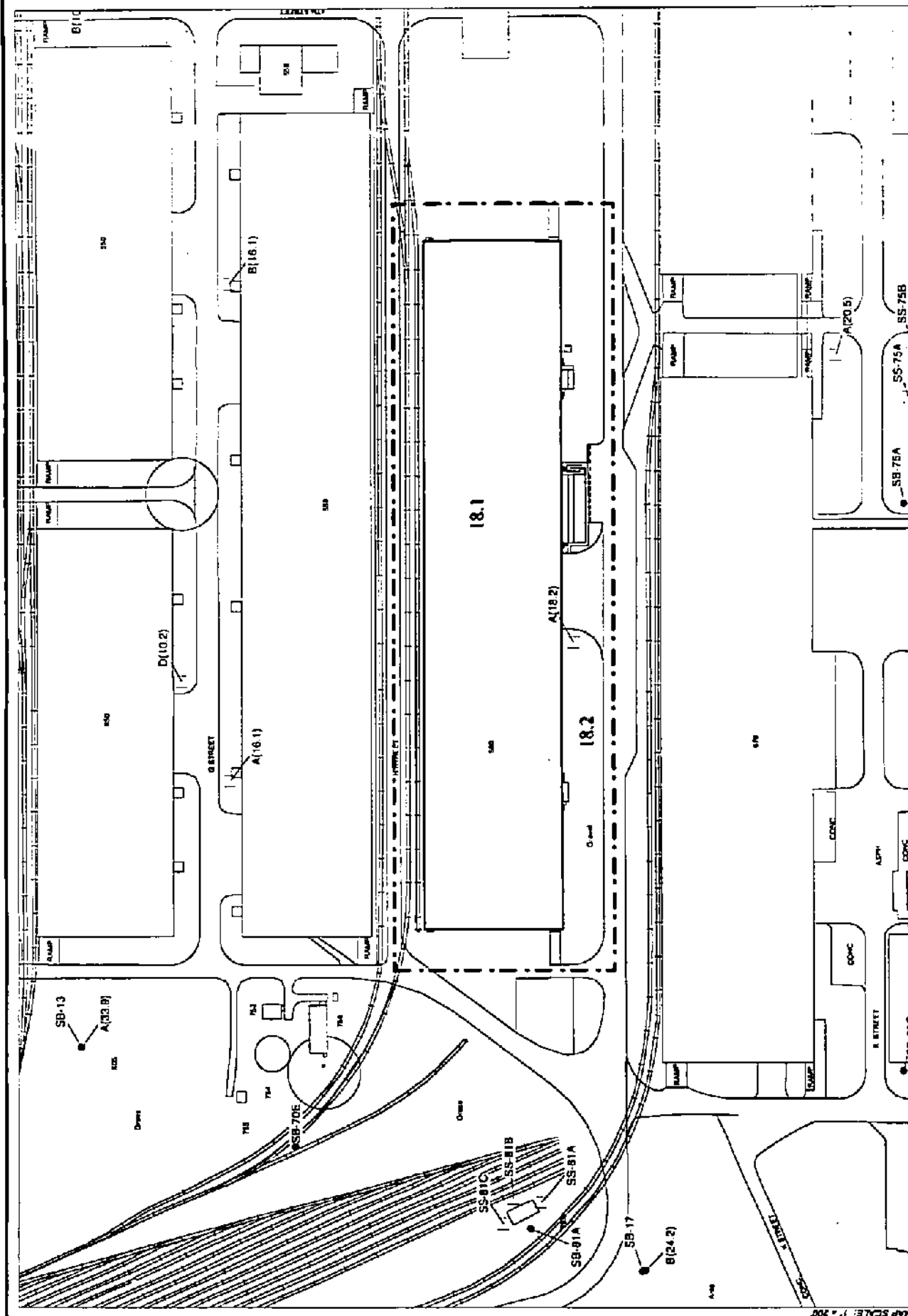
This relatively new general purpose warehouse has two drop inlets inside the building that lead to the storm drainage system. Additionally, two spills of aqueous film-forming foam (5 gallons and 15 gallons) were reported on October 17, 1995, and November 14, 1995, in Section 3 of the building. The damaged containers were moved to the recoupment facility, and absorbent was applied to the spills.

2.2.2 Sampling History

No media sampling has occurred at Subparcel 18.1, but the building was tested for ACM.

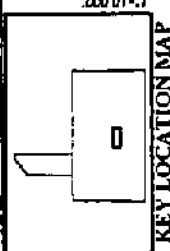
Figure 1
PARCEL 18
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



MAP SCALE: 1" = 300'

Parcel 18 map

TABLE 1

Analytes Investigated for Parcel 18

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

2.3 Findings

Building 560 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

2.4 Summary of Environmental Concerns

There are no known environmental concerns at Subparcel 18.1.

2.5 Identified Data Gaps

Although this building was constructed after 1978, LBP has not been tested for.

2.6 Recommendations

Subparcel 18.1 was not addressed during the BCT meetings (Fall 1997) or in the Draft PRE (CH2M HILL, January 1998). However, based on remediation of the two documented spills, Woodward-Clyde (1996) recommended placing this subparcel in CERFA Category 4.

3.0 Subparcel 18.2: Outdoor Area and Railroad Tracks

3.1 Description

Subparcel 18.2 measures 2.6 acres and includes the outdoor area surrounding the buildings in Parcel 18 that contains railroad tracks (DDMT, November 1997).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The surface soils surrounding buildings at the installation may contain pesticides as a result of routine pesticide application at the facility. In addition, Parcel 18 contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP (Woodward-Clyde, 1996).

3.2.2 Sampling History

Sampling under the BRAC Program was performed to provide information on the presence of pesticides and PCBs in surface soil. One surface soil sample, A(18.2), was collected south of Building 560. This subparcel contains one Level 1 immunoassay sample point (# 44) which was used to estimate PAH concentrations in surface soil. This data point was used to select 10 Screening Site 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

3.3 Findings

Because there are no SS or RI sites within this parcel, risks are based on the BRAC data only. In accordance with these BRAC data, the PRE risk ratios (CH2M HILL, January 1998) at Subparcel 18.2 indicate that there were no chemicals detected above background levels in this parcel; therefore, no risk ratios or noncarcinogenic PRE ratios were included in this report.

3.4 Summary of Environmental Concerns

Due to lack of contamination based on the one BRAC sample, there appear to be no environmental concerns at Subparcel 18.2.

3.5 Identified Data Gaps

No data gaps were identified for this subparcel.

3.6 Recommendations

The Draft PRE (CH2M HILL, January 1998; Table 5-2) recommended that the CERFA category for Subparcel 18.2 remain a Category 3 and that no further assessment is needed.

TAB

19.0

BRAC Parcel 19 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 19

1.1 Parcel Description

Parcel 19 is a 173,406-square-foot parcel in the central part of the Main Installation in OU-3 (see Figure 1). This parcel consists of three subparcels and associated sites: Buildings T467 and S468 and the areas surrounding the buildings in Parcel 19; Building S465; and Building S469.

No BRAC, RI, or SS sampling has occurred at Parcel 19.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The only environmental concern at Parcel 19 is that the buildings possibly need a walk-through to assess whether hazardous materials have been spilled in the buildings (BCT Meeting Minutes, September 1997).

2.0 Subparcel 19.1: General Purpose Warehouse, Building T467; Installation Services Warehouse, Building S468; and Area Surrounding the Buildings in Parcel 19

2.1 Description

Subparcel 19.1 measures 2.8 acres and includes Building T467 (a general purpose warehouse), Building S468 (an installation services warehouse), and the area surrounding the buildings in Parcel 19 (DDMT, November 1997). The 24,883-square-foot Building T467 was built in 1987 and was used for general storage; this building was demolished in 1996. Building S468 is a 9,600-square-foot facility that was built in 1960 and is used to store waste petroleum product drums. The area surrounding these buildings contains railroad tracks (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

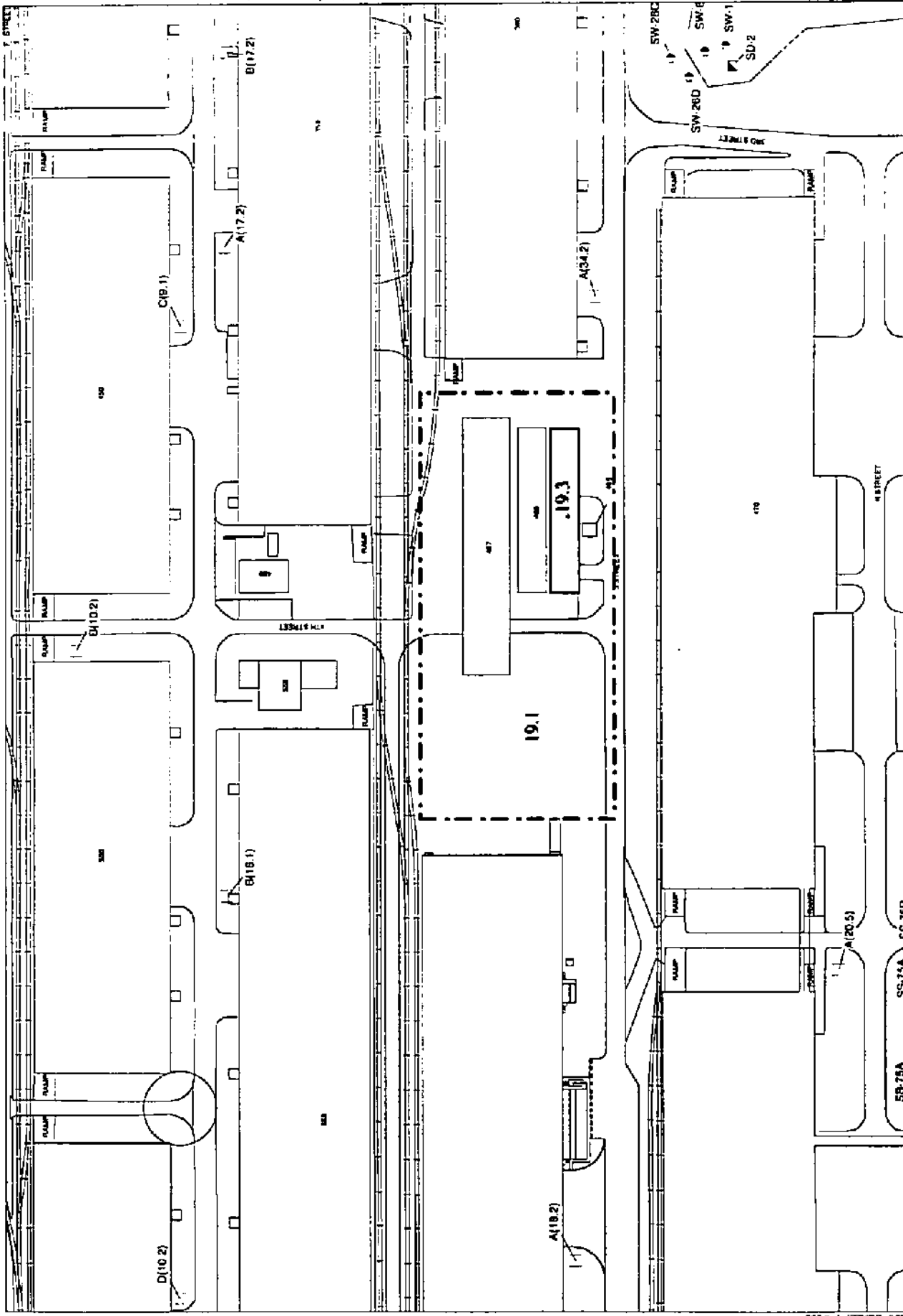
The surface soils surrounding buildings at the installation may contain pesticides resulting from routine pesticide application at the facility. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but Building S468 was tested for ACM.

Figure 1
PARCEL 19
Sampling Locations

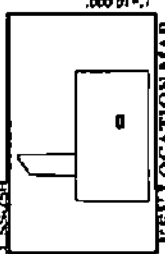
Defense Distribution Depot Memphis, TN



MAP SCALE: 1" = 200'

LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

2.3 Findings

Building S468 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Although Building T467 was not included in the Asbestos Identification Survey (Woodward-Clyde, 1996), ACM may/may not be present based on the year of construction. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

2.4 Summary of Environmental Concerns

In summary, the environmental concerns at this subparcel are ACM and LBP in the building interiors. Building T467 may be contaminated with ACM, and Building S468 may have been painted with LBP.

2.5 Identified Data Gaps

LBP was not specifically tested for in Building S468.

Building T467 was not included in the Asbestos Identification Survey (Woodward-Clyde, 1996). It was designated as "NA," meaning that it may be destroyed. Although this building was constructed after 1978, LBP has not been tested for.

2.6 Recommendations

No recommendations were provided in the BCT Meetings for this subparcel. Woodward-Clyde (1996) recommended that this subparcel should be a CERFA Category 7.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Buildings T467 and S468.

3.0 Subparcel 19.2: Vehicle Wash Rack, Building S465

3.1 Description

The 0.01-acre Subparcel 19.2 consists of Building S465, a vehicle wash rack (DDMT, November 1997). This wash rack, measuring 400 square feet, was built in 1984 and is used to store waste oil and lubricating oil. A UST is also located at this subparcel, and steam-cleaning equipment was stored here in the past (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Petroleum products are stored in Building S465 and it contains a vehicle wash (Woodward-Clyde, 1996). This building also contains a 1,000-gallon oil/water separator.

3.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but Building S465 was tested for ACM.

3.3 Findings

This building was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

3.4 Summary of Environmental Concerns

There are no known environmental concerns at this subparcel.

3.5 Identified Data Gaps

No information is available on whether hazardous materials have been spilled in this building. Although Building S465 was constructed after 1978, LBP has not been tested for.

3.6 Recommendations

The BCT meetings (September 1997) recommended performing a building walk-through to assess whether hazardous materials have been spilled. The CERFA Category proposed in Woodward-Clyde (1996) was a Category 7.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 19.2 to assess the extent of LBP in or on the outside of Building S465.

4.0 Subparcel 19.3: Battery Shop, Building S469

4.1 Description

Subparcel 19.3 measures 0.22 acres and includes Building S469, a battery shop (DDMT, November 1997). This shop was built in 1960 and includes 9,600 square feet of space used to store sulfuric acid, batteries, lead, and spray paint. In the past, this building has housed an electrical shop and acid recycling facility (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Building S469 has been used to store sulfuric acid, hydraulic fluid, waste oil, and lubricating oil. In addition, information from an interview indicates that a PCB spill occurred in this building and has not been investigated.

Building S469 is also the location of proposed NFA Sites 40 (Safety Kleen units) and 41 (satellite drums). Site 40 consists of nine locations throughout the installation where the self-contained Safety-Kleen solvent parts cleaning stations are located. The 20-to 40-gallon steel holding tanks, supported by steel legs, have been used in various locations since 1985. The parts cleaning

solvent is recirculated in the tanks and periodically replaced by Safety-Kleen (CH2M HILL, September 1994).

The Safety-Kleen units are used for carburetor and cold parts cleaning. New cleaning material contains 11.9 percent cresylic acids, 31.7 percent methylene chloride, and 81.3 percent ortho-dichlorobenzene. Used material generally is contaminated with various oils and greases from the parts themselves. Safety-Kleen handles the manifesting, transporting, and recycling of the used material.

Building S469 is one of the five locations of proposed NFA Site 41 (satellite drum accumulation areas). Site 41 consists of five satellite drum storage locations throughout the installation that have been used since 1985 to store drums of waste materials. The units vary in the number and size of drums they contain, but all units are located on concrete floors within buildings. Building S469 has one unit, and the stored wastes include sulfuric acid. The drums and areas are maintained in good condition and are regulated. All wastes collected in these areas are transported to the DRMO before offsite disposal (CH2M HILL, September 1994).

4.2.2 Sampling History

Building S469 was tested for ACM. Although no analytical data are available for this subparcel as Site 40, the subparcel was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action. Additionally, the FFA designates this site as an NFA site (CH2M HILL, September 1994).

Although no analytical data are available for Subparcel 19.3 as Site 41, the subparcel was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action.

4.3 Findings

A minimal level of risk exists because hazardous materials are handled in the Safety-Kleen units (NFA Site 40). These risks are controlled through the design and handling criteria regulated under RCRA. Because of the equipment design and procedural controls, there is no significant risk to human health or the environment from the use of Safety-Kleen parts cleaning units (CH2MHILL, September 1994).

A minimal level of risk exists because hazardous materials are handled in satellite drum accumulation areas (NFA Site 41). These risks are controlled through the design and handling criteria regulated under RCRA. Because of the design and procedural controls, there is no significant risk to human health or the environment from the past satellite drum accumulation operations (CH2MHILL, September 1994).

Building S469 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

Building S469 may have been painted with LBP.

4.5 Identified Data Gaps

No information is available on whether hazardous materials have been spilled in this building. LBP was not specifically tested for in Building S469.

4.6 Recommendations

For NFA Sites 40 and 41, the recommendation for this subparcel in the Draft NFA Report (CH2M HILL, September 1994) is that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the subparcel is No Action under CERCLA. This alternative will consist of leaving the subparcel as is. No additional sampling or monitoring will be necessary, because the conditions at the subparcel are protective of human health and the environment.

The BCT meetings (September 1997) recommended performing a building walk-through to assess whether hazardous materials have been spilled. The CERFA Category proposed in Woodward-Clyde (1996) was a Category 7.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 19.3 to assess the extent of LBP in or on the outside of Building S469.

TAB

20.0

BRAC Parcel 20 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 20

1.1 Parcel Description

Parcel 20 is a 1,260,303-square-foot parcel in the south central part of the Main Installation in OU-3 (see Figure 1). Parcel 20 consists of six subparcels with the following associated sites: Buildings 470, 489, 670 and the adjacent railroad tracks.

Sampling has occurred at Parcel 20 as part of the BRAC Program.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In summary, the environmental concerns of Parcel 20 are ACM and LBP in the building interiors, as well as surface and subsurface soil contamination. ACM was identified in Buildings 470, 489, and 670. Furthermore, all three buildings may have been painted with LBP based on their early construction dates.

The COPCs detected at Parcel 20 include arsenic, cadmium, chromium, lead, PAH compounds, and dieldrin. PAH and dieldrin are both sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 20.1: North Dock of Building 489

2.1 Description

Subparcel 20.1 measures 0.46 acre and includes the north dock of Building 489 (DDMT, November 1997).

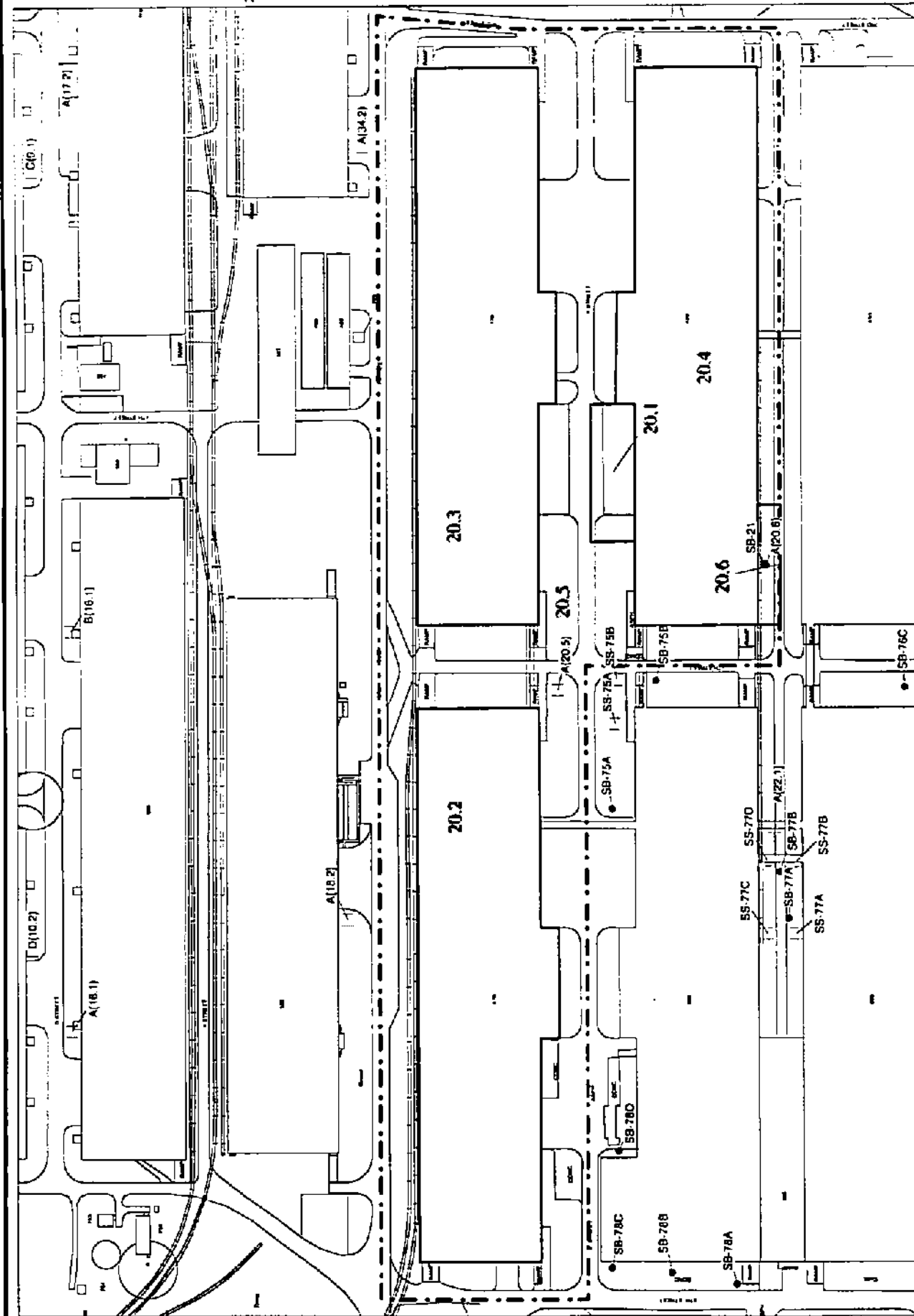


Figure 1
PARCEL 20
Sampling Locations

Defense Distribution Depot Memphis, TN

LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

KEY LOCATION MAP

1" = 10,000'

MAP SCALE: 1" = 250'

TABLE 1
Analytes Investigated for Parcel 20
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

301 218

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

A 1-gallon oil spill was reported at the north dock of Building 489 on November 3, 1995 (DDMT, November 1997). The exact location of the spill is unknown. Absorbent was applied to clean up the spill.

2.2.2 Sampling History

No previous media sampling has occurred at Subparcel 20.1.

2.3 Findings

A 1-gallon oil spill was reported at this subparcel. Absorbent was applied to clean up the spill. No other reports of hazardous material management or spills have been reported for this subparcel.

2.4 Summary of Environmental Concerns

There are no known environmental concerns at Subparcel 20.1.

2.5 Identified Data Gaps

There are no known data gaps for this subparcel.

2.6 Recommendations

Subparcel 20.1 is classified CERFA Category 3 due to the 1-gallon oil spill. No further remediation is required for this subparcel.

3.0 Subparcel 20.2: General Purpose Warehouse, Building 670

3.1 Description

The 5-acre Subparcel 20.2 consists of Building 670, a general purpose warehouse (DDMT, November 1997). This warehouse was built in 1953 and has 218,000 square feet of space used to store equipment and clothing (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The following activities occurred at Subparcel 20.2, Building 670, as identified in the BCP Report (DDMT, November 1997):

- Significant corrosion was noted on the floor due to acid leaks at the charging station.
- A 1-gallon hydraulic fluid spill was reported on August 30, 1995, inside Section 1 of Building 670.
- A 10-gallon battery electrolyte spill was reported on May 4, 1990, outside of Building 670.

Absorbent was applied to the spills. No additional cleanup was necessary, as determined by the BCP (DDMT, November 1997).

3.2.2 Sampling History

No previous media sampling has occurred at Subparcel 20.2, but ACM was tested for.

3.3 Findings

ACM was identified in the warehouse space (Building 670) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in Building 670, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM was identified in Building 670. If renovation or demolition is planned for this building, urgent removal of the ACM would be required. Furthermore, Building 670 may have been painted with LBP due to its early construction date.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building 670.

3.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 20.2 to assess the extent of LBP in or on the outside of Building 670.

Subparcel 20.2 is classified as CERFA Category 4.

4.0 Subparcel 20.3: General Purpose Warehouse, Building 470

4.1 Description

Subparcel 20.3 is another 5-acre subparcel that also includes a general purpose warehouse (Building 470). This 218,00-square-foot warehouse was built in 1954 and is used to store equipment and clothing (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 20.3 is associated with Building 470. Corrosion on the floor due to acid leaks near the battery charging station was observed during the EBS visual inspection of this building (DDMT, November 1997).

4.2.2 Sampling History

No previous media sampling has occurred at Subparcel 20.3, but ACM was tested for.

4.3 Findings

ACM was identified in the warehouse space (Building 470) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

ACM was identified in Building 470. If renovation or demolition is planned for this building, urgent removal of the ACM would be required. Furthermore, Building 470 may have been painted with LBP due to its early construction date.

4.5 Identified Data Gaps

LBP was not specifically tested for in this building.

4.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 20.3 to assess the extent of LBP in or on the outside of Building 470.

Subparcel 20.3 is classified as CERFA Category 4.

5.0 Subparcel 20.4: General Purpose Warehouse, Building 489

5.1 Description

Subparcel 20.4 measures 5.0 acres and includes Building 489, a general purpose warehouse (DDMT, November 1997). This warehouse was built in 1954 and has 218,000 square feet of space used to store equipment and clothing (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Subparcel 20.4 is associated with Building 489. Corrosion on the floor due to acid leaks near the battery charging station was observed during the EBS visual inspection of this building (DDMT, November 1997).

5.2.2 Sampling History

No previous media sampling has occurred at Subparcel 20.4, but ACM was tested for.

5.3 Findings

ACM was identified in the warehouse space (Building 489) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in Building 489, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

5.4 Summary of Environmental Concerns

ACM was identified in Building 489. If renovation or demolition is planned for this building, urgent removal of the ACM would be required. Furthermore, Building 489 may have been painted with LBP due to its early construction date.

5.5 Identified Data Gaps

LBP was not specifically tested for in this building.

5.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 20.4 to assess the extent of LBP in or on the outside of Building 489.

Subparcel 20.4 is classified as CERFA Category 4.

6.0 Subparcel 20.5: Area Surrounding the Buildings (mostly Building 670) in Parcel 20

6.1 Description

Subparcel 20.5, measuring 26.5 acres, consists of the area surrounding the buildings in Parcel 20 (mostly associated with Building 670) and includes railroad tracks (DDMT, November 1997).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

The surface soil surrounding buildings in Parcel 20 has the potential to contain pesticides due to routine application (DDMT, November 1997). In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

6.2.2 Sampling History

One Surface soil sample, A (20.5), was collected under the BRAC Program.

This subparcel also contains Level 1 immunoassay sample points (41 Immunoassay and 42 Immunoassay) which were used to estimate PAH concentrations in surface soil. These data were used to select 10 SS 70/71 soil boring locations near railroad tracks for further investigation across the Main Installation.

6.3 Findings

Only one COPC (dieldrin) was detected in the surface soil surrounding the buildings in Parcel 20 (excluding surface soil in Subparcel 20.6, which also surrounds buildings in Parcel 20). Dieldrin was detected at a concentration of 1.1 mg/kg, which exceeds the critical value of 0.5 mg/kg.

The PRE results (CH2M HILL, January 1998) based on BRAC sampling data indicate that carcinogenic risk ratios are greater than one in a million from the presence of dieldrin in the

sample collected. Noncarcinogenic chemicals were not detected in the sample collected at Subparcel 20.5.

6.4 Summary of Environmental Concerns

An elevated concentration of dieldrin that exceeds the critical value of 0.5 mg/kg was detected in the surface soil. However, dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

6.5 Identified Data Gaps

Further evaluation is needed for Subparcel 20.5. In addition, additional data may be needed for the dieldrin sitewide risk evaluation.

6.6 Recommendations

Subparcel 20.5 is a CERFA Category 7 due to the elevated concentrations of dieldrin (BCT Meeting Minutes, September 1997). A risk assessment is recommended for this subparcel.

7.0 Subparcel 20.6: Area Between Buildings 489 and 490

7.1 Description

The 0.40-acre Subparcel 20.6 consists of the area between Buildings 489 and 490 (DDMT, November 1997).

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

Subparcel 20.6 is associated with a sulfuric acid spill between Buildings 489 and 490 that was reported on June 10, 1993 (DDMT, November 1997). The action taken, exact location, and quantity of the spill are unknown.

7.2.2 Sampling History

A BRAC surface soil sample, A(20.6), and soil boring, SB-21, were collected at Subparcel 20.6.

7.3 Findings

The COPCs identified in the surface soils were arsenic, PAH compounds—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene—and cadmium. The COPCs identified in the subsurface soils were chromium and lead. PAHs are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

Chromium was detected at a concentration of 96.6 mg/kg at a depth of 4 to 7 feet, which greatly exceeds the RBC-GWP value of 38 mg/kg and the background value of 26 mg/kg. Lead concentrations were similar to background levels.

The PRE results (CH2M HILL, January 1998) based on BRAC sampling data indicate that carcinogenic risk ratios are greater than one in a million from the presence of PAH compounds

in the sample collected. The noncarcinogenic risk ratio was below one for an industrial worker, but was above one for a residential scenario from the presence of PAHs and low-level metals.

7.4 Summary of Environmental Concerns

Elevated concentrations of PAH compounds and metals were detected in the surface soil of Subparcel 20.6; elevated concentrations of metals were also detected in the subsurface soil. There are slight risks associated with this subparcel due to arsenic above background levels at 26 mg/kg. High concentrations of chromium were detected at the depth of 4 to 7 feet, greatly exceeding background and groundwater protection criteria values. However, concentrations of chromium were closer to screening criteria values at the 7- to 10-foot depth.

7.5 Identified Data Gaps

Further risk evaluation is needed at Subparcel 20.6.

7.6 Recommendations

A risk assessment is recommended for Subparcel 20.6, which is a potential candidate for an early removal action (BCT Meeting Minutes, September 1997). This subparcel will remain as CERFA Category 7.

301 225

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210

301 226

BRAC Parcel 21 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 21

1.1 Parcel Description

Parcel 21 is a 1,138,414-square-foot parcel in the south-central part of the Main Installation in OU-3 (see Figure 1). This subparcel consists of five subparcels with the following associated sites: Buildings 490, 685, 689, and 690.

Sampling has occurred at Parcel 21 as part of the BRAC and SS Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 20 are ACM and LBP in the building interiors, as well as surface and subsurface soil contamination.

ACM was identified in Buildings 490, 685, 689, and 690. In addition, Buildings 490, 689, and 690 may have been painted with LBP due to their early construction dates.

Samples were collected at this screening site to assess the presence of a contaminant release. The COPCs detected at this parcel include cadmium, chromium, lead, TCE, PAH compounds—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-c,d)pyrene—and dieldrin. PAH compounds and dieldrin are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

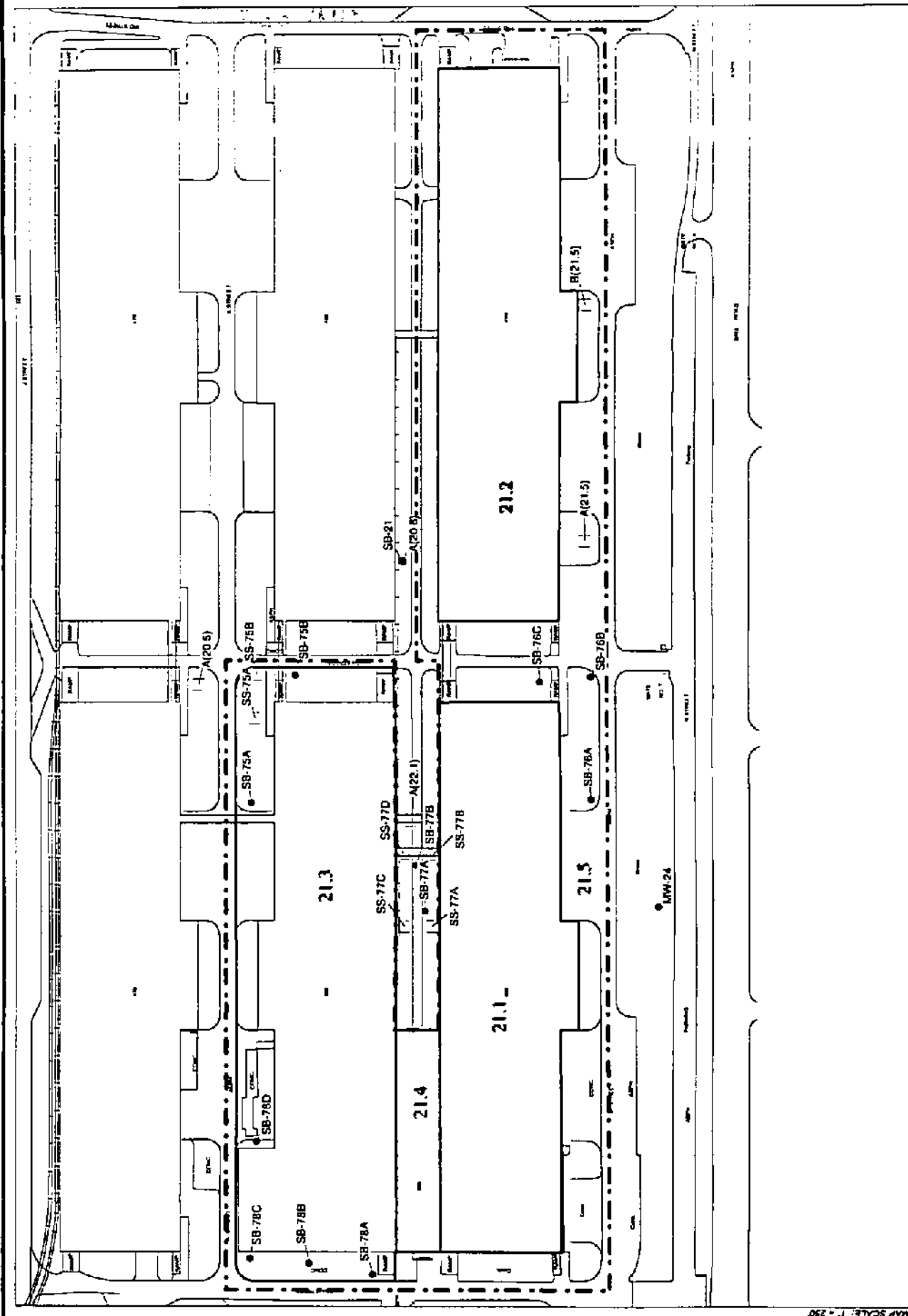
The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 21.1: General Purpose Warehouse, Building 690

2.1 Description

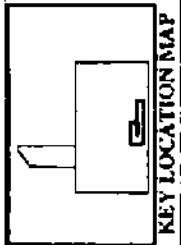
Subparcel 21.1 is 1/2 acre in area and consists of Building 690, a general purpose warehouse (DDMT, November 1997). This warehouse was built in 1953 and includes 218,000 square feet of space used to store material-handling equipment and materials awaiting shipment.

Figure 1
PARCEL 21
Sampling Locations
Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

MAP SCALE: 1" = 250'

000 000 1

PARCEL 21

TABLE 1
Analytes Investigated for Parcel 21
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	Fluoride	EPA 340.2 (Mod.)
Soil	pH	SW846 Method 9045

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 21.1 is associated with Building 690. At times in the past, unknown wastes and vehicle maintenance supplies have been stored here (Woodward-Clyde, 1996).

2.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

2.3 Findings

ACM was identified in the warehouse space (Building 690) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested in for Building 690, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

2.4 Summary of Environmental Concerns

ACM was identified in Building 690. If renovation or demolition is planned for this building, urgent removal of the ACM would be required. Building 690 may have been painted with LBP.

2.5 Identified Data Gaps

LBP was not specifically tested for in this building.

2.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 21.1 to assess the extent of LBP in or on the outside of Building 690.

Subparcel 21.1 is classified as CERFA Category 1.

3.0 Subparcel 21.2: General Purpose Warehouse, Building 490

3.1 Description

Subparcel 21.2 measures 5.0 acres and includes Building 490, a general purpose warehouse (DDMT, November 1997). This warehouse, built in 1954 with 218,000 square feet, is a central receiving facility that in the past was used for microfiche developing and historical dipping of machine parts as preservation (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 21.2, Building 490, is also the location of proposed NFA Site 40 (Safety-Kleen units). Site 40 consists of nine locations throughout the installation where the self-contained Safety-Kleen solvent parts cleaning stations are located. The 20- to 40-gallon steel holding tanks, supported by steel legs, have been used in various locations since 1985. The parts cleaning

solvent is recirculated in the tanks. The parts cleaning solvent is periodically replaced by Safety-Kleen (CH2M HILL, September 1994).

The Safety-Kleen units are used for carburetor and cold parts cleaning. New cleaning material contains 11.9 percent cresylic acids, 31.7 percent methylene chloride, and 81.3 percent ortho-dichlorobenzene. Used material generally contains various oils and greases from the parts themselves. Safety-Kleen handles the manifesting, transporting, and recycling of the used material.

3.2.2 Sampling History

No previous media sampling has occurred at Subparcel 21.2, but ACM was tested for.

Although no analytical data are available for NFA Site 40, the site was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the site was designated for no further action. Additionally, the FFA designates this site as a No Further Action Site (CH2M HILL, September 1994).

3.3 Findings

ACM was identified in the warehouse space (Building 490) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Abatement or removal of the ACM products in poor and/or friable condition was recommended to be performed in a timely manner. Although LBP was not specifically tested for in Building 490, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

A minimal level of risk exists because hazardous materials are handled in the Safety-Kleen units. These risks are controlled through the design and handling criteria regulated under RCRA. Because of the equipment design and procedural controls, there is no significant risk to human health or the environment from the use of Safety-Kleen parts cleaning units (CH2MHILL, September 1994).

3.4 Summary of Environmental Concerns

ACM was identified in Building 490, and the building may have been painted with LBP.

3.5 Identified Data Gaps

LBP was not specifically tested for in this building.

3.6 Recommendations

The BCT (Meeting Minutes, October 1997) recommends that Subparcel 21.2 remain as a CERFA Category 4.

For NFA Site 40, the Draft NFA Report (CH2M HILL, September 1994) recommends that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative is No Action under CERCLA. This alternative will

consist of leaving the site as is. No additional sampling or monitoring will be necessary, because the conditions at the site are protective of human health and the environment.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 21.2 to assess the extent of LBP in or on the outside of Building 490.

4.0 Subparcel 21.3: General Purpose Warehouse, Building 689

4.1 Description

Subparcel 21.3 consists of Building 689, another general purpose warehouse. This building, built in 1954 and measuring 228,000 square feet, is used to store material-handling equipment and materials awaiting storage. In the past, this facility has been used to store hazardous waste, Safety-Kleen parts cleaning units, and unknown wastes (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 21.3 is associated with Building 689 and the following activities: eleven spills documented from May 8, 1990 through November 16, 1995 inside and outside of Building 689; SS 78 (alcohol, acetone, toluene, and hydrofluoric acid area, Building 689); SS 75 (unknown wastes near Building 689); and NFA Site 40 (Safety-Kleen units).

The materials spilled at Building 689 include nitric acid, corrosion-removing compound, hydraulic fluid, oil, and sulfuric acid. Absorbent was applied to clean up the spills. The quantity released in the spills was insufficient to warrant a removal or remedial action (DDMT, November 1997).

SS 78 is located in the northern section of Building 689. This section of the building has historically stored alcohol, acetone, toluene, and hydrofluoric acid before transport (DDMT, November 1997).

SS 75 is located between Buildings 689 and 670. The section of Building 689 near this SS location also provided storage for flammable liquids such as alcohol, ketones, aromatics, and esters (CH2M HILL, March 1998). The area is not bermed and is adjacent to a storm sewer inlet (DDMT, November 1997).

The associated NFA Site 40 consists of nine locations throughout the installation where the self-contained Safety-Kleen solvent parts cleaning stations are located. The 20- to 40-gallon steel holding tanks, supported by steel legs, have been used in various locations since 1985. The parts cleaning solvent is recirculated in the tanks. The parts cleaning solvent is periodically replaced by Safety-Kleen Corporation (CH2M HILL, September 1994).

The Safety-Kleen units are used for carburetor and cold parts cleaning. New cleaning material contains 11.9 percent cresylic acids, 31.7 percent methylene chloride, and 81.3 percent ortho-dichlorobenzene. Used material generally contains various oils and greases from the parts themselves. Safety-Kleen handles the manifesting, transporting, and recycling of the used material.

4.2.2 Sampling History

Six soil borings (SB78A, SB78B, SB78C, SB78D, SB75A, and SB75B) and two surface soil samples (SS75A and SS75B) were collected during the SS sampling event.

Although no analytical data are available for NFA Site 40, the site was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the site was designated for no further action. Additionally, the FFA designates this subparcel as a No Further Action Site (CH2M HILL, September 1994).

4.3 Findings

ACM was identified in the warehouse space (Building 689) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Screening Site 78—Alcohol, Acetone, Toluene, and Hydrofluoric Acid Area, Building 689

The COPCs detected during the SS 78 sampling event in the subsurface soils include cadmium, chromium, lead, and TCE. Metals, including lead and chromium, found in the subsurface soil appear to be naturally occurring. Cadmium, detected in Sample SB78C at 1 to 3 feet, appears to be an isolated occurrence because it was not found in other subsurface soil samples below 3 feet at this site. Elevated concentrations of TCE were detected at depths of 1 to 20 feet in the boring located west of Building 689 (Sample SB78B). TCE was not found in Sample SB78A (approximately 150 feet to the south of Sample SB78B) or in Sample SB78C (approximately 150 feet to the north of Sample SB78B).

No PRE values were calculated for this screening site because there is no surface soil in the area and thus no exposures to the subsurface soil. The area around SS 78 is covered by concrete pavement.

Screening Site 75—Unknown Wastes Near Building 689

The COPCs detected during the SS 75 sampling event in the surface soils were PAH compounds—including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-c,d)pyrene. PAH compounds are found sitewide at DDMT due to railroad operations, asphalt paved roads, and other such sources and will be addressed in an upcoming sitewide risk evaluation. No COPCs were identified in the subsurface soils. However, lead was detected at 7.6 mg/kg, which exceeds the groundwater protection value of 1.5 mg/kg but not the background value of 24 mg/kg.

The PRE results (CH2M HILL, January 1998) indicated that carcinogenic risk ratios for an industrial worker and for a residential receptor were exceeded due to the presence of PAHs. The noncarcinogenic ratios were within the acceptable value of one.

NFA Site 40—Safety-Kleen Units

A minimal level of risk exists because hazardous materials are handled in the Safety-Kleen units. These risks are controlled through the design and handling criteria regulated under RCRA. Because of the equipment design and procedural controls, there is no significant risk to human health or the environment from the use of Safety-Kleen parts cleaning units (CH2MHILL, September 1994).

4.4 Summary of Environmental Concerns

ACM was identified in Building 689, and the building may have been painted with LBP.

For SS 78, the area northwest of Building 689, TCE was found in Sample SB78B at concentrations of 11 mg/kg at the 18- to 20-foot depth. This indicates that a release may have occurred to the deeper soil and possibly to groundwater at this site.

For SS 75, the area northeast of Building 689, PAH concentrations found in surface soil are found sitewide at DDMT and are attributed to railroad operations and other sources. PAH compounds will be addressed in an upcoming risk evaluation.

4.5 Identified Data Gaps

Additional subsurface soil sampling is needed at Subparcel 21.3.

LBP was not specifically tested for in Building 689.

4.6 Recommendations

The BCT (Meeting Minutes, October 1997) recommends that Subparcel 21.3 remain as a CERFA Category 4.

Additional subsurface soil sampling may be needed to evaluate the lateral and vertical extent of TCE at SS 78. Groundwater monitoring at the site and/or downgradient of the site may be needed if TCE is found at depth in the soil.

For NFA Site 40, the Draft NFA Report (CH2M HILL, September 1994) recommends that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the site is No Action under CERCLA. This alternative will consist of leaving the site as is. No additional sampling or monitoring will be necessary, because the conditions at the site are protective of human health and the environment.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 21.3 to assess the extent of LBP in or on the outside of Building 689.

5.0 Subparcel 21.4: General Purpose Warehouse, Building 685

5.1 Description

The 0.73-acre Subparcel 21.4 consists of Building 685, a general purpose warehouse (DDMT, November 1997). Built in 1985 with 32,000 square feet of space, this facility is used to store vehicle maintenance supplies (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Staining on the floor of Building 685 due to acid leaks from batteries in the fork lift area was observed during a visual inspection (DDMT, November 1997).

5.2.2 Sampling History

No previous media sampling has occurred at Subparcel 21.4, but ACM was tested for.

5.3 Findings

ACM was identified in the shipping office (Building 685) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. LBP was not specifically tested for in this building. However, Building 685 was installed in 1985, after the use of LBP was discontinued and therefore should not contain LBP.

5.4 Summary of Environmental Concerns

ACM was identified in Building 685. If renovation or demolition is planned, urgent removal of the ACM would be required.

5.5 Identified Data Gaps

LBP was not specifically tested for in this building.

5.6 Recommendations

The BCT (Meeting Minutes, October 1997) recommends that Building 685 remain a CERFA Category 4 because the staining on the floor and any acid releases have been neutralized and because the neutralizing agent will be cleaned out prior to leasing.

6.0 Subparcel 21.5: Area Surrounding Buildings in MDRA Parcel 21

6.1 Description

Subparcel 21.5 measures 32.6 acres and includes the area surrounding the buildings in Parcel 21 (DDMT, November 1997).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

The surface soil of Subparcel 21.5 has the potential to contain pesticides due to routine application (DDMT, November 1997). In addition, Subparcel 21.5 is associated with SS 76, unknown wastes near Building 690.

6.2.2 Sampling History

Two surface soil samples, A(21.5) and B(21.5), were collected at this subparcel under the BRAC effort. Soil borings SB76A, SB-76B, and SB-76C were collected under the SS Program.

6.3 Findings

The COPC dieldrin was detected in the surface soil during the SS 76 and the BRAC sampling events. Dieldrin is found sitewide at DDMT and will be addressed in an upcoming sitewide risk evaluation.

Two COPCs—chromium and lead—were detected in the subsurface soil during the SS 76 sampling event. The elevated concentrations of chromium and lead at these depths (4 to 20 feet) may simply be naturally occurring, as observed elsewhere at DDMT.

The PRE (CH2M HILL, January 1998) indicated that carcinogenic risk ratios for an industrial worker and for a residential receptor are both within a range of one in a million. The noncarcinogenic ratios were within the acceptable value of one. The PRE results (CH2M HILL, January 1998) based on BRAC sampling data indicated that carcinogenic risk ratios for an industrial worker and for a residential receptor were exceeded due to the presence of dieldrin in the surface soil. No noncarcinogens were identified in the surface soil samples.

6.4 Summary of Environmental Concerns

Both sampling events detected elevated concentrations of dieldrin in the surface soil. Because dieldrin is a sitewide COPC, it will be addressed in an upcoming sitewide risk evaluation. In accordance with the PRE results, there are no other human health risks of concern for Subparcel 21.5.

6.5 Identified Data Gaps

There are no known data gaps for this subparcel. Additional data may be needed for the dieldrin sitewide risk evaluation.

6.6 Recommendations

The BCT (Meeting Minutes, fall 1997) recommends that Subparcel 21.5 remain as a CERFA Category 7 due to the presence of dieldrin in the surface soil.

TAB

22.0

BRAC Parcel 22 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 22

1.1 Parcel Description

Parcel 22 is a 54,192-square-foot parcel in the south central part of the Main Installation in OU-3 (see Figure 1). Parcel 22 consists of two subparcels with the following associated sites: the area between Buildings 689 and 690.

Sampling has occurred at Parcel 22 as part of the BRAC and the SS Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 22 are surface and subsurface soil contamination. The parcel is associated with SS 77, unknown wastes near Buildings 689 and 690.

Samples were collected at this screening site to assess the presence of a contaminant release. The COPCs detected at Parcel 22 include antimony, PAH compounds—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-c,d)pyrene—and dieldrin. PAH compounds and dieldrin are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 22.1: Area Between Buildings 689 and 690, East of the Battery Recoupment Area

2.1 Description

The 2/3- acre Subparcel 22.1 includes the land area east of the battery recoupment area in Parcel 22 (DDMT, November 1997).

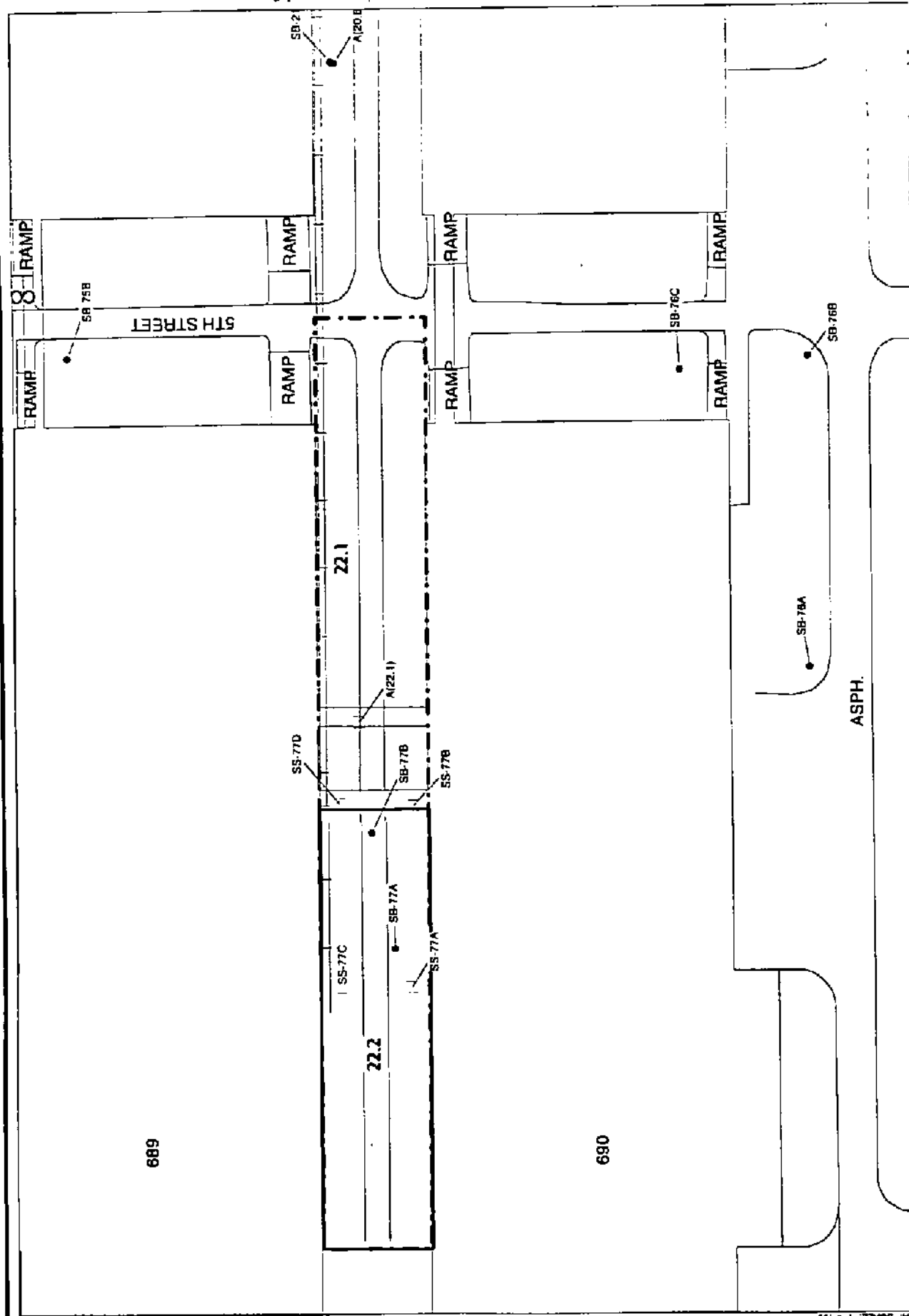


Figure 1
PARCEL 22
Sampling Locations

Defense Distribution Depot Memphis, TN

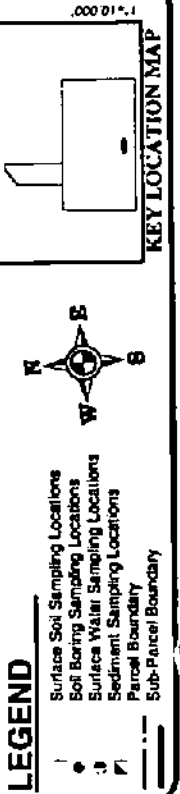


TABLE 1
Analytes Investigated for Parcel 22
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	pH	SW846 Method 9045

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The surface soil in Subparcel 22.1 has the potential to contain pesticides as a result of routine application (DDMT, November 1997).

2.2.2 Sampling History

Two surface soil samples, SS-77B and SS-77D, were collected under the SS Program at this subparcel. One BRAC surface soil sample, A(22.1), was also collected.

2.3 Findings

Some of the samples collected at Subparcel 22.1 are associated with SS 77, which is associated with Subparcel 22.2. The COPCs detected in the SS 77 surface soil samples collected at this subparcel were antimony and PAH compounds—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-c,d)pyrene. Antimony was detected in sample SS77B at 7.4 mg/kg, which is nearly identical to the background value of 7.0 mg/kg.

PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation. No COPCs were detected in the BRAC surface soil sample A(22.1), which was collected further east of the SS 77 samples in Subparcel 22.1, farther away from the battery recoupment area in Subparcel 22.2. The PRE results associated with SS 77 samples are discussed in Subparcel 22.2.

2.4 Summary of Environmental Concerns

PAH compounds are found at concentrations exceeding the screening criteria. The PAHs may require further characterization for human health impacts. PAH compounds are found sitewide at DDMT and will be addressed in an upcoming sitewide risk evaluation.

2.5 Identified Data Gaps

Further risk evaluation is recommended for Subparcel 22.1.

2.6 Recommendations

Further risk evaluation is recommended for this subparcel to evaluate PAHs in surface soil. The BCT recommend that this subparcel remain CERFA Category 7 due to detections of PAHs above screening criteria (BCT Meeting Minutes, October 1997).

3.0 Subparcel 22.2: Battery Recoupment Area Between Buildings 689 and 690

3.1 Description

Subparcel 22.2 measures 0.58 acre and consists of the land area between Buildings 689 and 690, the battery recoupment area (DDMT, November 1997).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 22.2 is associated with SS 77, unknown wastes near Buildings 689 and 690.

3.2.2 Sampling History

Samples SS-77A and SS-77C, both surface soil samples, were collected under the SS Program. The soil borings, SB-77A and SB-77B, were also collected under the SS Program.

3.3 Findings

Screening Site 77 samples were collected to evaluate the presence of a contaminant release. The COPCs detected at Subparcel 22.2 are antimony, arsenic, dieldrin, and PAH compounds—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-c,d)pyrene) in the surface soils. There are no COPCs for subsurface soil at this subparcel. Dieldrin and PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

The PRE results (CH2M HILL, January 1998) indicate that carcinogenic ratios for both industrial and residential scenarios exceed one in million due to the presence of PAHs. The noncarcinogenic ratios were less than one for an industrial worker, but were above a value of one for a resident, primarily from naturally occurring antimony.

3.4 Summary of Environmental Concerns

PAH compounds are found at concentrations exceeding the screening criteria. The PAHs may require further characterization for human health impacts. PAH compounds are found sitewide at DDMT and will be addressed in an upcoming sitewide risk evaluation.

3.5 Identified Data Gaps

Further risk evaluation is recommended for this subparcel.

3.6 Recommendations

Further risk evaluation is recommended for Subparcel 22.2 to evaluate PAHs in surface soil. The BCT recommends that this subparcel remain CERFA Category 7 due to detections of PAHs and dieldrin above screening criteria (BCT Meeting Minutes, October 1997).

301 244

TAB

23.0

BRAC Parcel 23 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 23

1.1 Parcel Description

Parcel 23 is a 1,266,614-square-foot parcel in the southwest portion of the Main Installation in OU-2 (see Figure 1). Parcel 23 consists of 11 subparcels that contain the following sites: Buildings 783, 878, 793, 995, open storage area X01, and the adjacent railroad tracks. A description of each subparcel and its associated sites is discussed below.

Sampling under the SS and the BRAC Programs occurred at this parcel in 1996 and 1997. The SS and BRAC Programs included sampling of surface soils and subsurface soils.

Table 1 summarizes the analytes investigated at Parcel 23 and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, potential environmental concerns at this parcel are asbestos and LBP in the building interiors as well as contaminants that exceed screening criteria in the surrounding surface and subsurface soils.

COPCs detected at Parcel 23 in the surface and subsurface soils include the following arsenic, chromium, dieldrin, and lead, which were detected at elevated concentrations in the soils surrounding Buildings 783 and 793. Dieldrin is a sitewide COPC and will be addressed in a sitewide risk evaluation.

ACM identified in Buildings 8 and 793 was found in non-friable and in fair to good condition. If demolition of these buildings is planned, urgent removal of the ACM would be required. LBP is assumed to be in Buildings 8, 783, 793, 795, and S995, as based on the age of construction and findings from other parts of DDMT.

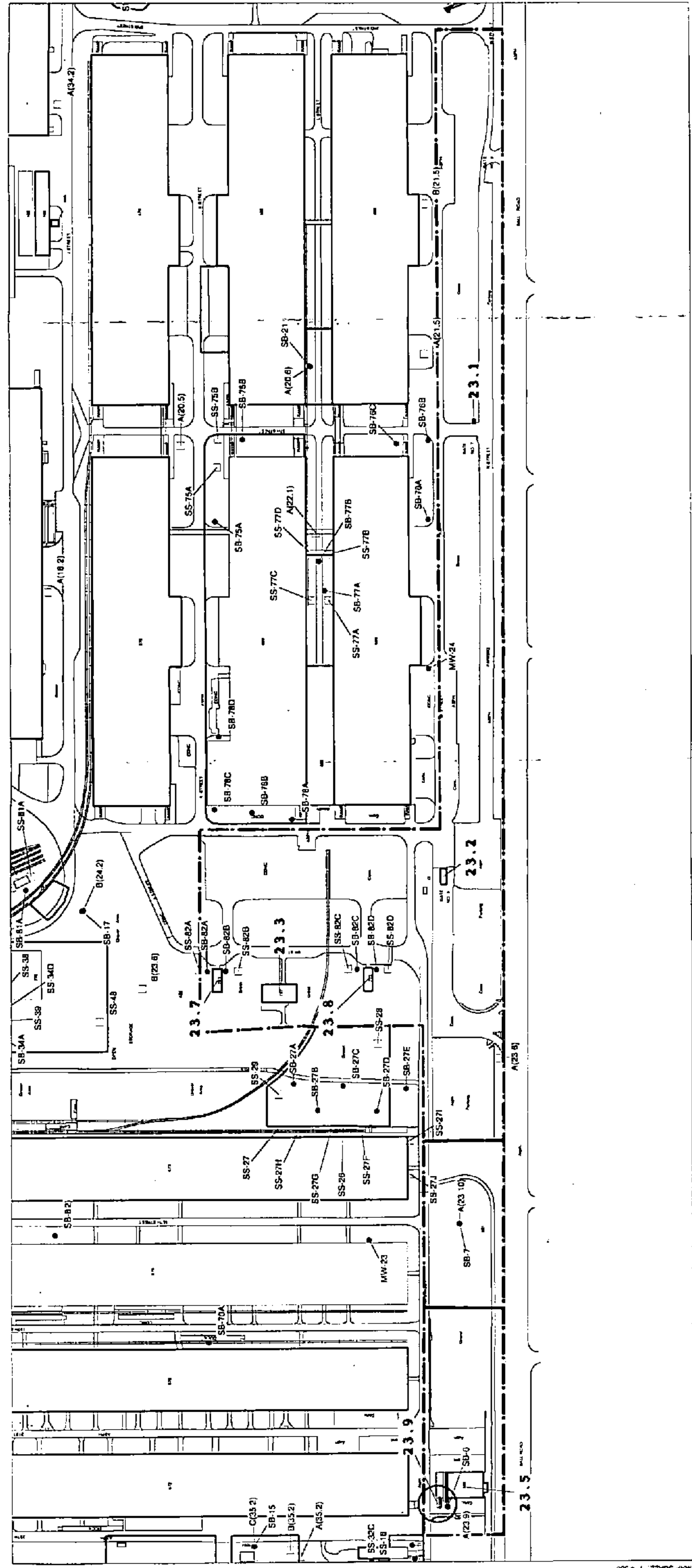
Table 2 summarizes the analytical methodologies that will be used on any proposed samples. Necessary additional sampling is discussed by subparcel below.

2.0 Subparcel 23.1: Sentry Station Gate No. 7

2.1 Description

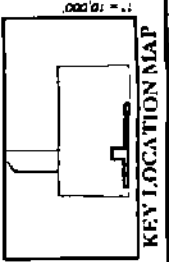
Subparcel 23.1 consists of sentry station gate no. 7. The sentry post at gate no. 7 is 67 square feet, and the installation date of the post is unknown (Woodward-Clyde, 1996; Table 3-1).

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MAP SCALE: 1" = 300'

Figure 1
PARCEL 23
Sampling Locations
Defense Distribution Depot Memphis, TN



- LEGEND**
- Surface Soil Sampling Locations
 - Soil Boring Sampling Locations
 - Surface Water Sampling Locations
 - Sediment Sampling Locations
 - - - Parcel Boundary
 - - - Sub-Parcel Boundary

TABLE 1

Analytes Investigated for Parcel 23

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Dioxins/Furans	CLP-SOW DFLM1.1
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	Total Petroleum Hydrocarbons (TPHs)	SW846 3550/9071/418.1
Soil	Total Fuel Hydrocarbons, Gas Range	SW846 Method 8015
Soil	Purgeable Aromatics, BTEX	SW846 Method 8020

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 23.1 contains the sentry station gate no. 7.

2.2.2 Sampling History

No sampling events were conducted at this subparcel.

2.3 Findings

The sentry post was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP. Because the construction date of this sentry station is unknown, LBP may or may not be present.

2.4 Summary of Environmental Concerns

This sentry station may have been painted with LBP.

2.5 Identified Data Gaps

LBP was not specifically tested for in this building.

2.6 Recommendations

The BCT recommends that this subparcel remain as a CERFA Category 1 since the building is clean (BCT Meeting Minutes, October 1997). However, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 23.1 to assess the extent of LBP in or on the outside of this sentry station.

3.0 Subparcel 23.2: Sentry Station Gate No. 8

3.1 Description

Subparcel 23.2 consists of sentry station gate no. 8. The sentry post is 675 square feet and was built in 1969 (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 23.2 contains the sentry station gate no. 7.

3.2.2 Sampling History

No sampling events were conducted at this subparcel.

3.3 Findings

ACM was identified in the guard station at gate no. 8 from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for at this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

This sentry station contains ACM and may have been painted with LBP.

3.5 Identified Data Gaps

LBP was not specifically tested for in this building.

3.6 Recommendations

The BCT recommends that this subparcel remain as a CERFAC Category 1 since the building is clean (BCT Meeting Minutes, October 1997). XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 23.3 to assess the extent of LBP in or on the outside of this sentry station.

4.0 Subparcel 23.3: General Purpose Warehouse, Building 787

4.1 Description

Subparcel 23.3 consists of Building 787. The building is 5,038 square feet in area and was constructed in 1988 (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

This subparcel consists of Building 787, a general purpose warehouse that is currently used for recycling steel. This warehouse was previously used for steel processing.

4.2.2 Sampling History

No sampling events were conducted at Subparcel 23.3.

4.3 Findings

Building 787 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required.

Although LBP was not specifically tested for in this building, Building 787 was constructed in 1988 after the use of LBP was discontinued; this building should not contain LBP.

4.4 Summary of Environmental Concerns

There are no known environmental concerns at Subparcel 23.3.

4.5 Identified Data Gaps

Although Building 787 was constructed after 1978, LBP has not been tested for.

4.6 Recommendations

The BCT recommends that this subparcel remain as a CERFA Category 1 since the building is clean (BCT Meeting Minutes, October 1997). Additional sampling is not required at Subparcel 23.3.

5.0 Subparcel 23.4: Waiting Shelter, Building 795

5.1 Description

Subparcel 23.4 consists of Building 795, a waiting shelter. The 240-square-foot building was constructed in 1974 (Woodward-Clyde, 1996).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Subparcel 23.4 contains only the waiting shelter, Building 795.

5.2.2 Sampling History

No sampling events were conducted at this subparcel.

5.3 Findings

Building 795 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

5.4 Summary of Environmental Concerns

Building 795 may have been painted with LBP.

5.5 Identified Data Gaps

LBP was not specifically tested for in this building.

5.6 Recommendations

The BCT recommends that this subparcel remain as a CERFA Category 1 since the building is clean (BCT Meeting Minutes, October 1997). XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 23.4 to assess the extent of LBP in or on the outside of Building 795.

6.0 Subparcel 23.5: Transportation-Steel Building S995

6.1 Description

Subparcel 23.5 consists of Building S995, the transportation-steel building. The 8,000-square-foot building was constructed in 1994.

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Subparcel 23.5 consists of Building S995, which is used for steel storage and handling (Woodward-Clyde, November 1996). Previous activities conducted at this building are unknown.

6.2.2 Sampling History

No sampling events were conducted at this subparcel.

6.3 Findings

Building S995 was built in 1994 and was not included in the original asbestos survey conducted in 1993. Based on its year of construction, and the fact that it is a loading dock building with no piping or transite board, DDMT personnel report that no asbestos containing material would be found in the building.

Although LBP was not specifically tested in this building, Building S995 was constructed in 1994, after the use of LBP was discontinued, and it should not contain LBP.

6.4 Summary of Environmental Concerns

There are no known environmental concerns for this subparcel.

6.5 Identified Data Gaps

There are no known data gaps for this subparcel.

6.6 Recommendations

The BCT recommends that this subparcel remain as a CERFA Category 1 since the building is clean (BCT Meeting Minutes, October 1997).

7.0 Subparcel 23.6: Area Surrounding Eastern Portion of Parcel 23

7.1 Description

Subparcel 23.6 consists of the area surrounding buildings in the eastern portion of Parcel 23.

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

Subparcel 23.6 is associated with the eastern portion of Parcel 23, which contains grassed areas. The surface soil surrounding buildings at the installation has the potential for pesticide contamination. In addition, this parcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP (DDMT, November 1997).

7.2.2 Sampling History

Four SS surface soil samples (SS82A through SS82D) and four SS borings (SB82A through SB82D) were collected at Subparcel 23.6. In addition, one BRAC surface soil sample, A(23.6), was collected.

7.3 Findings

Subparcel 23.6 is associated with SS82, entitled Flammables (Buildings 783 and 793), as identified in the Draft Screening Sites Letter Reports (CH2M HILL, March 1998). Only a few COPCs were detected in the surface and subsurface soils surrounding Buildings 783 and 793.

The COPCs identified near Building 783 in the surface soils were arsenic and dieldrin. Chromium and lead were detected in the subsurface soils at elevated concentrations.

Arsenic was the only COPC detected in the surface soils near Building 793. Chromium and lead were detected in elevated concentrations in the subsurface soils. Such elevated concentrations of chromium and lead at about similar depths (4 to 20 feet) were detected elsewhere at DDMT. Thus, elevated concentrations of these metals in subsurface soil is likely due to natural variability with changing soil type.

The samples near Buildings 783 and 793 were collected a few hundred feet north and south of the railroad tracks located between the two buildings. Sample results did not detect elevated concentrations of pesticides or PAHs.

A PRE was performed for Buildings 783 and 793 (CH2M HILL, January 1998). The carcinogenic risk ratio for this area was above a risk level of one in a million for both industrial and residential scenarios, due to the presence of arsenic in surface soil. Arsenic concentrations ranged between 20.2 and 24.3 mg/kg compared to the background level of 20 mg/kg.

The noncarcinogenic PRE risk ratios were well below a value of 1.0 for industrial workers, but were exceeded for the residential scenario from the presence of naturally occurring metals.

Thus, there are no human health concerns at this site from site-related contamination. No further action is recommended for Subparcel 23.6.

7.4 Summary of Environmental Concerns

There are no human health concerns at this subparcel from site-related contamination.

7.5 Identified Data Gaps

Groundwater samples need to be taken from the source area or immediately downgradient to evaluate the presence of chromium as identified in the Draft Screening Sites Letter Report (CH2M HILL, March 1998).

7.6 Recommendations

Groundwater sampling is recommended for this subparcel as indicated in the Draft Screening Sites Letter Report (CH2M HILL, March 1998). The BCT (Meeting Minutes, October 1997) recommends changing Subparcel 23.6 from a CERFA Category 7 to a Category 3, because removal or remedial action is not required.

8.0 Subparcel 23.7: Equipment Storage, Building 783

8.1 Description

Subparcel 23.7 consists of Building 783, which is used for equipment storage. The 2,146-square-foot building was installed in 1942 (Woodward-Clyde, 1996).

8.2 History of Subparcel Activities and Past Sampling Activities

8.2.1 Summary of Subparcel Activities

Subparcel 23.7 is associated with Building 783, which was previously designated for the storage of flammable items and ordnance material. This building also is the location of the former DDMT recoupment facility (DDMT, November 1997).

8.2.2 Sampling History

No sampling events were conducted within Building 783. However, SS surface and subsurface soil samples (SS82A, SS82B, SB82A, and SB82B) are located around this subparcel.

8.3 Findings

ACM was identified in the underground bunker/shop space (Building 783) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. If renovation or demolition is planned, urgent removal of the ACM would be required. Although LBP was not specifically tested for at Building 783, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

COPCs arsenic, chromium, lead, and dieldrin were detected at elevated concentrations in the soils surrounding Building 783. There was one detection of TCDD equivalent in Sample SS82A above the BCT screening criteria; however, the detected value was below the background value in which case its not a COPC.

Additional information about the findings near this building is discussed in Section 7.3.

8.4 Summary of Environmental Concerns

In summary, the environmental concerns at Subparcel 23.7 are ACM and LBP in the building interior, and soil contamination. ACM was identified in Building 783, and this building may have been painted with LBP.

Surface soils contain elevated concentrations of arsenic and dieldrin just above background values. Subsurface soils near Building 783 contain elevated concentrations of chromium and lead just above background values.

8.5 Identified Data Gaps

LBP was not specifically tested for in Building 783.

8.6 Recommendations

The BCT recommends that Subparcel 23.7 remain a CERFA Category 7 since there are elevated concentrations of arsenic at or just above BCT (background) values. XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 783.

9.0 Subparcel 23.8: Equipment Storage, Building 793

9.1 Description

Subparcel 23.8 consists of Building 793, which also is used for equipment storage. The 1,067-square-foot building was installed in 1942 (Woodward-Clyde, 1996).

9.2 History of Subparcel Activities and Past Sampling Activities

9.2.1 Summary of Subparcel Activities

Subparcel 23.8 is associated with Building 793. This building was previously designated for the storage of flammable items and ordnance material and is the location of the former DDMT recoupment facility (DDMT, November 1997).

9.2.2 Sampling History

No sampling events were conducted within this building. However, SS surface and subsurface soil samples (SS82C, SS82D, SB82C, and SB82D) are located around Subparcel 23.8.

9.3 Findings

Building 793 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Arsenic, chromium, lead, and dieldrin were detected at elevated concentrations in the soils surrounding Building 793. See Section 7.3 for more information about the findings near this subparcel.

9.4 Summary of Environmental Concerns

Building 793 may have been painted with LBP.

Surface soils contain arsenic, chromium, lead, and dieldrin at elevated concentrations in the soils surrounding Building 793.

9.5 Identified Data Gaps

LBP was not specifically tested for in this building.

9.6 Recommendations

The BCT recommends that Subparcel 23.8 remain a CERFA Category 7 because of elevated concentrations of arsenic chromium, lead, and dieldrin.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 793.

10.0 Subparcel 23.9: Open Area Outside of Building S995

10.1 Description

Subparcel 23.9 consists of an open area located outside of Building S995, which is located in Subparcel 23.5

10.2 History of Subparcel Activities and Past Sampling Activities

10.2.1 Summary of Subparcel Activities

Subparcel 23.9 is associated with a gasoline spill that was reported on September 13, 1993, outside of Building S995. The precise location of the spill, the action taken, and the quantity of the spill are unknown (DDMT, November 1997).

10.2.2 Sampling History

One BRAC surface soil sample, A(23.9), and one BRAC boring, SB-6, were collected at Subparcel 23.9.

10.3 Findings

This subparcel is associated with a gasoline spill.

The BRAC sample event detected one elevated concentration of lead at 24.3 mg/kg in a boring sample 7 to 10 feet in depth. This detection of lead slightly exceeded the background value of 24 mg/kg.

10.4 Summary of Environmental Concerns

There appears to be no contamination at Subparcel 23.9 because lead is a naturally occurring metal.

10.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

10.6 Recommendations

No additional sampling is required at Subparcel 23.9. The BCT (Meeting Minutes, October 1997) recommends that this subparcel is a CERFA Category 3, because sampling data does not indicate an environmental impact from the gasoline spill.

11.0 Subparcel 23.10: Open Storage Area X01

11.1 Description

Subparcel 23.10 consists of open storage area X01.

11.2 History of Subparcel Activities and Past Sampling Activities

11.2.1 Summary of Subparcel Activities

Subparcel 23.10 is associated with open storage area X01. According to an interview with DDMT personnel, this is the site of a former lake. The sediments at this site are possibly contaminated with PCBs and pesticide/herbicide residues (DDMT, November 1997).

11.2.2 Sampling History

One BRAC surface soil sample, A(23.10), and one BRAC boring, SB-7, were collected at this subparcel.

11.3 Findings

The sediments at Subparcel 23.10 were thought to be contaminated with PCBs and pesticide/herbicide residues. The BRAC soil sample collected at this subparcel did not detect any elevated concentrations of these constituents or other contaminants.

11.4 Summary of Environmental Concerns

There are no known environmental concerns at Subparcel 23.10.

11.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

11.6 Recommendations

Subparcel 23.10 does not require additional sampling. The BRAC sample taken at this subparcel contained dieldrin at concentrations below the residential criteria. The BCT recommends that this subparcel remain CERFA Category 3 (Meeting Minutes, October 1997).

12.0 Subparcel 23.11: Area Surrounding Buildings in the Western Portion of Parcel 23

12.1 Description

Subparcel 23.11 consists of the area surrounding buildings in the western portion of Parcel 23.

12.2 History of Subparcel Activities and Past Sampling Activities

12.2.1 Summary of Subparcel Activities

Subparcel 23.11 is associated with the western portion of Parcel 23. The surface soil surrounding buildings at the installation has the potential for pesticide contamination (DDMT, November 1997).

12.2.2 Sampling History

No sampling events were conducted at this subparcel. However, the BRAC sample A(23.9) and boring SB-6 taken in Subparcel 23.9 is located in the same vicinity as this subparcel.

12.3 Findings

The BRAC sample collected in Subparcel 23.9 (which is within Subparcel 23.11) detected one concentration of lead at 24.3 mg/kg in the subsurface soil, which slightly exceeds the background value of 24 mg/kg. There were no other COPCs detected in the subsurface or surface soils during the BRAC sampling event in this area.

12.4 Summary of Environmental Concerns

There are no known environmental concerns at Subparcel 23.11.

12.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

12.6 Recommendations

No additional sampling is required at Subparcel 23.11.

TAB

24.0

301 261

BRAC Parcel 24 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 24

1.1 Parcel Description

Parcel 24 is an 805,512-square-foot parcel in the southwest portion of the Main Installation in OU-2 (see Figure 1). Parcel 24 consists of three subparcels with the following associated sites: Buildings 770 and 771, open storage area X03, and the adjacent railroad tracks.

Sampling has occurred at this parcel as part of the initial RIs at DDMT (Law Environmental, 1990). Sampling at Parcel 24 has also occurred under BRAC, SS, and RI Sites Sampling Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for Parcel 24.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 24 are ACM and LBP in the building interiors and soil contamination. ACM was identified in Buildings 770 and T771. In addition, based on their early construction dates, both buildings may have been painted with LBP.

The COPCs detected in the soil at Parcel 24 include antimony, arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-c,d)pyrene, chromium, iron, lead, PCP, and vanadium.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 24.1: Gravel Parking Area on the Southeast Side of Building S873

2.1 Description

The 2-acre Subparcel 24.1 includes the area outside of Building S873 (the gravel parking lot to the southeast of the building) (DDMT, November 1997).

TABLE 1

Analytes Investigated for Parcel 24

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	PNAAs GC	SW846 Method 8100
Soil	pH	SW846 Method 9045
Soil	Total Petroleum Hydrocarbons (TPHs)	SW846 3550/9071/418.1
Soil	ASTM Particle Size	ASTM D422
Soil	Atterburg Limits	ASTM D4318
Soil	Percent Moisture	ASTM D2216
Soil	Alkalinity (CaCO ₃)	EPA 310.1
Soil	Cation Exchange Capacity	SW846 Method 9080
Soil	Total Organic Carbon	SW846 Method 9060

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 24.1 is associated with RI Site 27, the former recoupment area—Building S873. The PRE (CH2M HILL, January 1998) states that Building S873 served as the DDMT recoupment area over the estimated time period of 1942 to 1986. The building was formerly used for packing and repacking hazardous and nonhazardous materials from damaged and leaking containers. The recoupment activities were conducted in the southeast corner of the building and in the gravel parking area to the east of the building. The gravel parking area east of the building is the part of the RI Site 27 located in Subparcel 24.1.

Remediation of soil contamination from previous spills of pesticides DDE, DDT, and aldrin has been performed previously at Subparcel 24.1, resulting in the removal and disposal of contaminated soils. Approximately the upper 0.5 to 1 foot of soil in this area was removed and disposed of by DDMT in 1985 (CH2M HILL, January 1998).

2.2.2 Sampling History

Sampling at Subparcel 24.1 includes efforts under the Law Environmental investigation. The Law Environmental (1990) study included four surface soil samples, SS-26 through SS-29. Three RI surface soil samples (SS-27F, SS-27G and SS-27H) and five RI soil borings (SB27A, SB27B, SB27C, SB27D and SB27E) were also collected at (or associated with) this subparcel. Note that samples SS-27F, SS27G, SS27H, and SB27E were collected just outside the geographical boundary of Subparcel 24.1.

2.3 Findings

The COPCs detected at Subparcel 24.1 during the RI sampling event in the surface soils include antimony, arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-c,d)pyrene, iron, and vanadium. No COPCs were detected in the subsurface soil. The PAHs detected in the surface soil are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

Antimony and arsenic were detected at elevated concentrations during the Law Environmental RI of 1990. The more recent RI sampling event detected no exceedances of antimony or arsenic.

As presented in the Draft PRE (CH2M HILL, January 1998), the PRE carcinogenic risk ratios were well above a level of one in a million due to the presence of PAHs in all surface soil samples. The noncarcinogenic PRE ratios were not above a value of one for industrial workers, but were above one for the residential scenario, due to PAHs and metals in the soil.

2.4 Summary of Environmental Concerns

As indicated by the PRE results (CH2M HILL, January 1998), Subparcel 24.1 may require further investigation for PAHs and metals present at levels of potential concern to human health.

2.5 Identified Data Gaps

Additional groundwater, surface soil, and subsurface soil sampling are required (DDMT, November 1997).

2.6 Recommendations

The BCT recommends that Subparcel 24.1 remain as CERFA Category 7 due to the vanadium detection and elevated PAHs in sample locations on the western edge of the subparcel, along the railroad tracks (BCT Meeting Minutes, October 1997). A sitewide risk management decision is needed for railroad tracks that are associated with PAH contamination in surface soil.

3.0 Subparcel 24.2: Open Storage Area X03

3.1 Description

Subparcel 24.2 measures 12.6 acres and includes Area X03, an open storage area, and the adjacent railroad tracks (DDMT, November 1997).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The open storage area X03 found at Subparcel 24.2 was used until 1988 for storage of flammable materials in 55-gallon drums (DDMT, November 1997). The area was subsequently used for steel storage. Subparcel 24.2 is also associated with railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP (DDMT, November 1997).

3.2.2 Sampling History

Sampling at Subparcel 24.2 includes efforts under BRAC, RI, and SS Programs. Two surface soil samples, B(24.2) and B(23.6), and one soil boring, SB-17, were collected under the BRAC Program. Three surface soil samples, SS-27F, SS-27G, and SS-27H, and one boring, SB-27E, were collected during the RI effort and are associated with Subparcel 24.1. One soil boring, SB-70B, was collected during the SS sampling event.

Subparcel 24.2 contains Level 1 immunoassay sample points (13 Immunoassay and 14 Immunoassay) which were used to estimate PAH concentrations in surface soil. This data was used to select 10 SS 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

3.3 Findings

The COPCs detected at Subparcel 24.2 from the BRAC sampling event include arsenic, PAHs, and PCP in the surface soil and lead in the subsurface soil at a depth of zero to 4 feet. The PRE results from the BRAC data (CH2M HILL, January 1998) indicate that carcinogenic risk ratios were above one in a million for both industrial and residential scenarios due to arsenic in one surface soil sample at 84.2 mg/kg, which exceeds the BCT criteria of 20 mg/kg. There were no noncarcinogenic chemicals above background at Subparcel 24.2.

The soil boring SB70B was collected at the northern most corner of Subparcel 24.2 near the railroad tracks. No COPCs were detected in the boring samples.

3.4 Summary of Environmental Concerns

Based on the PRE results from the BRAC sampling event (CH2M HILL, January 1998), there appears to be no excessive human health concerns at Subparcel 24.2. However, arsenic was detected in sample B(24.2) at 84.2 mg/kg, a concentration four times greater than BCT (background) criteria values.

3.5 Identified Data Gaps

Subparcel 24.2 requires further evaluation.

3.6 Recommendations

The BCT recommends that Subparcel 24.2 remain a CERFA Category 7 due to the elevated concentration of arsenic that is four times greater than the BCT criteria (BCT Meeting Minutes, October 1997). Further risk evaluation of arsenic in surface soil, without additional sampling, is recommended.

4.0 Subparcel 24.3: Buildings 770 and T771 and Surrounding Area

4.1 Description

Subparcel 24.3, measuring 3.9 acres, includes Buildings 770 and T771 and the area surrounding these buildings (DDMT, November 1997). Building 770, the Vehicle Maintenance Shop, was built in 1952 and includes 25,000 square feet of space used to store antifreeze, petroleum products, paint, and solvent. Two USTs, also located here, were used to store waste oil in the past (A.T. Kearney Inc., January 1990). Building 770 also contains an oil/water separator that is pumped out quarterly, and a floor drain (DDMT, November 1997). Building T771, built in 1945 with 800 square feet of space, is a public toilet (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 24.2 is associated with Buildings 770 and T771. Subparcel 24.2 is also associated with RI Site 34 and proposed NFA Sites 30, 40, and 41 at Buildings 770.

The following spills have been reported for the area surrounding Building 770:

- An oil spill was reported on August 23, 1993 (outside).
- A 50-gallon spill of PCB containing liquid was reported on July 9, 1990.
- A 55-gallon spill of petroleum was reported on November 7, 1991 (outside).

The contaminated materials associated with these spills were removed, and no further removal or remedial actions were required (DDMT, November 1997).

Several tanks have been removed from Building 770 (DDMT, November 1997) as follows:

- An 11,155-gallon diesel tank removed in July 1994
- An 11,155-gallon fuel oil tank removed in July 1994

- A 10,000-gallon fuel oil tank removed in July 1994
- A 440-gallon gasoline tank removed in December 1989
- Two 1,000-gallon used motor oil tanks removed in December 1989

RI Site 34, underground waste oil storage tanks at Building 770, consists of the two former 1,000-gallon steel used-motor-oil tanks removed in December 1989. The tanks had been in use since the 1960s and were located west of Building 770.

Building 770 is the location of proposed NFA Site 30, which consists of three paint spray booths located throughout the installation. The booths have been in operation for an unknown period of time. Emissions from the areas are controlled by filters located on the back or side walls of the booths, which range in size from 8 feet x 10 feet to 24 feet x 10 feet. Paint from spraying operations passes through filters as a fan, located on the opposite side of the filter, forces air into a vent system.

Building 770 is also the location of proposed NFA Site 40, which consists of nine self-contained Safety-Kleen solvent parts-cleaning stations located throughout the installation. Five of the Safety-Kleen units are located in Building 770. The 20- to 40-gallon steel holding tanks, supported by steel legs, have been used in various locations since 1985. The parts-cleaning solvent, which is periodically replaced by Safety-Kleen (CH2M HILL, September 1994), is recirculated in the tanks. The Safety-Kleen units are used for carburetor and cold parts cleaning. New cleaning material contains 11.9 percent cresylic acids, 31.7 percent methylene chloride, and 81.3 percent ortho-di-chlorobenzene. Used material generally contains various oils and greases from the parts themselves. Safety-Kleen handles the manifesting, transporting, and recycling of the used material.

Building 770 is the location of proposed NFA Site 41, which consists of five satellite drum storage locations throughout the installation that have been used since 1985 to store drums of waste materials. The units vary in the number and size of drums they contain, but all units are located on concrete floors within buildings. Building 770 has two units, and the stored wastes include solvent rags and waste solvent. The drums and areas are maintained in good condition and are regulated. All wastes collected in these areas are transported to the DRMO before offsite disposal (CH2M HILL, September 1994).

4.2.2 Sampling History

Four surface soil samples (SS-38, SS-39, SS-48, and SS-49) were collected during the Law Environmental (1990) study. One surface soil sample, A(24.2), and one boring, SB-16, were collected during the BRAC effort. The RI samples collected at Subparcel 24.3 included three borings (SB-34A, SB-34B, and SB-34C) and three surface soil samples (SS-34D, SS-34E, and SS-34F).

Although no analytical data are available for this subparcel at Site 30, Subparcel 24.3 was evaluated during the RFA conducted in 1990, with the results indicating that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action. Additionally, the FFA designates this subparcel as an NFA Site (CH2M HILL, September 1994).

4.3 Findings

301 269

Buildings 770 and T771

ACM was identified in the Base Maintenance Shop (Building 770) and the Restroom/Storage Space (Building T771) from earlier surveys (Woodward-Clyde, 1996). ACM products in both buildings were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in Buildings 770 or T771, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

RI Site 34—Underground Waste Oil Storage Tanks at Building 770

During the RI sampling event, the surface and subsurface soils were sampled to assess the vertical and horizontal extent of soil contamination from past activities at the storage tank locations. The previous data collected by Law Environmental were associated with the RI sampling data. The COPCs detected during the RI sampling event include arsenic, antimony, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chromium, indeno(1,2,3-c,d)pyrene, and lead in the surface soils. Only chromium was detected in the subsurface soil at elevated concentrations that exceed screening criteria and background values.

The BRAC surface soil sample, A(24.2), also indicated elevated concentrations of PAHs, which were the only COPCs detected in the sample. The PRE results from the RI sampling event (CH2M HILL, January 1998) indicate that carcinogenic risk ratios were exceeded for both industrial and residential receptors from the presence of PAHs and arsenic in the surface soil samples. The noncarcinogenic PRE ratio was not exceeded above a value of 1.0 for an industrial worker, but the risk ratio was exceeded for the residential receptor.

NFA Site 30—Paint Spray Booths at Building 770

Minimal levels of hazardous or toxic materials were released in the spray paint booth (NFA Site 30). Furthermore, dry particulate filters were used to control air emissions. As a result, there appears to be no significant risk to human health or the environment from this spray paint booth.

NFA Site 40—Safety Kleen Units at Building 770

A minimal level of risk exists because hazardous materials are handled in the Safety-Kleen units (NFA Site 40). These risks are controlled through the design and handling criteria regulated under RCRA. Because of the equipment design and procedural controls, there is no significant risk to human health or the environment from the use of Safety-Kleen parts cleaning units (CH2M HILL, September 1994).

NFA Site 41—Satellite Drum Accumulation Area

A minimal level of risk exists because hazardous materials are handled in satellite drum accumulation areas (NFA Site 41). These risks are controlled through the design and handling criteria regulated under RCRA. Because of the design and procedural controls, there is no significant risk to human health or the environment from the past satellite drum accumulation operations (CH2M HILL, September 1994).

4.4 Summary of Environmental Concerns

The environmental concerns at Subparcel 24.3 are ACM and LBP in the building interiors, and soil contamination. ACM was identified in Building 770 and Building T771. If renovation or demolition is planned for either Building 770 or T771, urgent removal of the ACM would be required. Based on the early construction dates of Building 770 and T771, the buildings may have been painted with LBP.

The levels of metals and PAHs in the soil should be further evaluated at this subparcel to assess the potential human health risks. However, PAH is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

4.5 Identified Data Gaps

LBP was not specifically tested for in Buildings 770 or T771.

4.6 Recommendations

The BCT recommends that Subparcel 24.3 remains as a CERFA Category 7 pending the outcome of a risk assessment (BCT Meeting Minutes, fall 1997). Further risk evaluation of metals and PAHs in surface and subsurface soils, without additional sampling, is recommended.

For NFA Site 30, Site 40 and Site 41, the recommendation in the Draft NFA Report (CH2M HILL, September 1994) is that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the site is No Action under CERCLA. This alternative will consist of leaving the site as is. No additional sampling or monitoring will be necessary, because the conditions at the site are protective of human health and the environment.

TAB

25.0

BRAC Parcel 25 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 25

1.1 Parcel Description

Parcel 25 is an 830,835-square-foot parcel in the southwest part of the Main Installation in OU-2 (see Figure 1). Parcel 25 consists of two subparcels with the following associated sites: Buildings S873, 875, and the adjacent railroad tracks.

Sampling has occurred at Parcel 25 as part of the BRAC and the RI Programs.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 25 are ACM and LBP in the building interiors as well as soil contamination. ACM was identified in Building S873 and Building S875. In addition, both buildings may have been painted with LBP due to their early construction dates. The COPCs detected in the soils at Parcel 25 include PAHs—benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-c,d)pyrene—chlordane, and lead.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 25.1: Open Shed Warehouse, Building S873

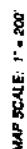
2.1 Description


Subparcel 25.1 measures 6.2 acres and includes Building S873, an open shed warehouse (DDMT, November 1997). This 276,000-square-foot facility was built in 1942 and is used to store hazardous materials; this facility is also the site of a former recoupment area (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 25.1 is associated with RI Site 27, former recoupment area—Building S873. The PRE (CH2M HILL, January 1988) states that Building S873 served as the DDMT recoupment area



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KEY LOCATION MAP

10,000

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1

Analytes Investigated for Parcel 25

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	PNA's GC	SW846 Method 8100

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

over the estimated time period of 1942 to 1986. The building was formerly used for packing and repacking of hazardous and nonhazardous materials from damaged and leaking containers. The recoupment activities were conducted in the southeast corner of the building and in the gravel parking area to the east of the building. The gravel parking area east of Building S873 is the part of the RI Site 27 located in Parcel 24.

Subparcel 25.1 is also associated with a number of spills of different types of materials that have occurred inside of and adjacent to this building. The following spills occurred inside of the building:

- A spill of 60 gallons of tetrachloroethylene was reported on March 10, 1990.
- A spill of 30 gallons of sulfuric acid was reported on April 16, 1990.
- A spill of 55 gallons of cleaning compound solvent was reported on December 7, 1990.
- A spill of 2 gallons of lubricating oil was reported on March 9, 1991.
- A spill of 2 gallons of hydraulic fluid was reported on August 16, 1991.
- Leaking 5-gallon drums of engine gas path cleaner were reported on November 18, 1991.
- A spill of 10 gallons of descaling compound was reported on February 13, 1992.
- Leaking 55-gallon drums of cleaning compound were reported on July 21, 1993.
- Leaking bottles of acid corrosive were reported on November 29, 1993.

Spills outside of the building include:

- 55 gallons of lube oil reported on March 2, 1992
- 55 gallons of fog oil reported on November 26, 1991

Absorbent was applied to all spills. The contaminated material associated with these spills was removed and no further removal or remedial actions were required (DDMT, November 1997). Currently, corrosives, chlorinated solvents, oils, lubricants and greases are being stored in Building S873, as observed during the EBS visual inspection (DDMT, November 1997).

2.2.2 Sampling History

Sampling associated with RI Site 27 actually occurred outside of the southeast corner of Building S873 in Subparcel 25.2 and Parcel 24.

2.3 Findings

ACM was identified in the open shed warehouse (Building S873) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Sampling data for RI Site 27 were actually collected in Subparcel 25.2. The results of the sampling data indicated elevated concentrations of PAH compounds in the surface soils just south of Building S873.

2.4 Summary of Environmental Concerns

ACM was identified in Building S873, and the building may have been painted with LBP.

Elevated concentrations of PAH compounds were detected in the surface soils just south of Building S873. The PAHs result in residential and industrial PRE carcinogenic risk ratios exceeding one in a million. The noncarcinogenic risk ratios for an industrial worker are below one, but were exceeded for a residential receptor due to the presence of PAHs.

PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

2.5 Identified Data Gaps

Building S873 was not tested for LBP. The area southeast of Building S873 requires a risk assessment.

2.6 Recommendations

The BCT recommends that Subparcel 25.1, Building S873, be changed to a CERFA Category 4 because of a documented release inside the building that was reported to have been cleaned up (BCT Meeting Minutes, September 1997). The BCT further recommends that the area surrounding Building S873 is CERFA Category 6 due to the PAH detections. The BCT recommends that the RI Site 27 requires a risk assessment and must go through the RI process. Table 5-2 of the Draft PRE suggests that Building S873 and the surrounding area can be classified as CERFA Category 6 (CH2M HILL, January 1998).

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 25.1 to assess the extent of LBP in or on the outside of Building S873.

3.0 Subparcel 25.2: Open Shed Warehouse, Building S875 and Surrounding Area

3.1 Description

The 12-acre Subparcel 25.2 includes Building S875 and the area surrounding the buildings in Parcel 25 (DDMT, November 1997). Building S875, built in 1942 with 276,000 square feet of space, is an open shed warehouse and heating fuel storage facility. This building currently is used to store overflow POLs, but it has been used to store acids, PCE, and chlorine in the past (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The area surrounding the buildings in Parcel 25 has the potential to contain pesticides due to routine applications (DDMT, November 1997). In addition, Subparcel 25.2 contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

Remediation of soil contamination from previous spills of pesticides DDE, DDT, and aldrin has been performed previously at this subparcel, resulting in the removal and disposal of contaminated soils. Approximately the upper 0.5 to 1 foot of soil in this area was removed and disposed of by DDMT in 1985 (CH2M HILL, January 1998).

Subparcel 25.2 is also associated with a 1,000-gallon heating oil tank that was located outside of Building 875, which was closed in place in July 1994 (DDMT, November 1997).

3.2.2 Sampling History

One surface soil sample, A(25.2), and one soil boring, SB-8, were collected under the BRAC program. Two surface soil samples, SS-27I and SS-27J, were collected under the RI Program.

3.3 Findings

ACM was identified in the Open Shed Warehouse (Building S875) from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

The RI sampling data, collected just south of Building S873, detected elevated concentrations of PAH compounds in the surface soils. The BRAC sampling data, collected in between Building S875 and Building S873, detected an elevated concentration of chlordane in the surface soil and an elevated concentration of lead in the boring sample at a depth of zero to 4 feet.

3.4 Summary of Environmental Concerns

In summary, the environmental concerns at Subparcel 25.2 are ACM and LBP in the building interior, as well as soil contamination. ACM was identified in Building S875, and the building may have been painted with LBP due to its early construction date.

RI Site 27

The PRE results based on the RI sampling event (CH2M HILL, January 1998) indicate that residential and industrial PRE carcinogenic risk ratios exceed one in a million due to the presence of PAHs. The noncarcinogenic risk ratios for an industrial worker are below one, but were exceeded for a residential receptor due to the presence of PAHs. PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

Area Surrounding Buildings in Parcel 25 (excluding RI Site 27)

The PRE results based on the BRAC sampling event indicate that the carcinogenic risk ratios were less than 1 in a million for both industrial and residential receptors. Noncarcinogenic risk ratios were less than one.

Samples were not collected near the railroad tracks located in Subparcel 25.2.

3.5 Identified Data Gaps

The RI Site 27 requires a risk assessment. Building S875 was not tested for LBP.

3.6 Recommendations

The area south of Building S873, RI Site 27, is an early removal candidate (DDMT, November 1997). As indicated by the PRE results, RI Site 27 requires further investigation for PAHs and metals present at levels of potential concern to human health (CH2M HILL, January 1998). The risk assessment may be performed in lieu of an early removal because of the moderate levels of the PAHs (DDMT, November 1997).

The BCT recommends that Subparcel 25.2 is CERFA Category 6 due to the PAH detections (BCT Meeting Minutes, September 1997) and the associated railroad tracks.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 25.2 to assess the extent of LBP in or on the outside of Building S875.

TAB

26.0

BRAC Parcel 26 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 26

1.1 Parcel Description

Parcel 26 is a 461,168-square-foot parcel in the southwestern portion of the Main Installation in OU-2 (see Figure 1). Parcel 26 consists of two subparcels with the following associated sites: Buildings S970 and 889, and the adjacent railroad tracks.

Sampling has occurred at this parcel under the SS Program.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 26 are ACM and LBP in the building interiors, and soil contamination. ACM was identified in Building S970, and the building may have been painted with LBP.

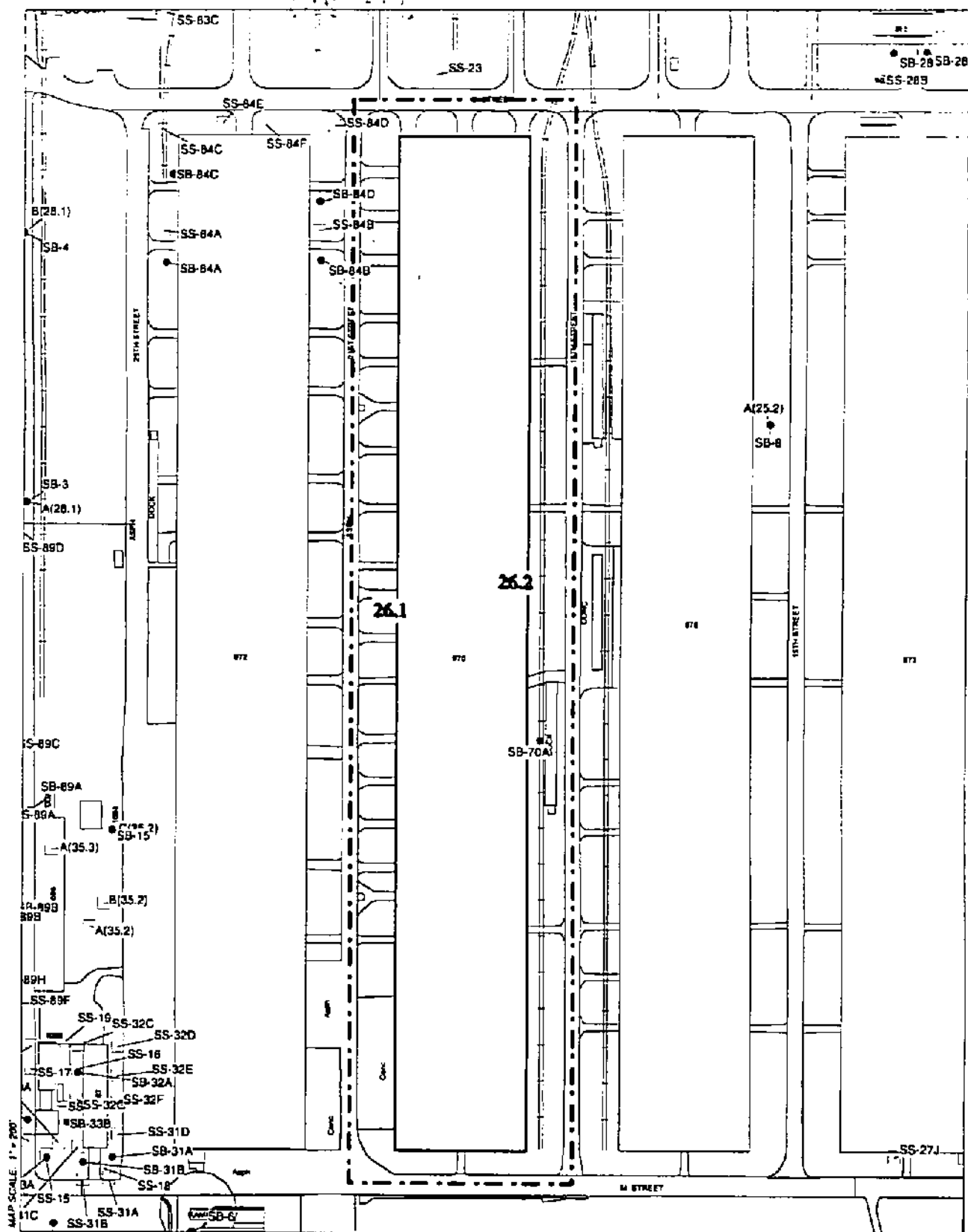
There were no COPCs detected in the subsurface soils surrounding the buildings in Parcel 26. Additional surface soil samples are needed for further evaluation.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 26.1: Loading and Unloading Dock, Building 889 and Area Surrounding the Buildings in Parcel 26

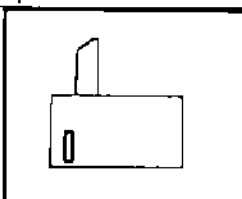
2.1 Description

The 4.7-acre Subparcel 26.1 includes Building 889 and the land area surrounding the buildings in Parcel 26; railroad tracks are also included in this subparcel (DDMT, November 1997). Building 889 is a loading and unloading dock; it is unknown when this dock was constructed (Woodward-Clyde, 1996).



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

14 - 15,000

Figure 1
PARCEL 26
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1
Analytes Investigated for Multiple Parcel Site—Railroad Tracks
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil and subsurface soil samples.

301 284

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

The surface soil surrounding the buildings in Parcel 26 have the potential to contain pesticides as a result of routine application (DDMT, November 1997). In addition, Subparcel 26.1 contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

One soil boring, SB-70A, and one Level 1 immunoassay sample, 6 Immunoassay, were collected at this subparcel under the SS Program. The Level 1 immunoassay samples were used to estimate PAH concentrations in surface soil. These data were used to select 10 SS 70/71 soil boring locations near railroad tracks across the Main Installation for further investigation.

2.3 Findings

No exceedances were detected in the soil boring collected near the loading dock and the railroad tracks east of Building S970.

2.4 Summary of Environmental Concerns

Only subsurface soil data have been collected at Subparcel 26.1. Additional surface soil sampling is needed in areas where waste handling would have been expected.

2.5 Identified Data Gaps

Additional surface soil sampling is needed for this subparcel.

2.6 Recommendations

The BCT recommends that Subparcel 26.1 remain CERFA Category 7 (BCT Meeting Minutes, October 1997).

3.0 Subparcel 26.2: Open Shed Warehouse, Building S970

3.1 Description

Subparcel 26.2 measures 6.3 acres and includes Building S970, an open shed warehouse (DDMT, November 1997). This facility was built in 1942 and includes 276,000 square feet of space used to store steel, rope, hardware, and hoses (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 26.2 is associated with an oil-fired generator at Building S970. The EBS visual inspection noted that oil has leaked onto the concrete pad (DDMT, November 1997).

The release consisted of petroleum products.

3.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

3.3 Findings

ACM was identified in Building S970 from earlier surveys (Woodward-Clyde, 1996). ACM products were also identified that were non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

3.4 Summary of Environmental Concerns

ACM was identified in Building S970, and the building may have been painted with LBP.

3.5 Identified Data Gaps

LBP was not specifically tested for in Building S970.

3.6 Recommendations

Because of the release of some petroleum products within Subparcel 26.2, the BCT (BCT Meeting Minutes, fall 1997) recommends changing the category from CERFA Category 7 to a Category 2.

If renovation or demolition is planned for Building S970, urgent removal of the ACM would be required. XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at Subparcel 26.2 to assess the extent of LBP in or on the outside of Building S970.

TAB

27.0

BRAC Parcel 27 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 27

1.1 Parcel Description

Parcel 27 is a 450,188-square-foot parcel in the southwestern portion of the Main Installation in OU-2 (see Figure 1). Parcel 27 consists of two subparcels with the following associated sites: Building S972 and the adjacent railroad tracks. A description of each subparcel and its associated sites is discussed below.

Sampling under the SS Program, including surface and subsurface soils, occurred at this parcel during 1996.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

Potential environmental concerns at this parcel are asbestos, LBP, and pesticides (from possible fumigation) in the building interior, and contaminants that exceed screening criteria in the surrounding surface and subsurface soils. COPCs detected at Parcel 27 in the surface soils and subsurface soils include chromium, lead, PAHs, and pesticides.

ACM identified in Building S972 was found in non-friable and fair to good condition. If demolition of this building is planned, urgent removal of the ACM would be required. LBP was assumed to be in the building as based on the age of construction and findings from other parts of DDMT.

All buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. The pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

PAH compounds at this parcel are concentrated at the northeast corner of Building S972 at the location of the railroad tracks. PAH compounds are found sitewide at DDMT because of railroad operations or asphalt paved areas. The detected PAHs are sitewide problems and will be addressed in an upcoming sitewide risk evaluation.

Chlorinated pesticides are present in surface soil and are believed to result from past routine applications. One of six samples had both alpha and gamma chlordane concentrations slightly above residential RBCs, but not industrial RBCs.

TABLE 1

Analytes Investigated for Parcel 27

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

The elevated concentrations of lead and chromium appear to be related to the industrial activities around Building S972 and/or the railroad tracks. The metal occurrences appear to be localized and are not believed to be extensive.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 27.1: Outdoor Area Surrounding Building 972

2.1 Description

Subparcel 27.1 consists of the area surrounding Building 972.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

This subparcel is associated with the areas (i.e., storage facilities and a railroad track) surrounding Building S972 (Woodward-Clyde, November 1996). The surface soil in this subparcel and the railroad tracks have the potential for pesticide contamination. The railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Six SS surface samples (SS84A, SS84B, SS84C, SS84D, SS84E, and SS84F) and four SS borings (SB84A, SB84B, SB84C, and SB84D) were collected at this subparcel.

2.3 Findings

This subparcel is associated with SS 84, the area immediately surrounding Building 972, as identified in the Draft Screening Sites Letter Reports (CH2M HILL, March 1998). A number of chemicals were detected at concentrations exceeding screening criteria and background values in the soils located at this screening site. The COPCs detected in the surface soils were chromium, PAHs [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-c,d)pyrene], and chlorinated pesticides [alpha-chlordane and gamma-chlordane]. The COPCs detected in the subsurface soils were chromium and lead.

In accordance with results of the sampling event, the carcinogenic risk ratios for the industrial and residential scenario were above one in a million due to the low concentrations of PAHs present in the surface soils (CH2M HILL, January 1998). The noncarcinogenic PRE ratios were not exceeded for an industrial worker scenario, but the ratio was exceeded for a residential scenario due to the presence of PAHs.

2.4 Summary of Environmental Concerns

Elevated concentrations of PAHs, pesticides and metals were detected in the surface and subsurface soil of this subparcel.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

PAH compounds at this parcel are concentrated at the northeast corner of Building S972 at the location of the railroad tracks. The detected PAHs are sitewide problems and will be addressed in an upcoming sitewide risk evaluation.

Chlorinated pesticides are present in surface soil and are believed to result from past routine applications. One of six samples had both alpha and gamma chlordane concentrations slightly above residential RBCs, but not industrial RBCs.

The elevated concentrations of lead and chromium appear to be related to the industrial activities around Building S972 and/or the railroad tracks. The metal occurrences appear to be localized and are not believed to be extensive.

2.5 Identified Data Gaps

There are no known additional data needs for this subparcel.

2.6 Recommendations

The BCT originally categorized this subparcel as a CERFA Category 4. However, based on the SS 84 sampling event PRE results presented in the Draft PRE (CH2M HILL, January 1998), it is recommended that this subparcel be reclassified from CERFA Category 4 to CERFA Category 7, due to the presence of PAHs.

Further risk evaluation of PAHs in surface soils, using existing data (without additional sampling), is recommended to confirm that No Further Action is required at Subparcel 27.1.

3.0 Subparcel 27.2: Open Shed, Building S972

3.1 Description

Subparcel 27.2 is a 276,000-square-foot open shed warehouse (Building S972) that was installed in 1942.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 27.2 (Building S972) is associated with Screening Site 84. This building, which was previously used to store flammables, solvents, and waste oil, is now used to store and handle packing material. Oil-stained areas were observed in Building S972 during the EBS visual inspection. The BCP (DDMT, November 1997) reported that operational spills were cleaned when they occurred. The observed stains were recently removed by floor cleaning and relining.

3.2.2 Sampling History

Sampling events were not conducted at this subparcel.

3.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings.

3.4 Summary of Environmental Concerns

ACM was identified in Building S972 and the building may have been painted with LBP.

3.5 Identified Data Gaps

Testing for LBP has not occurred at this particular building.

3.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of this building.

In accordance with representative air sampling results, Building S972 should be classified as Category 1.

TAB

28.0

BRAC Parcel 28 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 28

1.1 Parcel Description

Parcel 28 is a 536,349-square-foot parcel in the southwest part of the Main Installation in OU-2 (see Figure 1). Parcel 28 consists of two subparcels that contain Building 1089, open storage area X04, and the adjacent railroad tracks. A description of each subparcel and its associated sites is discussed below.

Sampling of surface soils and subsurface soils under the SS Program and the BRAC Program occurred at this parcel from 1995 through 1997. A surface soil sample was collected by Law Environmental in 1990 in a location that borders Parcel 35.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, potential environmental concerns at this parcel are asbestos and LBP in the building interior and contaminants that exceed screening criteria in the surrounding surface and subsurface soils. Building 1089 has the potential to contain ACM and LBP because of its early construction date.

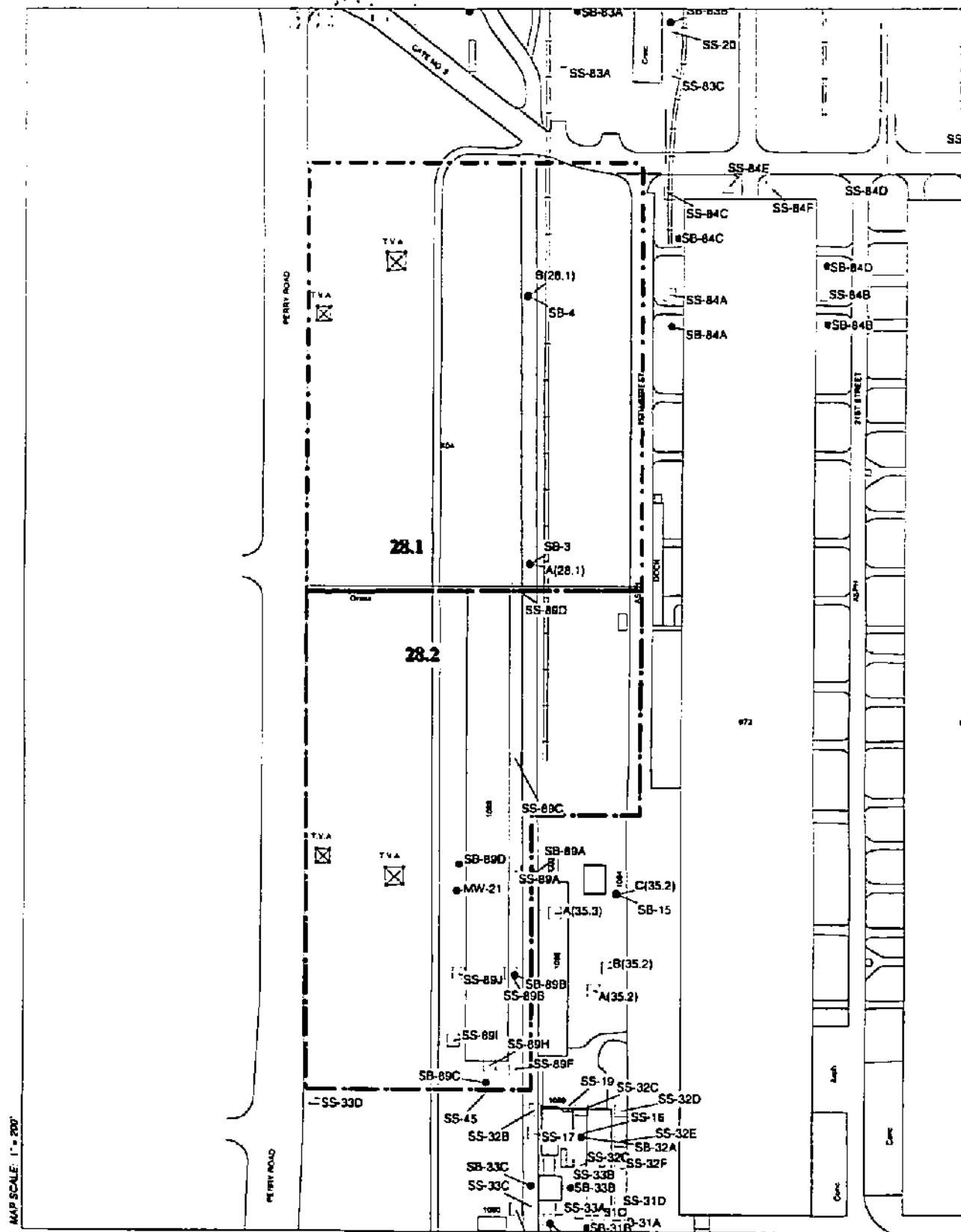
COPCs detected at Parcel 28 in the surface and subsurface soils include arsenic, aluminum, iron, chromium, and lead.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 28.1: Open Storage Area, X04

2.1 Description

Subparcel 28.1 consists of the open storage area X04 and the adjacent railroad tracks.



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary

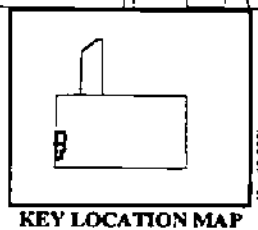


Figure 1
PARCEL 28
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1
Analytes Investigated for Parcel 28
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	pH	SW846 Method 9045

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 8010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Open storage area X04 is used to store steel and PVC pipes, and the area was previously used to store feed stock material. Open storage area X04 has not been used to store hazardous waste (DDMT, November 1997; Table 3-6). The railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Four BRAC soil samples—A(28.1), SB-3, B(28.1), and SB-4—were collected at this site.

2.3 Findings

Aluminum and iron concentrations were detected in the range of the BCT screening levels in the surface soils. Lead was detected above the groundwater protection value in the subsurface soil at a depth of zero to 4 feet. However, the detected concentration was within the background value range.

In accordance with the PRE results of the BRAC sampling event conducted at Parcel 28.1, carcinogenic risk ratios are well within a risk level of one in a million for both the industrial and residential scenarios (CH2M HILL, January 1998).

The noncarcinogenic PRE risk ratios for Parcel 28.1 were above a value of 1.0 for both the industrial and residential scenarios, primarily from the inorganic chemicals iron and aluminum. However, iron and aluminum concentrations in surface soil do not pose significant health risks.

2.4 Summary of Environmental Concerns

Elevated concentrations of iron and aluminum in the surface soil result in the noncarcinogenic risk ratios being above a value of one for both the industrial and residential scenarios. However, iron and aluminum concentrations in surface soil do not pose significant health risks.

2.5 Identified Data Gaps

There are no known identified data gaps for this subparcel.

2.6 Recommendations

The BCT recommends (Meeting Minutes, October 1997) that this subparcel be classified as a CERFA Category 3.

3.0 Subparcel 28.2: Acid Storage, Building 1089 and Surrounding Area

3.1 Description

Subparcel 28.2 consists of Building 1089 and the immediate surrounding area. Building 1089 is 39,600 square feet and was constructed in 1960 (Woodward-Clyde, November 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

This subparcel is associated with SS 89, Building 1089, and the immediate surrounding area (CH2M HILL, March 1998). Building 1089 was previously used to store acids. It is currently used to store miscellaneous chemicals such as paints and solvents (Woodward-Clyde, November 1996). The surface soil surrounding the building has the potential for VOC and metal contamination due to subparcel activities taking place.

3.2.2 Sampling History

Eight SS surface soil samples (SS89A through SS89D, SS89F, and SS89H through SS89J) and four SS boring samples (SB89A through SB89D) were collected within this subparcel. One surface soil sample (SS45) was collected by Law Environmental at this subparcel. Note that the Law Environmental sample also borders the north side of Parcel 35.

3.3 Findings

Although Building 1089 was not included in the Asbestos Identification Survey (Woodward-Clyde, 1996), ACM may be present due to the year of construction. In addition, although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

Metals COPCs—chromium, arsenic, and lead—were detected at concentrations exceeding screening criteria and background values in the soils at this screening site. Lead concentrations were detected in the surface soils at values five to six times above the EPA-established CERCLA soil lead clean-up guidance. Because of the significant levels of metals, Subparcel 28.2 is a candidate for early removal.

The elevated concentrations of metals observed in the surface soils are suspected to be from historical operations involving paints at the site. These metals are not readily available for leaching and percolation as evidenced by subsurface soil sample results, which do not exceed screening criteria.

A PRE—as reported in the Draft Preliminary Risk Evaluation (CH2M HILL, January 1998)—was performed for the area surrounding Building 1089. The PRE carcinogenic risk ratio for this area is above a risk level of one in a million from arsenic at slightly above background levels. The noncarcinogenic PRE ratios were above a value of one for both industrial worker and residential scenarios from the presence of chromium, copper, zinc, and lead.

3.4 Summary of Environmental Concerns

SS 89 will need to go through the RI process and will likely require some remedial action because of the co-occurring elevated lead and chromium concentrations as reported in the Draft Screening Sites Letter Report (CH2M HILL, March 1998). The high levels of metal concentrations in surface soil also make SS89 an early removal candidate.

This subparcel is a CERFA Category 6.

3.5 Identified Data Gaps

Additional surface soil samples are necessary to evaluate the extent of metals contamination at Subparcel 28.2. Testing for ACM and LBP has not occurred at Building 1089.

3.6 Recommendations

Additional surface soil sampling is recommended in order to assess the extent of metals contamination.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 1089. Testing for ACM should also be conducted, and recommendations for management should be made on the basis of the condition of the ACM.

TAB

29.0

BRAC Parcel 29 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 29

1.1 Parcel Description

Parcel 29 is a 1,305,477-square-foot parcel in the northwest corner of the Main Installation in OU-4 (see Figure 1). Parcel 29 consists of Subparcel 29.1, Building 9; Subparcel 29.2, Buildings 801, 802, and 804 as well as open storage areas X27 and X30; and Subparcel 29.3, the west storm-water drainage canal and the adjacent railroad tracks.

Sampling under the SS Program and the BRAC Program occurred at Parcel 29 from 1996 through 1997. The SS Program included sampling of surface soils, subsurface soils, sediment, and surface water. The BRAC Program sampled only surface and subsurface soil. Previous surface water samples were collected in investigations conducted by Law Environmental in 1990. A sediment sample was collected in 1995 by EDRW, Inc.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

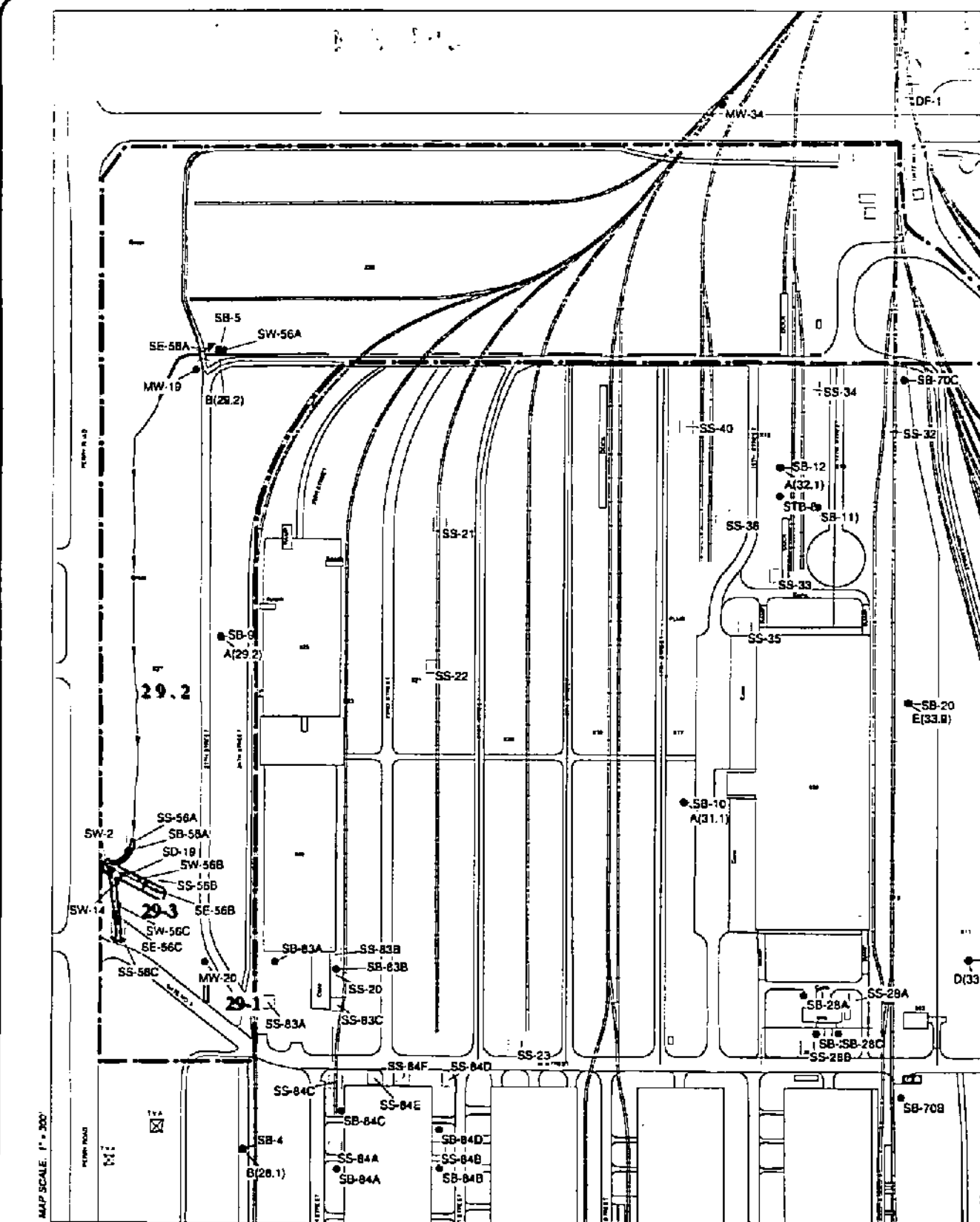
1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns at Parcel 29 consist of surface soil contamination at Subparcels 29.2 and 29.3 (especially at SS 56), and ACM and LBP in the interiors of Buildings 9 and 801.

In accordance with BCT recommendations (BCT Meeting Minutes, September 1997), SS 56 at Subparcel 29.3 requires further assessment for PAHs, DDE, DDT, and DDD in the sediments. Also, dieldrin and chromium concentrations are above residential RBC associated with Subparcel 29.2. PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide evaluation.

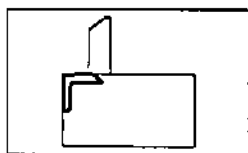
ACM was identified in Buildings 9 and 801 during a previous survey (Woodward-Clyde, 1996) and found to be in non-friable and/or fair-to-good condition. If demolition of either of these buildings is planned, urgent removal of the ACM would be required. LBP was assumed to be evident in Building 801 based on the age of construction and findings from other parts of DDMT.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- △ Sediment Sampling Locations
- Parcel Boundary
- - - Sub-Parcel Boundary



KEY LOCATION MAP

1" = 10,000'

Figure 1
PARCEL 29
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1
Analytes Investigated for Parcel 29
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Dioxins/Furans	CLP-SOW DFLM1.1
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Surface Water	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Surface Water	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Surface Water	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	TCL Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	TCL Pesticides Only GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 8010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.0 Subparcel 29.1: Gate No. 9, Building 9

2.1 Description

Subparcel 29.1 is the smallest of the Parcel 29 subparcels, measuring 0.01 acre. This subparcel includes sentry station gate no. 9 (DDMT, November 1997). The gate was built in 1942 and has 420-square-feet of space used as a sentry post (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

No waste management or material storage is associated with Subparcel 29.1 (DDMT, November 1997).

2.2.2 Sampling History

No previous media sampling has occurred at this subparcel, but ACM was tested for.

2.3 Findings

ACM was identified in the communication/restroom (Building 9) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

2.4 Summary of Environmental Concerns

There are no environmental concerns at this subparcel.

2.5 Identified Data Gaps

Testing for LBP has not occurred at Building 9.

2.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary to assess the extent of LBP in or on the outside of Building 9.

3.0 Subparcel 29.2: Buildings 801, 802, and 804, also Open Storage Areas X27 and X30

3.1 Description

This large subparcel measures 30.4 acres and includes Building 801 (facility engineer maintenance shop), Building 802 (waiting shelter), Building 804 (load and unload dock), and open storage areas X27 and X30 (DDMT, November 1997). Areas X27 and X30 are large open areas used to store steel and PVC pipe. Building 801 is a 544-square-foot facility built in 1956 and used for engineering storage. Building 802 was built in 1981 and contains 400 square feet

used as a shelter. Historical information (i.e., construction date, previous uses) is not available for Building 804 (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Building 801 is the facility engineer maintenance shop that is currently used for engineering storage. Previous storage use is unknown. Building 802 is the waiting shelter. Building 804 is a loading and unloading dock. Open storage areas X27 and X30 are used to store steel and PVC pipes.

According to the BCP Report (DDMT, November 1997), a 1.25-gallon hydraulic fluid spill in the street was reported on September 12, 1995. The spill traveled north, out Gate 15, and across Dunn Avenue. Application of absorbent was sufficient to clean up the spill. The exact location of the spill is unknown.

On the basis of information from DDMT personnel, the surface soil surrounding buildings at the Main Installation has the potential for pesticide contamination. In addition, railroad tracks at DDMT have been associated with elevated PAH compounds and pesticides.

3.2.2 Sampling History

Both soil boring samples, SB-5 and SB-9, and surface soil samples, A(29.2) and B(29.2), were collected at Subparcel 29.2 under the BRAC Program. One surface water sample, SW-56A, and one sediment sample, SE-56A, were collected under the SS Program.

3.3 Findings

Building 801

ACM was identified in this FE maintenance shop (Building 801) from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition, which can be managed through a comprehensive operations and maintenance program. Although LBP was not specifically tested for in Building 801, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Building 802

The waiting shelter (Building 802) was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than one percent. No further action is required. Although LBP was not specifically tested for in this Building 802, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

Surrounding Areas in Parcel 29.2 (Including Open Storage Areas X27 and X30)

In accordance with BRAC sampling data, COPCs detected in the surface soils at Subparcel 29.2 are chromium, dieldrin, and methylene chloride. A PRE based on BRAC samples (CH2M HILL, January 1998) reported that the carcinogenic risk ratio for Subparcel 29.2 was within a risk level of one in a million for the industrial worker scenario. However, the ratio was exceeded for the residential scenario, primarily from dieldrin at low levels (0.13 mg/kg) in one sample.

The noncarcinogenic PRE ratios were below a value of one for industrial workers, but were slightly exceeded for the residential scenario from the presence of chromium, selenium, and zinc—all of which occur naturally in the soil.

Only one COPC, DDT, was detected in the sediment sample.

3.4 Summary of Environmental Concerns

In summary, the environmental concerns of this subparcel are ACM and LBP in the building interiors, and soil contamination.

ACM was identified in Building 801 and the building may have been painted with LBP. There was no ACM identified in Building 802 and the building probably does not contain LBP since it was constructed after the use of LBP was discontinued.

Dieldrin and chromium concentrations in the surface soil exceed screening criteria values and result in carcinogenic and noncarcinogenic residential risk ratio exceedances. Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation. Chromium occurs naturally in the soil and was identified at similar concentrations throughout the Main Installation.

3.5 Identified Data Gaps

Testing for LBP has not occurred at Buildings 801 and 802.

3.6 Recommendations

The BCT recommends further assessment for this subparcel due to dieldrin and chromium concentrations above screening criteria in one BRAC boring sample (BCT Meeting Minutes, September 1997).

For Building 801, XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary to assess the extent of LBP in or on the outside of the building.

4.0 Subparcel 29.3: West Storm-water Drainage Canal

4.1 Description

Subparcel 29.3, the west storm-water drainage canal, measures 0.13 acre (DDMT, November 1997). The canal, located in the middle of the west boundary of the Main Installation, is 7 feet deep and 6 feet wide. It has been operating since the 1940s (A.T. Kearney, Inc., January 1990).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 29.3 is associated with SS 56, the west storm-water drainage canal that collects storm-water runoff from the PCP tank area and the western portion of the Main Installation.

4.2.2 Sampling History

Two surface water samples, SW-2 and SW-14, were collected at this subparcel under the Law Environmental investigation. Samples collected under the SS Program include: two surface water samples, SW56B and SW-56C; two sediment samples, SE-56B and SE-56C; three surface soil samples, SS-56A, SS-56B, and SS-56C; and one soil boring, SB-56A. One sediment sample, SD-19, was collected at SS 56 during the 1995 Sediment Sampling Program (EDRW Inc., 1996).

4.3 Findings

A number of COPCs were detected at Subparcel 29.3 as a result of the SS Program and Law Environmental sampling events. COPCs detected in the surface soil were aluminum, arsenic, chromium, iron, and manganese. The COPC detected in the subsurface soil was lead. COPCs detected in the surface water were dissolved arsenic, dissolved selenium, alpha endosulfan, bis(2-ethylhexyl)phthalate, and silver. The COPCs detected in the sediment were lead, p,p'-DDD, and p,p'-DDE. PAH compounds were also detected in the sediments at concentrations that exceed the screening criteria but not the background values.

A PRE based on available sample data (CH2M HILL, January 1998) reported that the carcinogenic risk ratio for this area was above a risk level of one in a million for both the industrial and residential scenarios. This risk ratio was attributed to arsenic at 20.2 mg/kg concentration, compared to a background level at 20 mg/kg.

The noncarcinogenic PRE ratios at Subparcel 29.3 were above a value of one for both industrial and residential scenarios from the presence of several metals at elevated concentrations in the soils.

4.4 Summary of Environmental Concerns

In accordance with BCT recommendations (BCT Meeting Minutes, September 1997), SS 56 at Subparcel 29.3 requires further assessment for PAHs, DDE, DDT, and DDD in the sediments. Also, dieldrin and chromium concentrations are above residential RBC associated with Subparcel 29.2.

4.5 Identified Data Gaps

An evaluation of offsite data should be performed to assess whether there has been transport of constituents offsite.

4.6 Recommendations

For Subparcel 29.3, it is recommended that a risk assessment be performed to confirm that NFA is required at the site. Downgradient, offsite data should be evaluated to evaluate whether transport of sediment and surface water constituents presents an ecological health concern. Additional downgradient sediment and surface water samples need to be collected if existing data are insufficient. The BCT recommends that Subparcel 29.4 remain CERFA Category 7 until a risk assessment is performed.

TAB

30.0

BRAC Parcel 30 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 30

1.1 Parcel Description

Parcel 30 is a 400,699-square-foot parcel in the northwestern portion of the Main Installation in OU-4 (see Figure 1). Parcel 30 consists of five subparcels and the following associated sites: Buildings 925 and P949 and the adjacent railroad tracks.

Sampling of surface soils and subsurface soils, under the SS Program, occurred at Parcel 30 in 1996. A previous surface and subsurface soil sample was collected during an investigation by Law Environmental in 1990.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

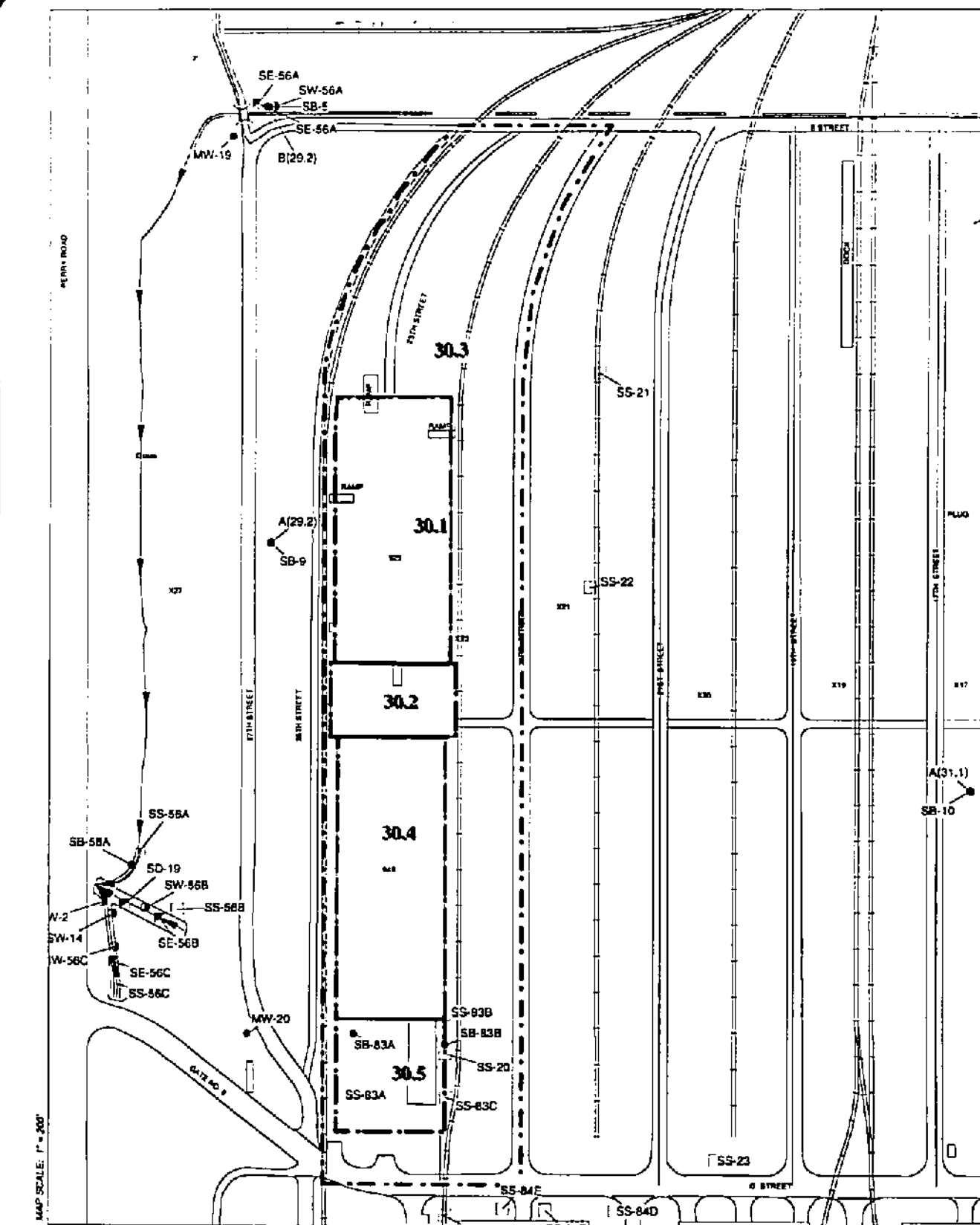
In general, potential environmental concerns at this parcel are asbestos and LBP in the building interiors as well as contaminants that exceed screening criteria in the surrounding surface soils and subsurface soils.

Buildings previously placed in CERFA Category 7 (based on possible fumigation) can now be recategorized into Category 1 as a result of air sampling in representative buildings. Pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

COPCs antimony, barium, beryllium, cadmium, chromium, iron, lead, and zinc were detected in the surface soils and subsurface soils at Parcel 30. PAHs were detected in elevated concentrations in the soils south of Building P949. PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide investigation.

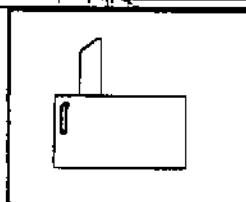
Buildings at Parcel 30 that were potentially fumigated include Building P949. Results of representative air sampling indicate that health-based criteria were not exceeded, and therefore this building can now be placed into CERFA Category 1.

The following sections present a description of each subparcel, historical activities and environmental sampling that has been performed, findings, a summary of environmental concerns, identified data gaps, and recommendations for each subparcel. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

1" = 10,000'

Figure 1
PARCEL 30
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1
Analytes Investigated for Parcel 30
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.0 Subparcel 30.1: Special Purpose Warehouse, Building 925

2.1 Description

Subparcel 30.1 measures 1.4 acres and includes Building 925, special purpose warehouse (DDMT, November 1997). This warehouse was rebuilt in 1993 to 1994 and has 60,000 square feet of space used to store flammable materials in drums. In the past, this warehouse has been used to store petroleum products in 55-gallon drums (Woodward-Clyde, 1996).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Building 925 is currently used for drum storage of flammable and hazardous materials. It is reported that prior to the construction of the building, the area was used for drum storage. Initially, drums were stored within an earthen berm, but this was later replaced with a concrete berm. According to the BCP report (DDMT, November 1997), there is documentation that a spill occurred on January 19, 1988, when a fabric tension building (S925) that was constructed over the top of the concrete floor and bermed area failed during a storm. The spill of 325 gallons of mixed solvents, known as X-25 material, (which was diluted by more than 30,000 gallons of rainwater) was immediately removed and properly disposed of.

Materials currently stored in Building 925 include acetone, MEK, methanol, and ethanol.

2.2.2 Sampling History

No sampling events were conducted at Subparcel 30.1.

2.3 Findings

The X-25 material associated with the spill in the former Building 925 was removed in 1988. Any remaining material has continued to volatilize and degrade over the 9-year period since the spill.

Building 925 was built in 1994 and was not included in the original asbestos survey conducted in 1993. Based on its year of construction, no ACM would be found in the building. Although LBP was not specifically tested for in this building, Building 925 was constructed in 1993 to 1994, after the use of LBP was discontinued, and it should not contain LBP.

2.4 Summary of Environmental Concerns

There are no known environmental concerns for Subparcel 30.1 (Building 925). All remedial actions necessary to protect human health and the environment have been taken.

2.5 Identified Data Gaps

There are no identified data gaps for Subparcel 30.1.

2.6 Recommendations

The BCT recommends recategorizing Building 925 as a CERFA Category 4 (BCT Meeting Minutes, September 1997). The area south of Building 925, Subparcel 30.2, requires additional soil sampling (due to the spill) to assess potential contamination.

3.0 Subparcel 30.2: Area Between Buildings 925 and P949

3.1 Description

The 0.42-acre Subparcel 30.2 includes the area between Buildings 925 and P949. This area has been used in the past to store drums, using an earthen berm, and to store flammable solvents (DDMT, November 1997).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 30.2 consists of NFA Site 53, a spill of 325 gallons of highly flammable solvents between Buildings 925 and P949. According to the BCP report (DDMT, November 1997), the spill occurred on January 19, 1988. The material associated with the spill was a mixture of highly flammable solvents, including xylene and toluene.

The building was rebuilt, and the spill area formerly inside the old building is now primarily outside the new building to the south (Subparcel 30.2), where any residual material has continued to volatilize and degrade over the 9-year period since the spill (BCT Meeting Minutes, September 1997).

3.2.2 Sampling History

Although no analytical data are available for Subparcel 30.2, this subparcel was evaluated during the RFA conducted in 1990. The results indicated that the potential for release from all pathways was low. There was no history or evidence of uncontrolled leaks or spills, the units appeared to be in good condition, and the subparcel was designated for no further action.

3.3 Findings

The X-25 material associated with the spill in the former Building S925 (Subparcel 30.1) was removed in 1988. It is unknown whether this material migrated to Subparcel 30.2.

3.4 Summary of Environmental Concerns

The surface soil of this subparcel has the potential to contain contaminants due to the 1988 spill.

3.5 Identified Data Gaps

The BCT suggests (BCT Meeting Minutes, September 1997) that additional soil sampling is required because of the January 19, 1988, spill that took place in the former Building S925.

3.6 Recommendations

The recommendation for Subparcel 30.2 (CH2M HILL, September 1994) is that no remedial actions are necessary for the protection of human health or the environment. This recommendation should be confirmed by additional soil sampling to evaluate the January 19, 1988, spill that took place in the former Building S925.

4.0 Subparcel 30.3: Area Surroundings the Buildings in Parcel 30

4.1 Description

Subparcel 30.3, measuring 6.0 acres, is the largest of the Parcel 3 subparcels. This subparcel includes the area surrounding the buildings in Parcel 30. Open Storage Area X23 and the railroad tracks are also associated with Subparcel 30.3 (DDMT, November 1997).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 30.3 contains open storage area X23. According to Table 3-1 of the EBS Report, the area is used to store steel and PVC pipes (Woodward-Clyde, November 1996). Normally, the open storage areas at DDMT have the potential for hazardous materials to have been released. In addition to open storage area X23, this subparcel contains railroad tracks that were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

4.2.2 Sampling History

No sampling events were conducted at Subparcel 30.3.

4.3 Findings

This subparcel consists of open storage area X23 and the adjacent railroad tracks. There is no known contamination at the open storage area. PAHs and pesticides have been detected near railroad tracks at several DDMT locations and will be evaluated in an upcoming sitewide risk evaluation.

4.4 Summary of Environmental Concerns

This subparcel contains railroad tracks that have been associated with elevated concentrations of PAHs and pesticides.

4.5 Identified Data Gaps

Soil sampling may be needed at Subparcel 30.3.

4.6 Recommendations

A sitewide risk evaluation of PAHs and pesticides is planned using existing data from other parcels. This evaluation will be considered representative of sitewide conditions, including this parcel.

5.0 Subparcel 30.4: Building P949

5.1 Description

Subparcel 30.4 includes Building P949, a general purpose warehouse. This 60,000-square foot warehouse was built in 1987 and is used to store steel (Woodward-Clyde, 1996). The total subparcel size is 1.4 acres (DDMT, November 1997).

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Subparcel 30.4 is associated with Building P949, which is used to store hazardous materials. This building was fumigated as reported in the BCP plan (DDMT, November 1997). No previous data exist to assess the impact of fumigation. Air sampling to assess the impact of fumigation was conducted in other buildings known to have been fumigated (BCP, November 1997).

5.2.2 Sampling History

No previous media sampling events were conducted at Subparcel 30.4. However, SS 83 samples were collected just south of Building P949. Screening Site 83 includes POL areas X-13, X-15, and X-25.

5.3 Findings

Building P949 was not tested for ACM since the building has no insulation or transite board according to DDMT personnel. The building has not been tested for LBP, however, the building was constructed after the use of LBP was discontinued.

Air sampling was conducted in a number of buildings known to have been fumigated or possibly fumigated. Pesticides DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits. Because the limited air sampling is representative of Building P949, at which fumigation was also suspected, there is no health-based concern due to air.

Results of SS 83 samples, the surface soil area surrounding Building P949, are presented in Section 6.3 below.

5.4 Summary of Environmental Concerns

Because the limited air sampling is representative of Building P949, at which fumigation was also suspected, there is no health-based concern due to air. According to DDMT personnel, the building has been sold and will be brought down.

5.5 Identified Data Gaps

There are no known identified data gaps for this subparcel.

5.6 Recommendations

Based on representative air sampling results, Building P949 should be classified as CERFA Category 1.

6.0 Subparcel 30.5: Area Adjacent to South Side of Building P949

6.1 Description

Subparcel 30.5, measuring 0.55 acre, includes the area adjacent to the south side of Building P949. This area was formerly used to dispose of dry paint residues (DDMT, November 1997).

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Subparcel 30.5 is associated with SS 83, the dried paint disposal area, which is adjacent to the south side of Building P949. The location of SS 83 was apparently used for outside spray painting and sandblasting, and some dried paint residues remain.

6.2.2 Sampling History

Three SS surface soil samples (SS83A, SS83B, and SS83C) and two SS borings (SB83A and SB83B) were collected at this subparcel.

6.3 Findings

COPCs antimony, barium, beryllium, cadmium, chromium, iron, lead, and zinc were detected at SS 83 just south of Building P949. The surface soils at SS 83 have been impacted by paint chip disposal. Therefore, metals concentrations are elevated—indicating potential human health impacts, if exposures were to occur.

A PRE was performed for SS 83 and was reported in the Draft Preliminary Risk Evaluation (CH2M HILL, January 1998). The carcinogenic risk ratio for this area is above a risk level of one in a million for both industrial and residential scenarios, primarily from the presence of PAHs and low-level PCBs. The noncarcinogenic PRE ratios were above a value of one for both industrial and residential scenarios, primarily due to metals lead, iron, chromium, and zinc.

6.4 Summary of Environmental Concerns

The past paint operations may have impacted the regional soil, thus indicating the presence of high levels of metals in the soils, which should be further evaluated. Subsurface soils collected from 4 feet and deeper were not impacted from paint chip disposal activities.

6.5 Identified Data Gaps

Additional samples are needed to define the extent of metals contamination for site management decisions.

6.6 Recommendations

Further site management decisions should be made for the risks at SS 83. The extent of metals distribution should be further defined prior to corrective actions as stated in the Draft Screening Sites Letter Report (CH2M HILL, March 1998).

TAB

31.0

BRAC Parcel 31 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 31

1.1 Parcel Description

Parcel 31 is a 1,033,072-square-foot parcel in the northwest portion of the Main Installation in OU-3 (see Figure 1). Parcel 31 consists of one subparcel with the following associated sites: open storage areas X17, X19, X20, and X21 and the adjacent railroad tracks.

Sampling has occurred at Parcel 31 as part of the initial RIs at DDMT (Law Environmental, 1990). In addition, sampling under BRAC and SS Programs has occurred at this parcel.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

The environmental concerns for Parcel 31 are associated with railroad track activities. COPCs—antimony, arsenic, total chromium, dibenz(a,h)anthracene, PCBs, and dieldrin—were detected in the Law Environmental (1990) RI samples collected near the railroad tracks.

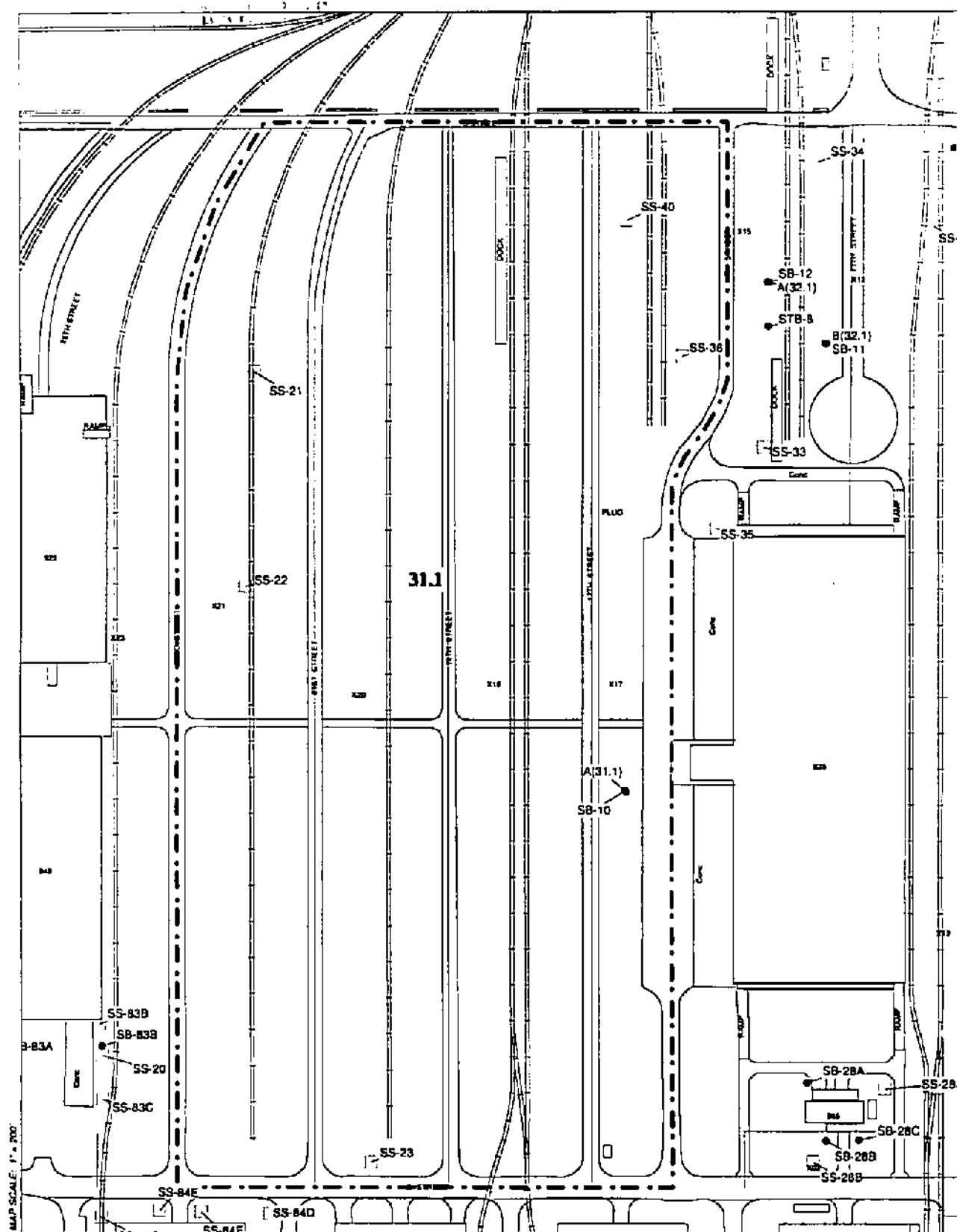
One COPC (lead) was detected in the BRAC boring sample at a depth of zero to 4 feet. The detected value slightly exceeded the background value. Other detected concentrations of lead in the same boring at depths of 4 to 10 feet were within background value range.

A sitewide-specific human health evaluation is recommended for the railroad tracks at DDMT.

2.0 Subparcel 31.1: Open Storage Areas X17, X19, X20, and X21

2.1 Description

Subparcel 31.1 includes open storage areas X17, X19, X20, and X21. According to the EBS Report (Woodward-Clyde, November 1996), open storage areas X17, X19, and X21 are used for storing steel and PVC pipes. Open storage area X20 is used for storing miscellaneous nonhazardous materials.



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- - - Sub-Parcel Boundary

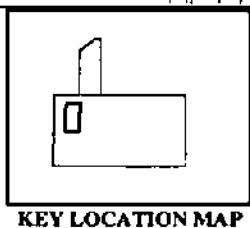


Figure 1
PARCEL 31
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1

Analytes Investigated for Parcel 31

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:¹Includes surface soil, subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

DDMT (November 1997) reports that the surface soil in the open storage areas of Subparcel 31.1 have the potential for hazardous materials to have been released. In addition, railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

2.2.2 Sampling History

Surface soil samples SS-21, SS-22, SS-23, SS-36, and SS-40 were collected at this subparcel under the Law Environmental study. Surface soil sample A(31.1) and soil boring SB-10 were collected during the BRAC Program sampling event at Subparcel 31.1.

2.3 Findings

The Law Environmental surface soil samples were collected near the railroad tracks in Parcel 31. These samples are associated with SS 70/71—all railroad tracks. The COPCs detected at Parcel 31 include arsenic, antimony, chromium, dieldrin, dibenz(a,h)anthracene, and PCBs.

The Law Environmental surface soil sample SS-21, collected in the northwest portion of Parcel 31, detected the following COPCs: antimony, total chromium, PCBs, and dieldrin. The COPCs detected at SS-23, collected in the southern portion of Parcel 31, were antimony, arsenic, dibenz(a,h)anthracene, PCBs, and dieldrin. Arsenic was the only COPC detected at SS-36 and SS-40, in which both samples were collected in the northeast portion of Parcel 31.

Lead was detected as a COPC in the BRAC boring collected in the eastern portion of Parcel 31.

2.4 Summary of Environmental Concerns

Because most COPCs were detected in the surface soil near the railroad tracks in this subparcel, the environmental concerns appear to be associated with railroad track activities. In general, the railroad tracks throughout DDMT have been associated with elevated PAH compounds and pesticides. However, no pesticides were detected at elevated concentrations in Subparcel 31.1.

Another environmental concern involves the reports of outdoor storage of acetone in the area (BCT Meeting Minutes, October 1997). Because there is only one current sample, the BCT suggests additional soil sampling at this parcel.

2.5 Identified Data Gaps

Additional soil sampling is needed at Parcel 31. In addition, an evaluation of human health risks associated with SS 70/71—all railroad tracks—has not been performed.

2.6 Recommendations

The BCT recommends that Parcel 31 remain as CERFA Category 7 until additional soil sampling is conducted.

Furthermore, based on SS sampling data, a site-specific human health evaluation is recommended for the railroad tracks. Depending on the results of this evaluation, the site may require no further action or could require remediation due to the presence of PAH compounds and other constituents. Possible remedial options may include removing and replacing contaminated ballast material and contaminated soil along the tracks. Removal of tracks that are no longer needed for future facility use should be considered.

TAB

320

BRAC Parcel 32 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 32

1.1 Parcel Description

Parcel 32 is a 453,549-square-foot parcel in the northwest portion of the Main Installation in OU-4 (see Figure 1). Parcel 32 consists of Subparcel 32.1, open storage areas X02, X13, and X15 and the adjacent railroad tracks; Subparcel 32.2, Building 835; and Subparcel 32.3, special purpose warehouse (recoupment area) Building 865.

Sampling occurred at Parcel 32 as part of the initial Law Environmental RIs (Law Environmental, 1990). Sampling under BRAC and SS Programs has also occurred at this parcel.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for Parcel 32.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, potential environmental concerns at this parcel are asbestos and LBP in the building interior and contaminants that exceed screening criteria in the surrounding surface soils and subsurface soils.

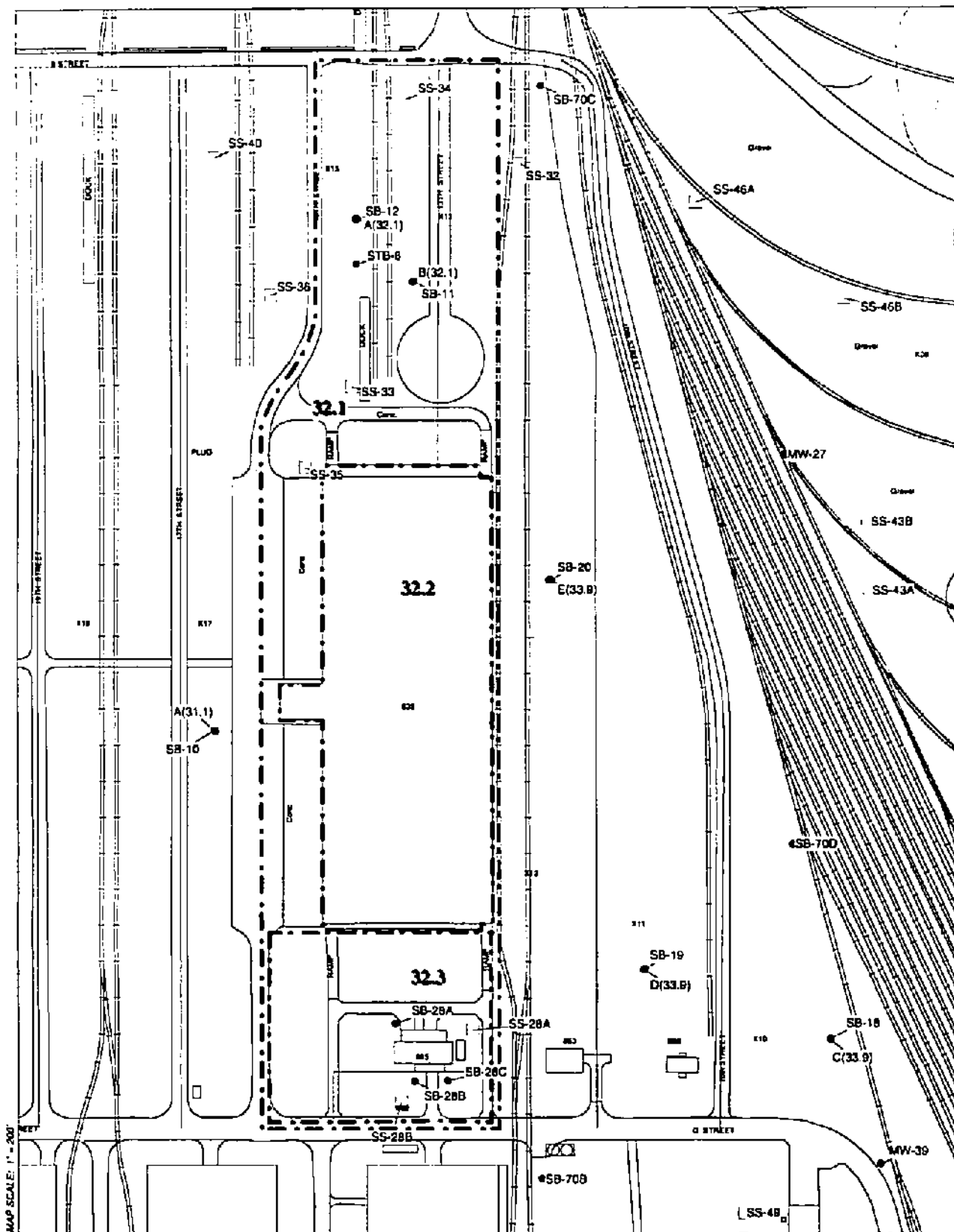
COPCs detected at Parcel 32 in the surface soils and subsurface soils include arsenic and lead. Elevated concentrations of arsenic and lead were detected in the surface and subsurface soils surrounding Building 865. ACM was not detected in Building 835 nor in Building 865. Furthermore, based on the construction date of these buildings, they are not believed to have been painted with LBP.

Table 2 summarizes the analytical methodologies that will be used on any proposed samples. The following sections discuss findings and necessary additional sampling by subparcel.

2.0 Subparcel 32.1: Open Storage Areas X02, X13, and X15

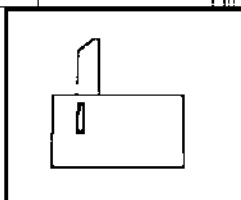
2.1 Description

The 6.8-acre Subparcel 32.1 consists of open storage areas X02, X13, and X15 (DDMT, November 1997) as well as the adjacent railroad tracks. Open storage area X02 is used to store steel and PVC pipe; open storage areas X13 and X15 are used to store miscellaneous nonhazardous materials (Woodward-Clyde, 1996).



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- △ Surface Water Sampling Locations
- Sediment Sampling Locations
- - - Parcel Boundary
- - - Sub-Parcel Boundary



KEY LOCATION MAP

1" = 10,000'

Figure 1
PARCEL 32
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1
Analytes Investigated for Parcel 32
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

301 333

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

According to the EBS Report (Woodward-Clyde, November 1996), open storage area X02 is used to store steel and PVC pipes. Open storage areas X13 and X15 are currently used to store miscellaneous nonhazardous materials; historically, flammables were stored in these two areas (Woodward-Clyde, November 1996). The open storage areas have the potential for hazardous materials to have been released (DDMT, November 1997). In addition, the adjacent railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP (DDMT, November 1997).

2.2.2 Sampling History

Samples associated with the BRAC sampling program that have been collected at Subparcel 32.1 are surface soil samples A(32.1) and B(32.1), and borings SB-11 and SB-12. Surface soil samples SS33, SS34, and SS35 and boring STB-8 were collected during the Law Environmental investigation in 1990.

2.3 Findings

No exceedances were detected at Subparcel 32.1 during the BRAC sampling event. The Law Environmental boring taken near the railroad tracks detected elevated concentrations of beta BHC at depths of 217 to 222 feet that exceeded the RBC-GWP. The Law Environmental surface soil sample (SS 34), also collected near the railroad tracks, did not detect elevated concentrations of pesticides or PAH compounds.

2.4 Summary of Environmental Concerns

There are no environmental concerns at Subparcel 32.1.

2.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

2.6 Recommendations

The BCT recommends (BCT Meeting Minutes, October 1997) classifying Subparcel 32.1 as CERFA Category 3 since no exceedances were detected during the BRAC sampling event.

3.0 Subparcel 32.2: Special Purpose Warehouse, Building 835

3.1 Description

Subparcel 32.2 measures 3.6 acres and consists of Building 835, a special purpose warehouse (DDMT, November 1997). This structure was built in 1988 and has 156,800 square feet of space used to store hazardous materials (reactives, oxidizers, corrosives, photo chemicals, pesticides, and flammables) (Woodward-Clyde, 1996).

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

Subparcel 32.2 consists of Building 835. According to the BCP report, 13 spills were reported inside Building 835 from March 9, 1991, to May 26, 1995 (DDMT, November 1997). Materials that were spilled included battery acid, hydrochloric acid, sulfuric acid, herbicide, muriatic acid, and transmission fluid. A spill outside of Building 835 was reported on August 23, 1993. The materials spilled were lubricating oil and engine oil. The location of the spill, quantity of the spill, and action taken are unknown (DDMT, November 1997).

3.2.2 Sampling History

Air samples 835-3, 835-4-1, 835-2B, 835-6, 835-2A, 835-1, 835-4, and 835-5 taken at this subparcel were all collected in Building 835.

3.3 Findings

Building 835 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than 1 percent. No further action is required.

According to the BCT meeting minutes (October 1997), air sampling was performed at Building 835 to assess whether any of the materials stored in the building are remaining in the building. Air sampling at Building 835 detected the following pesticides: 4,4'-DDE, 4,4'-DDT, and heptachlor. The detected concentrations did not exceed the OSHA or NIOSH allowable limits. However, the building was empty during sampling with no activity other than the sample collection. The numbers obtained from the sampling program should be viewed as a baseline that could potentially increase with increased activity.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

3.4 Summary of Environmental Concerns

There are no environmental concerns at Subparcel 32.2.

3.5 Identified Data Gaps

Although Building 835 was constructed after 1978, LBP has not been tested for.

3.6 Recommendations

Results of air sampling in Building 835 indicate that health-based criteria were not exceeded, and therefore this building can now be placed into CERFA Category 1.

4.0 Subparcel 32.3: Special Purpose Warehouse, Building 865

4.1 Description

Subparcel 32.3 is 0.10 acre in size and consists of Building 865, a special purpose warehouse (the recoupment area) (DDMT, November 1997). This facility, measuring 4,200 square feet, was built in 1988 and is used for hazardous materials response storage (Woodward-Clyde, 1996).

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 32.3 is associated with SS 28. This subparcel consists of Building 865—the recoupment area—a hazardous materials and waste handling area used to transfer materials from damaged or leaking containers into undamaged containers. A small fenced-in area, located on the southwest side of Building 865, contains various drums (5-, 10-, 15- and 55-gallon) of old chemicals such as methyl ethyl ketone, oil, and isopropanol. Some of the drums in this area were noticed to have protruding rusting tops (DDMT, November 1997).

4.2.2 Sampling History

Surface soil sample SS28A and soil borings SB-28A through SB-28C were collected under the SS sampling program at Subparcel 32.3.

4.3 Findings

Building 865

Building 865 was tested for ACM in earlier surveys (Woodward-Clyde, 1996), and the test results were negative or less than 1 percent. No further action is required. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed after 1978 at DDMT is believed not to contain LBP.

Surrounding Areas

The SS Program sampling event detected elevated concentrations of arsenic and lead that exceeded background and screening criteria values in the area surrounding Building 865, SS 28. An elevated concentration of benzo(a)pyrene was also detected, but not above background values.

4.4 Summary of Environmental Concerns

A PRE for SS 28 was performed and reported in the Draft Preliminary Risk Evaluation Report (CH2M HILL, January 1998). The carcinogenic risk ratios were above risk levels of one in a million due to the arsenic in the soils at a level of 21.1 mg/kg and 21.5 mg/kg, compared to a background level of 20 mg/kg. The noncarcinogenic PRE ratio was less than one for an industrial worker scenario but was slightly exceeded for a residential scenario due to the presence of several inorganic chemicals at low levels.

4.5 Identified Data Gaps

Although this building was constructed after 1978, LBP has not been tested for.

4.6 Recommendations

Further evaluation of arsenic and lead in surface and subsurface soil against background values, using existing SS sampling data, is recommended.

Proper disposal is recommended for the containers observed in the small fenced-in area located on the southwest side of Building 865.

TAB

33.0

BRAC Parcel 33 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 33

1.1 Parcel Description

Parcel 33 is a 1,732,081-square-foot parcel in the northwest portion of the Main Installation in OU-4 (see Figure 1). Parcel 33 consists of eleven subparcels that contain the following sites: Buildings 720, 737, 753, 754, 755, 756, 765, 860, and 863; open storage areas X05, X06, X07, X08, X10, X11, and X12; and the adjacent railroad tracks. A description of each subparcel and its associated sites is discussed below.

Sampling of surface soils and subsurface soils under the SS and BRAC Programs occurred at this parcel from 1995 through 1997. Previous surface and subsurface soil samples were taken in investigations conducted by Law Environmental in 1990.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under the SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

In general, potential environmental concerns at this parcel are asbestos and LBP in the building interior, and contaminants that exceed screening criteria in the surrounding surface soils and subsurface soils.

All buildings previously placed in Category 7 (based on possible fumigation) can now be recategorized with Category 1 as a result of air sampling in representative buildings. Pesticides—DDT, DDE, heptachlor, alpha-chlordane, and gamma-chlordane—were detected in those buildings that were sampled. However, the detected values were two orders of magnitude below health-based criteria and did not exceed the OSHA or NIOSH allowable limits.

COPCs detected at Parcel 33 in the surface soils and subsurface soils include antimony, arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chromium, lead, alpha-chlordane, dieldrin, gamma-chlordane, and TCDD equivalent.

The environmental issues at this parcel consist of surface soil contamination and ACM and LBP in the building interiors.

The presence of dieldrin (at SS 42), arsenic (at SS 46), chlordane (at SS 46), DDE/DDT (at SS46), and PAHs and PCBs (at SS 80) in surface soils within Parcel 33 resulted in PRE carcinogenic industrial and residential risk ratios above one in a million. The presence of metals and PAHs in surface soils at SS 80 resulted in PRE noncarcinogenic residential risk ratios above 1 in a million.

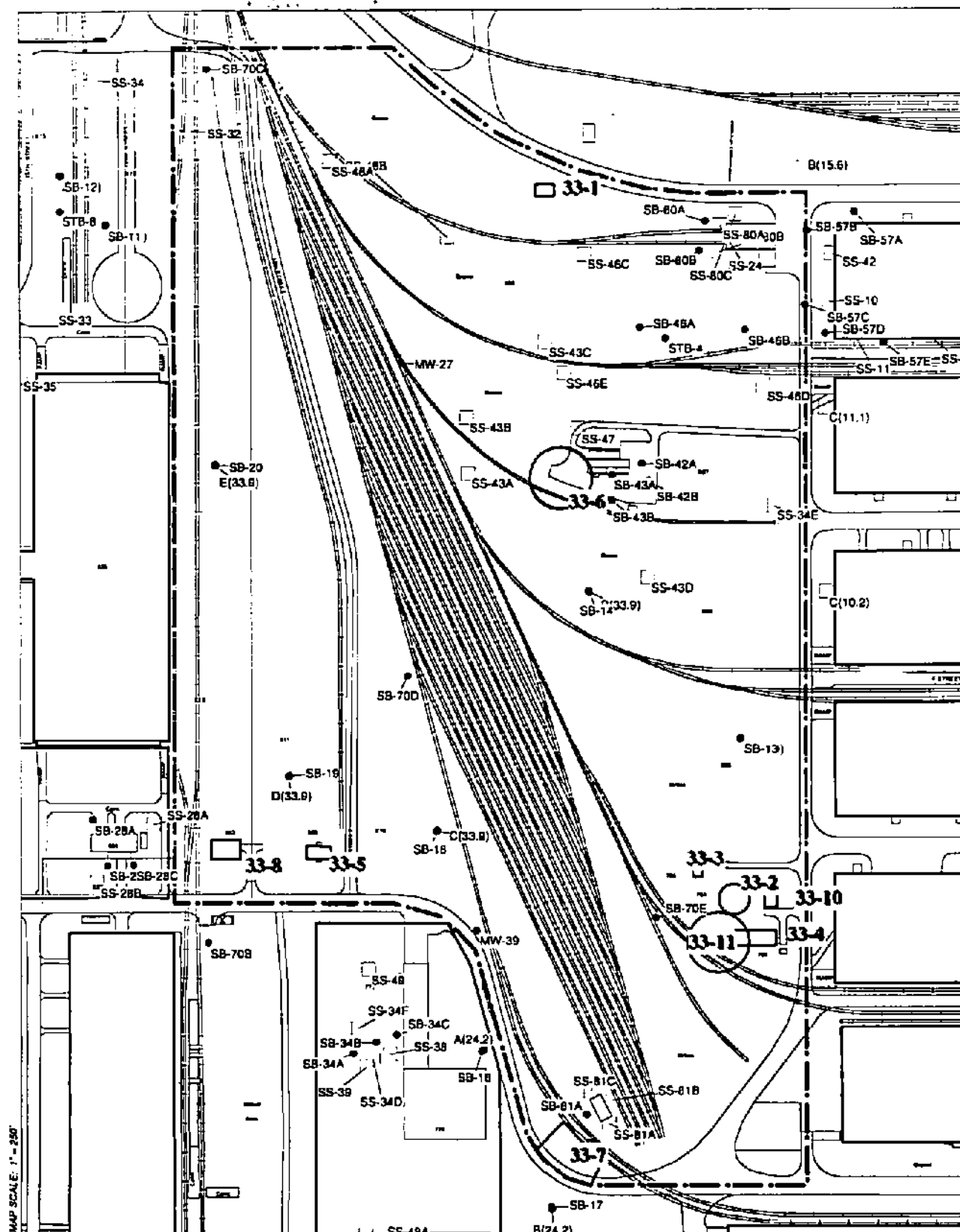


Figure 1
PARCEL 33
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1
Analytes Investigated for Parcel 33
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TCL Dioxins/Furans	CLP-SOW DFLM1.1
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	PNAs GC	SW846 Method 8100
Soil	Phenols GC	SW846 Method 8040

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

PAHs were detected in elevated concentrations in the soils surrounding Building 720. PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide investigation.

ACM was identified in Buildings 720, 737, 753, 755, 756, 860, and 863 during a previous survey and found to be in non-friable and/or fair-to-good condition. If demolition of any of these buildings is planned, urgent removal of the ACM would be required.

LBP was assumed to be in most buildings located in Parcel 33 based on age of construction and findings from other parts of the DDMT. However, the construction dates for Building 754 and Building 756 were unknown.

Buildings in this parcel that were potentially fumigated include Building S737. Results of representative air sampling indicate that health-based criteria were not exceeded, and therefore these buildings can now be placed into Category 1.

The following sections discuss (1) findings at each subparcel of Parcel 33 and (2) recommendations for individual subparcels. The recommendations include any additional sampling that is required. Sample-specific PRE calculations are available for some subparcels. Table 2 summarizes the analytical methodologies that will be used on any proposed samples.

2.0 Subparcel 33.1: Sentry Station, Building 727

2.1 Description

This subparcel consists of Building 727, located in a gravel area west of Building 720. Building 727 is the Sentry Station, which was installed in 1994 (Woodward-Clyde, 1996; Table 3-1).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

Subparcel 33.1, Building 727, housed security operations. There is no documented storage of hazardous substances or petroleum products; nor has there been release or migration of hazardous substances or petroleum products from an adjacent property (DDMT, November 1997).

2.2.2 Sampling History

No sampling events were conducted at this subparcel.

2.3 Findings

There is no known contamination in this building.

2.4 Summary of Environmental Concerns

There are no known environmental concerns at this subparcel.

2.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

TABLE 2
Summary of Analysis Methods for Sampling on Main Installation
Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

2.6 Recommendations

This subparcel is classified as a CERFA Category 1.

3.0 Subparcel 33.2: Water Storage Tank, Building 754

3.1 Description

Subparcel 33.2 consists of Building 754, which is 1,963 square feet in size and is used to house a water storage tank (Woodward-Clyde, 1996). Building 754 was installed in 1954 according to DDMT personnel. The size of the water tank is unknown.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

This subparcel contains a water storage tank that is housed in Building 754. No waste management or material storage have been reported for this subparcel (DDMT, November 1997).

3.2.2 Sampling History

No sampling events were conducted at this subparcel.

3.3 Findings

Building 754 houses a water storage tank. No sampling was conducted at this subparcel due to the type of activity at the building; the area is not believed to be contaminated.

The building was not tested for the presence of ACM or LBP. There is a potential for LBP in this building since testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP (Woodward-Clyde, 1996).

3.4 Summary of Environmental Concerns

Building 754 may be contaminated with ACM and LBP.

3.5 Identified Data Gaps

Testing for ACM and LBP has not occurred at Building 754.

3.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 754. Testing may be necessary in this subparcel to assess the extent of asbestos in the interior of the building.

4.0 Subparcel 33.3: Pump House, Building 755

4.1 Description

Subparcel 33.3 consists of the 237-square-foot sewage pump house, Building 755 (Woodward-Clyde, 1996). The pump house was installed in 1953.

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

No waste management or material storage has been reported for this subparcel (DDMT, November 1997).

4.2.2 Sampling History

No sampling events were conducted at this subparcel.

4.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program. LBP was also identified in this building from earlier surveys (Woodward-Clyde, 1996).

4.4 Summary of Environmental Concerns

ACM and LBP were identified in Building 755.

4.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

4.6 Recommendations

No additional sampling is required for this subparcel.

5.0 Subparcel 33.4: Fire Pump House, Building 756

5.1 Description

Subparcel 33.4 consists of the fire pump house, Building 756 (Woodward-Clyde, 1996). Building 756 was installed in 1986 according to DDMT personnel.

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

No waste management or material storage has been reported for this subparcel (DDMT, November 1997).

5.2.2 Sampling History

No sampling events were conducted at this subparcel.

5.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program.

Building 756 was not tested for the presence of LBP, but the building was installed in 1986 after the use of LBP was discontinued. Therefore, the building was probably not painted with LBP.

5.4 Summary of Environmental Concerns

ACM was identified in Building 756, and the building may have been painted with LBP.

5.5 Identified Data Gaps

Testing for LBP has not occurred at Building 756.

5.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 756.

6.0 Subparcel 33.5: Office, Building T860

6.1 Description

Subparcel 33.5 consists of Building T860, which is used as an office (Woodward-Clyde, 1996). The building was installed in 1944.

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Building T860 was used for administrative support functions. No waste management or material storage has been reported for this subparcel (DDMT, November 1997).

6.2.2 Sampling History

No sampling events were conducted at this subparcel. However, BRAC samples SB-19 and D[33.9], which were taken in open storage area X11, are located just north of this subparcel.

6.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program. Since Building T860 was installed in 1944, it potentially was painted with LBP in the past.

6.4 Summary of Environmental Concerns

ACM was identified in Building T860 and the building may have been painted with LBP.

6.5 Identified Data Gaps

Testing for LBP has not occurred at Building T860.

6.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building T860.

7.0 Subparcel 33.6: Wastewater Treatment Unit Area

7.1 Description

Subparcel 33.6 consists of NFA Site 44, the former Wastewater Treatment Unit (WWTU) Area. As indicated in the Draft No Further Action Report (CH2M HILL, September 1994), the WWTU was located just west of Building 737 and consisted of a 12,000-gallon portable pool with a vinyl liner, pumps, medium capacity carbon cell, and associated piping on a concrete pad.

7.2 History of Subparcel Activities and Past Sampling Activities

7.2.1 Summary of Subparcel Activities

This subparcel is associated with the proposed No Further Action Site 44, the former WWTU. The WWTU was used to treat rainwater mixed with PCP-contaminated oil and rinse waters from equipment decontamination during remedial actions and cleanup operations of the pesticide shop, Building 737. A 50-gallon mineral oil (<1 ppm PCB) spill was reported on November 9, 1995, outside of Building 737. The contaminated material was excavated and disposed of (DDMT, November 1997).

7.2.2 Sampling History

No sampling events were conducted at this subparcel.

7.3 Findings

Sample results of the treated wastewater held in the portable pool at the WWTU were within allowable levels for sewer discharge. The portable pool was dismantled immediately after the site cleanup activities were completed in 1986. In accordance with the analysis of all available and pertinent information, it is concluded that no remedial actions are necessary for the protection of human health or the environment at this subparcel.

7.4 Summary of Environmental Concerns

There are no known environmental concerns at this subparcel.

7.5 Identified Data Gaps

301 347

There are no identified data gaps for this subparcel.

7.6 Recommendations

For NFA Site 44, the recommendation in the Draft NFA Report (CH2M HILL, 1994) is that no remedial actions are necessary for the protection of human health or the environment. Therefore, the selected remedial alternative for the site is No Action under CERCLA. This alternative will consist of leaving the site as is. No additional sampling or monitoring will be necessary, because the conditions at the site are protective of human health and the environment.

8.0 Subparcel 33.7: Fuel Oil Building (Screening Site 81), Previous Location of Building 765

8.1 Description

Subparcel 33.7 consists of a square area associated with Screening Site 81, Fuel Oil Building (Building 765), south of the railroad tracks. Building 765 previously contained a fuel oil storage tank. The tank and Building 765 have since been removed.

8.2 History of Subparcel Activities and Past Sampling Activities

8.2.1 Summary of Subparcel Activities

This subparcel is associated with SS 81 and is located near the railroad tracks just south of former Building 765. Railroad tracks at the DDMT have been associated with elevated PAH compounds and pesticides.

8.2.2 Sampling History

No sampling events were conducted at this subparcel. However, SS surface and subsurface soil samples (SS81A, SS81B, SS81C, and SB81A) taken near former Building 765, are located just northeast of this subparcel.

8.3 Findings

PAHs and pesticides are normally detected in these areas (near railroad tracks) and will be evaluated in an upcoming sitewide risk evaluation.

8.4 Summary of Environmental Concerns

Elevated PAH concentrations were detected in the surface soils of Subparcel 33.7.

8.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

8.6 Recommendations

Additional sampling may be required for the upcoming PAH sitewide risk evaluation.

9.0 Subparcel 33.8: Loading and Operations, Building 863

9.1 Description

Subparcel 33.8 consists of Building 863, a loading and operations building installed in 1943 (Woodward-Clyde, 1996).

9.2 History of Subparcel Activities and Past Sampling Activities

9.2.1 Summary of Subparcel Activities

Forklifts fueled by gasoline or fuel oil are used to transport and load materials in Building 863. Considerable oil stains were observed on the concrete floor of Building S863 [Inta: verify S designation]. However, there is no documentation that storage of hazardous substances or petroleum products occurred at this site; nor is there evidence of a release or migration of these substances onto this subparcel (DDMT, November 1997).

9.2.2 Sampling History

No sampling events were conducted at this subparcel.

9.3 Findings

Earlier surveys (Woodward-Clyde, 1996) identified ACM in this building. The ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program.

Building 863 was installed in 1943 and potentially was painted with LBP in the past.

9.4 Summary of Environmental Concerns

ACM was identified in Building 863, and the building may have been painted with LBP.

9.5 Identified Data Gaps

Testing for LBP has not occurred at Building 863.

9.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 863. Furthermore, the BCT recommends collecting additional samples inside of Building 863 to assess whether any metals were released from the battery recharge operations (BCT Meeting Minutes, October 1997).

10.0 Subparcel 33.9: Railroad Engine Shop, Building 720; Pesticide Shop, Building 737; Diesel Fuel Tank House, Building 765; Open Storage Areas X05, X06, X07, X08, X10, X11, and X12

10.1 Description

Subparcel 33.9 consists of Buildings 720, 737, and 765 as well as open storage areas X05, X06, X07, X08, X10, X11, and X12.

Building 720 was installed in 1942 and is known as the Railroad Engine Shop (Woodward-Clyde, 1996). Building 737 was installed in 1961 and is currently used for storing and mixing of pesticides (Woodward-Clyde, 1996). Building 765 is a 6,500-square-foot building that houses a diesel fuel AST. The size of the tank and the building's installation date are both unknown (Woodward-Clyde, 1996).

Open storage areas X05, X06, X07, and X08 are all commonly referred to as the East Rail Yard Area. Open storage area X05 is located west of Building 650; X06 is located west of Building 649; X07 is located west of Building 630; and X08 is located west of Building 629 (Woodward-Clyde, 1996). Open storage areas X10, X11, and X12 encompass almost the entire west half of Parcel 33.

10.2 History of Subparcel Activities and Past Sampling Activities

10.2.1 Summary of Subparcel Activities

Subparcel 33.9 is associated with SS 42, 43, 46, and 80. The subparcel also consists of Buildings 720, 737, and 765 and open storage areas X05, X06, X07, X08, X10, X11, and X12.

SS 42 is the former PCP Dip Vat Area located near Building 737; the vat was used to hold PCP for treating wood pallets. SS 43 consisted of the UST that stored PCP in the same area; the UST was removed in 1985. During the tank removal and soil sampling in the area, leaking was discovered at six joints between the pump house and tank, and between the pump house and dipping vat. Removal of the tank and soil in the area took place until the excavation pit was approximately 15 feet deep, 20 feet wide, and 22 feet long. The soil associated with the dip vat and PCP UST was removed until the concentration of total dioxins and furans was below 200 ppb (OHM, 1986).

Correspondence with facility personnel by OHM and USAHEA representatives also revealed that PCP liquid had been mixed with waste oil in past years and sprayed on the grounds for dust control (OHM, 1986). Approximately six areas in the vicinity of Subparcel 33.9 were suspected of receiving the mixture. The areas are located in between the cluster of railroad track trunk line and 6th Street, extending 450 feet to the southeast and 1,000 feet to the northwest. None of the soil suspected of receiving this treatment was removed; however, gravel was used to cover some of the areas with higher dioxin concentrations.

Building 720 (SS 80) is a large engine repair shop used for dispensing diesel fuel. The building houses a 12,000-gallon diesel AST and a 1,000-gallon used motor oil tank. There have been no documented releases reported for this tank and areas surrounding Building 720; nor was there

any evidence of disposal or migration of petroleum products from an adjacent property onto this property (DDMT, November 1997).

Building 737 is currently used for storing and mixing of pesticides. The building was formerly used as a PCP dip vat (Woodward-Clyde, 1996). Air sampling was conducted in the building to determine the potential environmental impact of pesticide mixing and storage.

SS 46 is the former PCP pallet drying area where wooden pallets treated with PCP were placed on the ground to dry. This activity was performed in open storage areas within Parcel 33.

As noted in of the EBS Report (Woodward-Clyde, 1996; Table 3-1), the former Building 765 housed a tank for storage of diesel fuel. The building and tank have been removed.

Open storage areas X05, X06, X07, and X08 are used to store petroleum products, equipment, and transformers. Open storage areas X10 and X12 currently store miscellaneous nonhazardous materials; historically, petroleum products were stored in these areas (Woodward-Clyde, 1996). Open storage area X11 contains drums that store flammables.

10.2.2 Sampling History

Building 720 and Open Storage Area X08

Building 720 is located near open storage area X08. Surface and subsurface soils surrounding Building 720 were sampled during the SS Program sampling event and the Law Environmental investigation. A number of SS surface soil samples and borings (SS80A, SS80B, SS80C, SB80A, and SB80B) were collected, and one surface soil sample (SS24) was collected by Law Environmental.

Open storage area X08 is located north of open storage area X07 and Building 737. A number of SS surface and subsurface soil samples (SS43C, SS46A, SS46B, SS46C, SB46A, and SB46B) were collected in this storage area.

Building 737 and Open Storage Area X07

Building 737 is located within open storage area X07. Surface and subsurface soils surrounding Building 737 were sampled during the SS Program sampling event and the Law Environmental investigation. Three SS surface soil samples (SS46D, SS46E, and SS43B) were collected and four SS borings (SB42A, SB42B, SB43C, and SB43B) were collected. One surface soil sample (SS47) was collected during the investigation by Law Environmental.

Open Storage Area X06

Open storage area X06 is located just south of Building 737. Four SS surface soil samples (SS43A, SS43D, SS42A, and SS42B) were collected. One BRAC surface soil sample (B[33.9]) and one BRAC boring (SB-14) was also collected in this area.

Open Storage Area X05

Open storage area X05 is located south of Building 737 and open storage area X06. Surface and subsurface soils were sampled in this area during the SS Program and the BRAC Program. Three SS surface soil samples (SS42C, SS42D, and SS42E) were collected in the area and one SS boring (SB70E) was collected near the railroad tracks located south of the storage area. One BRAC surface soil sample (B[33.9]) and one BRAC boring (SB-13) were also collected in the open storage area.

Building 765 and Open Storage Area X10

Building 765 is located south of open storage area X10. A number of SS surface and subsurface soil samples (SS81A, SS81B, SS81C, and SB81A) were collected from the area surrounding Building 765.

Open storage area X10 is surrounded by railroad tracks. One SS boring (SB70D) and one BRAC boring (SB-18) were collected in this area. A BRAC surface soil samples (C[33.9]) was also collected.

Open Storage Area X11

Open storage area X11 is located west of open storage area X10. One BRAC boring (SB-19) and one BRAC surface soil sample (D[33.9]) were collected just north of Subparcel 33.5.

Open Storage Area X12

Open storage area X12 is located west of open storage area X11. One BRAC boring (SB-20) and one BRAC surface soil sample (E[33.9]) were collected in the open storage area. An SS boring (SB70C) and a Law Environmental surface soil sample (SS32) were collected in the northern part of the open storage area.

10.3 Findings***Building 720 (Screening Site 80)***

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program.

Building 720 was installed in 1942 and potentially was painted with LBP in the past. A number of COPCs—including metals (lead, chromium, and arsenic), PAHs, and dieldrin—were detected in the surface and subsurface soils surrounding Building 720.

A PRE (CH2M HILL, January 1998) was performed for the area near Building 720 (SS 80). The PRE carcinogenic risk ratio for this area is above a risk level of one in a million for both industrial and residential scenarios, primarily from the presence of PAHs and PCBs.

The noncarcinogenic PRE ratios were below a value of 1.0 for industrial workers, but were exceeded for the residential scenario from the presence of PAHs and metals.

Building 737 (Screening Site 42)

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program. Building 737 was installed in 1943 and potentially was painted with LBP in the past.

TCDD equivalent was detected near Building 737. A PRE (CH2M HILL, January 1998) was performed for the area near Building 737 (SS 42). The PRE carcinogenic risk ratio for this area is above a risk level of one in a million for both industrial and residential scenarios, primarily from the presence of dieldrin in the soils. However, the dieldrin concentrations are below background-based criteria, and dieldrin is not a COPC for this area.

No noncarcinogenic chemicals were detected in the soil samples near Building 737, and therefore a ratio was not estimated.

Air sampling to assess the presence of pesticides was also conducted in Building 737. The pesticides DDE, heptachlor, alpha-chlordane, and gamma-chlordane were detected in Building 737. The detected concentrations did not exceed the OSHA or NIOSH allowable limits. However, the building was empty during sampling, with no activity other than the sample collection. The numbers obtained from the sampling program should be viewed as a baseline that could potentially increase with increased activity.

Building 765 Location (Screening Site 81)

Building 765 previously housed an AST diesel fuel storage tank; the tank and the building have since been removed. Results of the PRE (CH2M HILL, January 1998) performed for this area (SS 81) indicate that carcinogenic risks are below one in a million and that noncarcinogenic ratios are also not significant. Thus, the site has no significant human health concerns.

Open Storage Areas

Open storage areas X05, X06, X07, and X08 are used to store transformers. An investigation by DDMT personnel in October 1996 determined that all transformers at DDMT are labeled as non-PCB. Thus, there are no PCB-qualified subparcels in Parcel 33.

Pallet Drying Area (Screening Site 46)

Wooden pallets that had been treated with PCP were placed on the ground to dry in open storage areas in Parcel 33. Carcinogenic risk ratios (due to arsenic, chlordane, and DDT/DDE) for surface soil samples were above the one in a million risk level for industrial and residential scenarios.

BRAC Sampling Results

In accordance with the results of limited BRAC sampling conducted at Subparcel 33.9, the PRE carcinogenic risk ratios for both the industrial and residential receptors are within a risk level of one in a million. The noncarcinogenic PRE ratio did not exceed a value of 1.0 for the industrial worker scenario, but the ratio was exceeded for the residential scenario due to the presence of antimony and chromium in the soils. However, PRE results for the screening sites located at different areas within Subparcel 33.9 exceeded the carcinogenic risk ratio for both the industrial and residential receptors as discussed above.

10.4 Summary of Environmental Concerns

In summary, environmental concerns of this subparcel are ACM and LBP in the building interiors, and soil contamination.

ACM was identified in Buildings 720 and 737, and, the buildings may have been painted with LBP.

Elevated concentrations of metals, PAH compounds and PCBs were detected in the surface and subsurface soils.

10.5 Identified Data Gaps

Building 720

Additional surface soil sampling is recommended to further evaluate the extent of PAHs and PCBs and to support a human health risk evaluation for the site.

Furthermore, testing for LBP at Building 720 and 737 has not occurred.

10.6 Recommendations

Additional sampling is recommended in the area of Building 720 (SS 80) to evaluate the extent of PAH and PCB constituents in surface soil and to support a human health risk evaluation for the area near Building 720 (CH2M HILL, March 1998). Further risk evaluation of arsenic and pesticides in surface soils, without additional sampling, is recommended for SS 46, the former PCP pallet drying area in open storage areas near Building 737 (CH2M HILL, March 1998). Additional data may be needed at other areas within this subparcel for the dieldrin and PAH sitewide risk evaluation. The BCT recommends that additional surface soil sampling take place throughout Parcel 33.9, especially at open storage area X11 (BCT Meeting Minutes, October 1997).

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Buildings 720 and 737.

In accordance with representative air sampling results, Building 737 should be classified as Category 1.

11.0 Subparcel 33.10: Water Pump Station, Building 753

11.1 Description

Subparcel 33.10 consists of a 513-square-foot water pump station (Building 753) installed in 1956 (Woodward-Clyde, 1996).

11.2 History of Subparcel Activities and Past Sampling Activities

11.2.1 Summary of Subparcel Activities

The water pump station, Building 753, is used to refill fire extinguishers. There is no documentation that storage of hazardous substances or petroleum products occurred at this site; nor is there evidence of a release or migration of these substances onto this subparcel (DDMT, November 1997).

11.2.2 Sampling History

No sampling events were conducted at this subparcel.

11.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in non-friable and/or in fair to good condition. This class of ACM can be managed through a comprehensive operations and maintenance program.

Building 753 was installed in 1956 and potentially was painted with LBP in the past.

11.4 Summary of Environmental Concerns

ACM was identified in Building 753 and the building may have been painted with LBP.

11.5 Identified Data Gaps

Testing for LBP has not occurred at Building 753.

11.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 753.

12.0 Subparcel 33.11: Diesel Fuel UST

12.1 Description

Subparcel 33.11 consists of the former 1,000-gallon diesel fuel UST that was located just outside of Building 756 (Woodward-Clyde, 1996). The UST was removed in July 1994 (DDMT, November 1997).

12.2 History of Subparcel Activities and Past Sampling Activities

12.2.1 Summary of Subparcel Activities

The fuel from this 1,000-gallon UST was used to supply the emergency generator at Building 756. There have been no documented releases reported for this tank; nor was there any evidence of disposal or migration of petroleum products from an adjacent property (DDMT, November 1997).

12.2.2 Sampling History

Soil was sampled for TPH, which was found to be less than 20 ppm at this subparcel (DDMT, November 1997).

12.3 Findings

There have been no documented releases reported for this tank; nor was there any evidence of disposal or migration of petroleum products from an adjacent property.

12.4 Summary of Environmental Concerns

There are no known environmental concerns at this subparcel.

12.5 Identified Data Gaps

There are no identified data gaps for this subparcel.

12.6 Recommendations

No additional sampling is required for this subparcel.

301 356 .

TAB

34.0

BRAC Parcel 34 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 34

1.1 Parcel Description

Parcel 34 is a 302,166-square-foot parcel in the southeast part of the Main Installation in OU-3 (see Figure 1). Parcel 34 consists of Subparcel 34.1, Building 360 and Subparcel 34.2, the area surrounding Building 360 and the adjacent railroad tracks.

Sampling has occurred at Parcel 34 as part of the BRAC sampling program.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with CLP target list and reporting limits. Figure 1 shows the locations of all past sampling points for Parcel 34.

1.2 Summary of Parcel Environmental Concerns and Recommendations

No environmental concerns are associated with Parcel 34. The BRAC sampling event detected one elevated concentration of chlordane in the surface soil surrounding Building 360. However, as presented in the PRE (CH2M HILL, January 1998), the carcinogenic risk is well below acceptable levels for both industrial and residential scenarios of one in a million. The noncarcinogenic PRE ratios were also below background levels. Thus, there are no significant risks from the detected chlordane, and no other chemicals were detected above background levels.

2.0 Subparcel 34.1: General Purpose Warehouse, Building 360

2.1 Description

Subparcel 34.1 consists of Building 360, a general purpose warehouse. The 174,665-square-foot building was constructed in 1996 and is currently unused according to the Environmental Baseline Survey Report (Woodward-Clyde, November 1996) and facility personnel (April 1998).

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

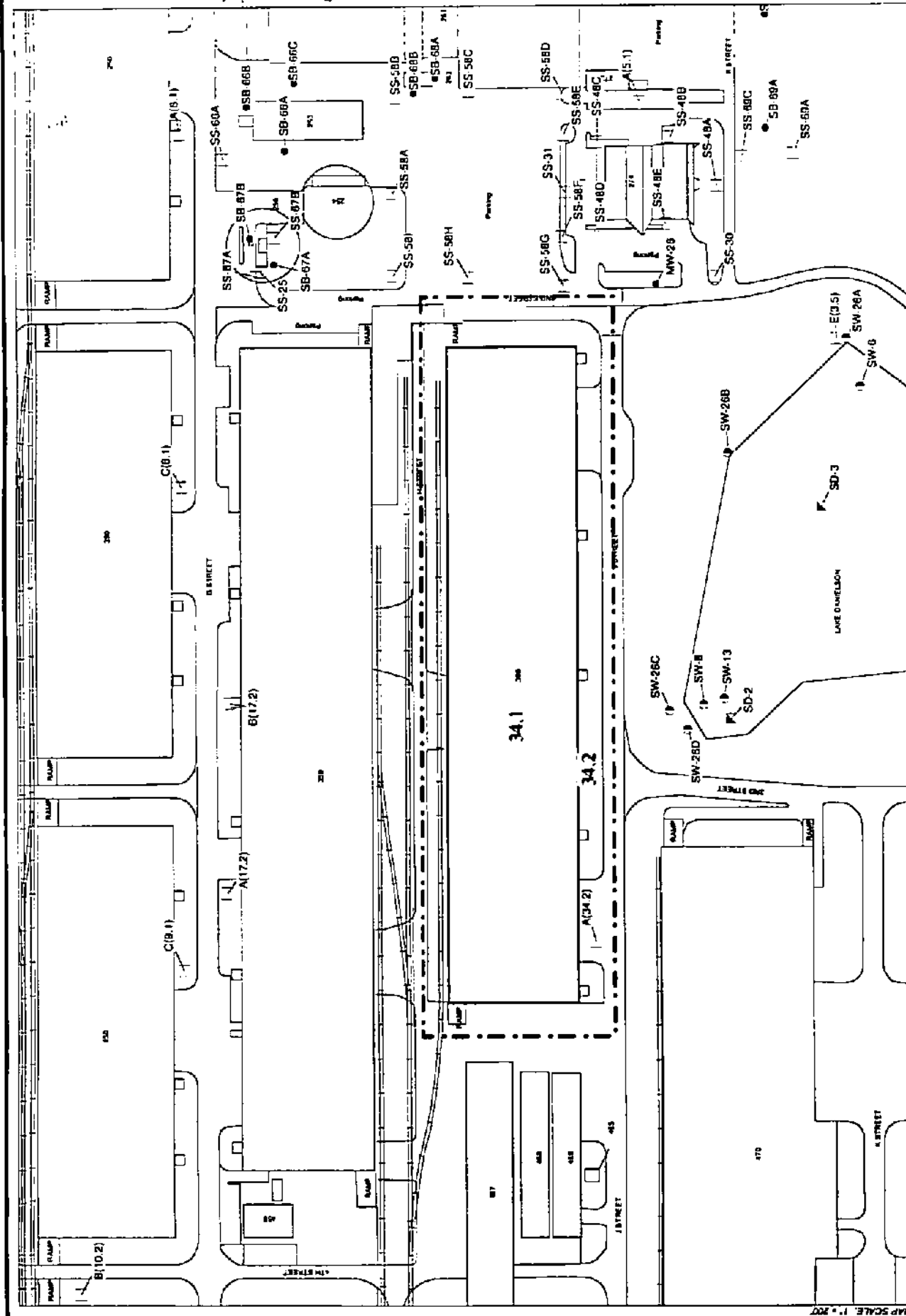
No waste management or hazardous material storage activities are reported for Building 360 (DDMT, November 1997). The only activities that have taken place at Building 360 were an employee picnic and a closing ceremony as reported by facility personnel (April 1998).

2.2.2 Sampling History

No previous sampling has occurred at Subparcel 34.1.

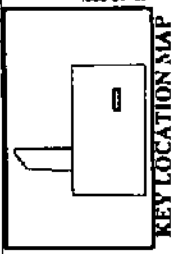
Figure 1
PARCEL 34
Sampling Locations

Defense Distribution Depot Memphis, TN



LEGEND

- Surface Soil Sampling Locations
- Soil Boring Sampling Locations
- Surface Water Sampling Locations
- Sediment Sampling Locations
- Parcel Boundary
- Sub-Parcel Boundary



KEY LOCATION MAP

MAP SCALE: 1" = 200'

TABLE 1

Analytes Investigated for Parcel 34

Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

2.3 Findings

There is no known contamination within this subparcel. Based on the year of construction, ACM is probably not present in Building 360. Furthermore, the interior and exterior walls of the building are not believed to have been painted with LBP.

2.4 Summary of Environmental Concerns

There are no environmental concerns at Subparcel 34.1, Building 360.

2.5 Identified Data Gaps

There are no known data gaps for this subparcel.

2.6 Recommendations

There are no health-based risks or concerns associated with this subparcel.

3.0 Subparcel 34.2: Area Surrounding Building 360

3.1 Description

Subparcel 34.2 consists of the area surrounding Building 360 and the adjacent railroad tracks in Parcel 34.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

The surface soil surrounding Building 360 at Subparcel 34.2 has the potential for pesticide contamination. The railroad tracks were historically sprayed with pesticides, herbicides, and waste oil containing PCP.

3.2.2 Sampling History

One surface soil sample, A(34.2), associated with the BRAC Sampling Program was collected at this subparcel. No samples were collected under the Law Environmental investigation in 1990; nor were any RI or SS samples collected at Subparcel 34.2.

3.3 Findings

The BRAC surface soil sample detected elevated concentrations of chlordane that exceed the BCT screening value.

As presented in the PRE (CH2M HILL, January 1998), the carcinogenic risk was well below acceptable levels for both industrial and residential scenarios of one in a million. The noncarcinogenic PRE ratios were below background levels also.

3.4 Summary of Environmental Concerns

Based on PRE results, there are no significant risks from the detected chlordane at this subparcel, and no other chemicals were detected above background levels.

3.5 Identified Data Gaps

There are no identified data gaps for Subparcel 34.2.

3.6 Recommendations

The BCT recommends (BCT Meeting Minutes, October 1997) classifying Subparcel 34.2 as CERFA Category 3, which indicates occurrence of a release but not at concentrations that require remedial action.

301 362

TAB

35.0

BRAC Parcel 35 Summary Report

Defense Distribution Depot Memphis, Tennessee

1.0 Overview of Parcel 35

1.1 Parcel Description

Parcel 35 is a 262,545-square-foot parcel in the southwest corner of the Main Installation in OU-2 (see Figure 1). Parcel 35 consists of five subparcels that contain Buildings 1084, 1086, 1087, 1090, and 1091. A description of each subparcel and its associated buildings are discussed below.

Sampling under SS Program, the RI Program, and the BRAC Program has occurred at this parcel from 1996 through 1997. The SS and RI programs for this parcel included sampling of surface soils and subsurface soils. The BRAC Program included sampling of surface soils, subsurface soils, and sediment. Previous surface soil samples were collected in investigations conducted by Law Environmental in 1990.

Table 1 summarizes the analytes investigated at this parcel and the methods used to analyze them. The parameters were analyzed under SW846 Methods, with the CLP target list and reporting limits. Figure 2.1 shows the locations of all past sampling points for this parcel.

1.2 Summary of Parcel Environmental Concerns and Recommendations

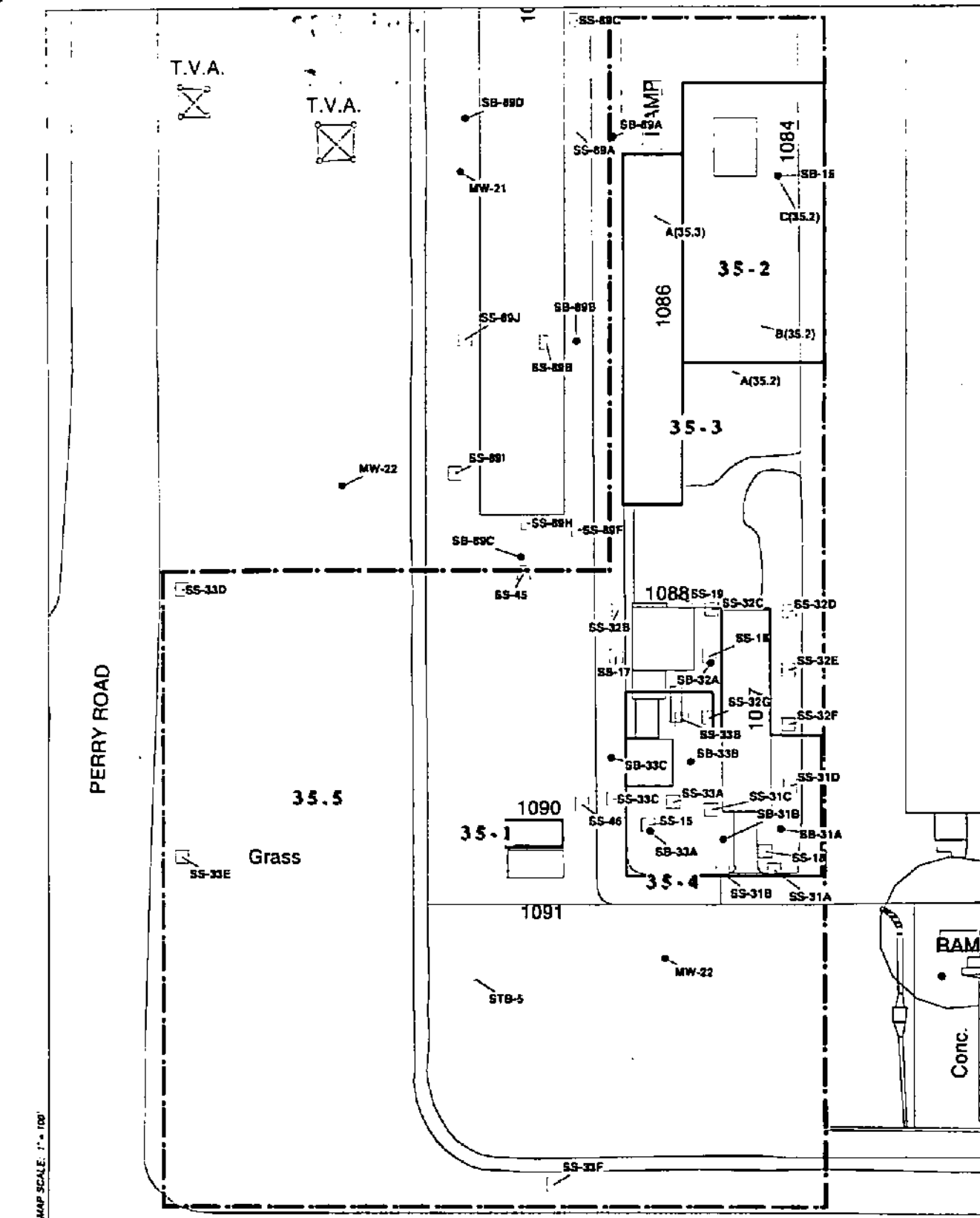
In general, the potential environmental concerns at this site are ACM and LBP in the building interiors and contaminants that exceed screening criteria in the surrounding surface soils, subsurface soils, and sediment.

COPCs detected at Parcel 35 in the surface soils, subsurface soils, and sediment include antimony, arsenic, cadmium, chromium, lead, DDT, PCBs, PAHs, dieldrin, methylene chloride, copper, naphthalene, nickel, and zinc. Elevated metals concentrations in surface soils may be from past management of sand-blasted paint residue that historically was collected in waste piles and in drums.







The environmental issues at this parcel consist of surface soil contamination and ACM and LBP in the building interiors. The presence of PAHs, arsenic, chromium, lead, and other metals at various locations within Parcel 35 resulted in PRE carcinogenic risk ratios being above 1 in a million for the industrial and residential scenarios. Noncarcinogenic ratios were above one within Parcel 35 due to the presence of metals in surface soil.

PAHs were detected in elevated concentrations in the soils surrounding Building 1087. PAH compounds are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

ACM was identified in Buildings 1084, 1087, 1090, and 1091 during a previous survey and was found to be in poor condition. Restricted access to all buildings was recommended until the

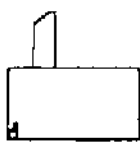


LEGEND

-  Surface Soil Sampling Locations
 Soil Boring Sampling Locations
 Surface Water Sampling Locations
 Sediment Sampling Locations
 Parcel Boundary
 Sub-Parcel Boundary



KEY LOCATION MAP



3. - 19 000 000

Figure 1
PARCEL 35
Sampling Locations

Defense Distribution Depot Memphis, TN

CH2MHILL

TABLE 1

Analytes Investigated for Parcel 35
Defense Distribution Depot Memphis, Tennessee

Matrix	Parameter Analysis	Method of Analysis
Soil ¹	TCL Volatiles (VOCs) GC/MS	SW846 Method 8260A
Soil	TCL Semivolatiles (SVOCs) GC/MS	SW846 Method 8270B
Soil	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	TCL Pesticides/ Polychlorinated Biphenyls (PCBs) GC	SW846 Method 8081
Soil	PNAs GC	SW846 Method 8100
Soil	Total petroleum hydrocarbons (TPHs)	SW846 3550/9071/418.1

Notes:

¹Includes surface soil, subsurface soil, and sediment samples.

ACM could be remediated. LBP was assumed to be in all buildings located in Parcel 35 based on the age of construction and findings from other parts of DDMT.

Based on of the Draft PRE (CH2M HILL, January 1998; Table 5-2), it is expected that this parcel will be reclassified from CERFA Category 7 to CERFA Category 3, pending the results of a risk assessment. Table 2 summarizes the analytical methodologies that will be used for the proposed samples.

The findings at each subparcel of Parcel 35 and necessary additional sampling are discussed by subparcel below. Sample-specific PRE calculations are available for some subparcels.

2.0 Subparcel 35.1: Paint Storage Warehouse, Building 1090

2.1 Description

Subparcel 35.1 consists of Building 1090, which was installed in 1952 and is used as a paint storage warehouse.

2.2 History of Subparcel Activities and Past Sampling Activities

2.2.1 Summary of Subparcel Activities

An EBS visual inspection (DDMT, November 1997) documented the storage of paint thinner, lubricating oil, P-19 preservation oil, and corrosion prevention compound inside Building 1090. Because of the early installation date, this building may contain ACM and LBP.

2.2.2 Sampling History

No sampling events were conducted at this site.

2.3 Findings

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented.

Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to have LBP.

2.4 Summary of Environmental Concerns

ACM was identified in Building 1090 and the building may have been painted with LBP.

2.5 Identified Data Gaps

Testing for LBP has not occurred at Building 1090.

2.6 Recommendations

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 1090.

301 367

TABLE 2

Summary of Analysis Methods for Sampling on Main Installation
 Defense Distribution Depot Memphis, Tennessee

Matrix	QA/QC Level	Parameter Analysis	Method of Analysis
Soil	2	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	2	Zinc	SW846 Method 6010B
Soil	2	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	2	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	2	TCL-Pesticides GC	
Soil	2	Herbicides	SW846 Method 8151
Soil	2	PNA'S GC	SW846 Method 8100
Soil	2	Fluoride	EPA 340.2 (Mod.)
Soil	2	pH	SW846 9045
Soil	2	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	2	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	2	PCB'S GC	SW846 Method 8081
Soil	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Soil	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Soil	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Soil	3	TAL Metals (TAL)	SW846 Method 6010B/7000 SERIES
Soil	3	Zinc	SW846 Method 6010B
Soil	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Soil	3	Herbicides	SW846 Method 8151
Soil	3	PCB'S GC	SDW846 Method 8081
Soil	3	Phenols GC	SW846 Method 8040
Soil	3	PNA'S GC	SW846 Method 8100
Soil	3	TCL-Pesticides/PCB'S GC	SW846 Method 8081
Soil	3	Fluoride	EPA 340.2 (Mod.)
Soil	3	pH	SW846 Method 9045
Surface Water	3	TCL-Volatiles GC/MS	SW846 Method 8260A
Surface Water	3	TCL-Semivolatiles GC/MS	SW846 Method 8270B
Surface Water	3	Priority Pollutant Metals (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	Priority Pollutant Metals, Soluble (PPM)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TAL- Metals, Soluble (TAL)	SW846 Method 6010B/7000 SERIES
Surface Water	3	TCL- Pesticides Only GC	SW846 Method 8081
Surface Water	3	TCL-PCB'S GC	SW846 Method 8081
Surface Water	3	TCL-Dioxins/Furans	CLP-SOW DFLM1.1
Surface Water	3	PNA'S GC	SW846 Method 8100
Surface Water	3	Thiodiglycol	USACOE Method UL09/LL9
Surface Water	3	Solids, Total Suspended (TSS)	EPA 160.2
Surface Water	3	Carbon, Total Organic (TOC)	EPA 415.2
Surface Water	3	TCL- Pesticides/PCB'S	SW846 Method 8081

Notes:

Includes surface and subsurface soil, and sediment samples.

3.0 Subparcel 35.2: Pesticides and POL Storage Area, Building 1084

3.1 Description

Subparcel 35.2 consists of Building 1084 and the area surrounding Building 1084, an old concrete grease rack and a storage area for POL at Building 1085, and a UST. Building 1084 was used to store DDT and other pesticides. The building is now used as an office building.

3.2 History of Subparcel Activities and Past Sampling Activities

3.2.1 Summary of Subparcel Activities

This subparcel is associated with three proposed ER sites, as follows. Site 87 (Building 1084) was used to store DDT and other pesticides (DDMT, November 1997). Site 88 is an old concrete grease rack and storage area for POL located at former Building 1085. Site 89 was a UST associated with the grease rack that was removed in 1988 (DDMT, November 1997). There are no data to assess whether any spills of pesticides occurred within Building 1084. Because of its early installation date, the building may contain ACM and LBP.

3.2.2 Sampling History

Five BRAC samples were collected from this subparcel, as follows. One surface soil sample was collected at each sample location B(35.2) and C(35.2), and three subsurface soil samples were collected at boring SB-15.

3.3 Findings

ACM was identified in Building 1084 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

The COPCs detected in the surface soils at Subparcel 35.2 include arsenic, chromium, lead, cadmium, dieldrin, and petroleum.

Most COPCs in the surface soils were detected at concentrations greatly exceeding background and screening criteria values. For example, arsenic was detected at a concentration of 71.6 mg/kg, which greatly exceeds the BCT (background) criteria value of 20 mg/kg. Chromium was detected at a concentration of 122 mg/kg and 98 mg/kg, of which both values exceed the background value of 24.8 mg/kg and the BCT criteria value of 39 mg/kg.

Note that copper and zinc were detected at concentrations that exceed the background values but not other screening criteria values.

The COPC detected in the subsurface soil includes chromium at the depth of 7 to 10 feet.

The PRE carcinogenic risk ratio for Parcel 35.2 is above a risk level of one in a million from the presence of arsenic and dieldrin. The noncarcinogenic PRE ratios for Parcel 35.2 were below a

value of one for an industrial worker; but were above a value of one for a residential receptor due to the presence of chromium, copper, and zinc at concentrations above background.

3.4 Summary of Environmental Concerns

In summary, the environmental concerns of this subparcel are ACM and LBP in the building interior, and soil contamination. ACM was identified in Building 1084 and the building may have been painted with LBP.

There were elevated concentrations of arsenic, chromium, lead, cadmium, dieldrin, and petroleum detected in the surface and subsurface soils of Subparcel 35.2.

Dieldrin is a sitewide COPC and will be addressed in an upcoming sitewide risk evaluation.

Metals are naturally occurring and were detected at locations throughout the Main Installation at similar concentrations. However, arsenic was not normally detected at such a high concentration (71.6 mg/kg) in other subparcels.

3.5 Identified Data Gaps

Testing for LBP has not occurred at Building 1084.

3.6 Recommendations

According to Table 5-2 of the Draft PRE (CH2M HILL, January 1998), this subparcel requires further risk assessment to determine that No Further Action is required.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 1084.

4.0 Subparcel 35.3: Hazardous Materials Storage, Building 1086

4.1 Description

Subparcel 35.3 consists of Building 1086, which was used to store hazardous materials from 1959 through 1984. This building is currently a spray paint booth.

4.2 History of Subparcel Activities and Past Sampling Activities

4.2.1 Summary of Subparcel Activities

Subparcel 35.3 consists of the proposed NFA Site 30 at Building 1086. Various paints containing VOCs and HAPs are used in the paint booth at Building 1086. As discussed in the NFA Report (CH2M HILL, September 1994), air emissions from paint over-spraying are controlled with dry particulate filters. Spent filters are placed in dumpsters and discarded as non-hazardous waste. A sump is also located within Building 1086 as noted in the EBS visual inspection (DDMT, November 1997).

4.2.2 Sampling History

One BRAC sediment sample, A(35.3), was collected from the sump located in Building 1086.

4.3 Findings

Contaminants detected in the sump sediment at Building 1086 include metals (antimony, cadmium, copper, lead, nickel, and zinc) and an SVOC (naphthalene). Naphthalene is a solvent commonly used for cleaning paint equipment; it also is a constituent in various paints.

As discussed in the No Further Action Report (CH2M HILL, September 1994), an analysis of all available pertinent information for NFA Site 30 concluded that no remedial actions are necessary for the protection of human health or the environment at this subparcel.

This subparcel was evaluated during the RFA conducted in 1990, and the results indicated that the potential for release from all release pathways was low (CH2M HILL, September 1994).

No ACM was identified in Building 1086 from earlier surveys. And, although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

4.4 Summary of Environmental Concerns

Building 1086 may have been painted with LBP.

4.5 Identified Data Gaps

Testing for LBP has not occurred at Building 1086.

4.6 Recommendations

The BCT originally classified all buildings in Parcel 35 as CERFA Category 7 pending the results of representative air sampling to be conducted in other buildings to determine the potential environmental impacts of hazardous material storage in various buildings at DDMT (Meeting Minutes, October 1997).

All buildings previously placed in Category 7 can now be recategorized with Category 1 as a result of air sampling in representative buildings. In those buildings that were sampled, pesticides were detected (DDT, DDE, heptachlor, alpha-chlordane and gamma-chlordane). However, the detected values were two orders of magnitude below health-based criteria, and did not exceed the OSHA or NIOSH allowable limits.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary at this subparcel to assess the extent of LBP in or on the outside of Building 1086.

5.0 Subparcel 35.4: Former Spray Paint Booth in Building 1087 and Sandblasting Waste Drum Storage Area

5.1 Description

Subparcel 35.4 consists of a former spray paint booth in Building 1087 and the sandblasting waste drum storage area south of Building 1088. Building 1087 is located on the southwest corner of the Main Installation. Painting operations at Building 1087 were performed from the 1950s through 1985. The water cascade booth in Building 1087 was replaced in late 1985 with the dry filter paint booth located in Building 1086 (which is in Subparcel 35.3).

The sandblasting waste drum storage area is located just south of Building 1088 in the southwest corner of the Main Installation. The storage area consists of an open-sided, metal-roofed shed with a gravel floor.

5.2 History of Subparcel Activities and Past Sampling Activities

5.2.1 Summary of Subparcel Activities

Subparcel 35.4 is associated with SS 31 and 33. Building 1087 (SS 31) was formerly the location of a drive-through, water cascade, spray paint booth and drying oven, which was used to conduct major stock primer and enamel spray painting operations. Primer and enamel paints contain VOCs and HAPs such as toluene, xylene, lead, and methyl ethyl ketone. The building is currently used to store freshly painted equipment until it is dry.

The Sandblasting Waste Drum Storage Area (SS 33) was used to store 55-gallon drums containing spent sandblasting material. During the EBS visual inspection (DDMT, November 1997), the existing drums were in good condition, and there was no evidence of container failures.

Note that RI Site 32, the Sandblasting Waste Accumulation area, is adjacent to Building 1088, just west of Building 1087 and north of the Sandblasting Waste Drum Storage Area. However, RI Site 32 is associated with Subparcel 35.5.

5.2.2 Sampling History

A total of thirteen surface soil samples were collected within Subparcel 35.4. Ten of these samples (SS33A, SS33B, SS31A, SS31B, SS31C, SS31D, SB33A, SB33B, SB31A, and SS31B) were collected at SS 31 and 33; one sample (SS32G) was an RI surface soil sample; and two samples (SS15 and SS18) were surface soil samples collected from the Law Environmental investigation.

Twelve subsurface soil samples were collected within Parcel 35.4 during the SS sampling event at boring locations SB33A, SB33B, SB31A, and SB31B.

5.3 Findings

A number of COPCs were detected in the surface and subsurface soils at Parcel 35.4. The COPCs in surface soils included PAH and PCB compounds, metals (lead, chromium, cadmium, arsenic, and antimony), and DDT. The COPCs in subsurface soils included metals (antimony, cadmium, chromium, and lead) and methylene chloride.

Former Paint Spray Booth (Building 1087, SS 31)

ACM was identified in this building from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

The COPCs identified in the surface and subsurface soil surrounding Building 1087 include antimony, arsenic, cadmium, chromium and lead. Heavy metals, including chromium and lead, found in surface soil at concentrations above background are possibly from sandblasting operations near this site.

The PRE performed for Building 1087 (CH2M HILL, January 1998) reported that the carcinogenic risk ratio for this area is above a risk level of 1 in a million from the presence of arsenic slightly above background levels. The noncarcinogenic PRE ratios were above a value of 1.0 for both industrial worker and residential scenarios from the presence of chromium and lead. However, because the observed PRE risk and non-carcinogenic ratios are only from the presence of low levels of inorganic chemicals that are naturally occurring and just above background, no significant human health concerns are anticipated from this area under the industrial use scenario.

Sandblasting Waste Drum Storage (South of Building 1088, SS 33)

The surface soils in this area have elevated concentrations of metals, PAHs and PCBs, with relatively high concentrations detected along the fenced property boundary, possibly resulting from sand blasting operations. Subsurface metals concentrations below the 1-foot depth are similar to those found at other parcels and are considered to represent natural variability of metals with changing soil type.

The PRE results for this area (CH2M HILL, January 1998) indicate that carcinogenic risks are below 1 in a million and that noncarcinogenic ratios are less than one for industrial scenarios. Noncarcinogenic ratios are slightly above one for residential scenarios due to metals. Further risk evaluation of metals in surface and subsurface soils is recommended, using existing data (without additional sampling).

5.4 Summary of Environmental Concerns

In summary, the environmental concerns of this subparcel are ACM and LBP in the building interior, and soil contamination.

ACM was identified in Building 1087 and the building may have been painted with LBP. Further risk evaluation of metals (lead and chromium) in surface soils surrounding Building 1087 is recommended, without additional sampling. The elevated chromium and lead concentrations are possibly a result of sandblasting operations near the site. The arsenic levels detected in the surface soils are similar to background values.

There were elevated concentrations of PAHs, dieldrin, PCBs, and DDT in the surface soils surrounding the waste drum storage area, mostly detected along the fenced property boundary, which could have resulted from sand blasting operations.

PAH and dieldrin are sitewide COPCs and will be addressed in an upcoming sitewide risk evaluation.

The elevated concentrations of PCBs were detected in the previous investigation conducted by Law Environmental in 1990. PCBs were not detected in the more recent sampling event.

The surface soil throughout the main installation has the potential for pesticide contamination (including DDT) due to routine application.

5.5 Identified Data Gaps

Further risk evaluation is needed for metals in surface soils surrounding Building 1087. Furthermore, testing for LBP at Building 1087 has not occurred.

5.6 Recommendations

It is recommended that a risk assessment be performed at this subparcel to confirm that No Further Action is required.

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 1087.

6.0 Subparcel 35.5: Remaining Areas of Parcel 35

6.1 Description

Subparcel 35.5 consists of all the areas in Parcel 35 that are not included in Subparcels 35.1 through 35.4. Significant sites included within this subparcel are Building S1091, Building 1088 and the sandblasting waste accumulation area adjacent to Building 1088, and the surface soils within the subparcel.

Building 1091 was installed in 1953 and is used as a paint storage warehouse. Building 1088 was installed in 1953 and is used for sandblasting. The sandblasting waste accumulation area is adjacent to Building 1088. The area consists of a corrugated steel shed with a gravel floor. Three hoppers in the shed collect the dust from sandblasting operations and direct it into 55-gallon drums.

6.2 History of Subparcel Activities and Past Sampling Activities

6.2.1 Summary of Subparcel Activities

Subparcel 35.5 contains storage facilities and shops. Major sites in Subparcel 35.5 are Building S1091, Building 1088, and RI Site 32 (the Sandblast Waste Accumulation Area). Building S1091 was formerly used as a paint storage warehouse. Because of the early installation date for Building S1091 and 1088, the buildings may contain ACM and LBP.

Sandblasting is another activity of concern occurring at Subparcel 35.5. Prior to the use of Building 1088 and the hopper system at the waste accumulation area, sandblasting operations were performed on the open ground in the general vicinity of Building 1087, according to the RFA Report (A.T. Kearney, Inc., January 1990).

6.2.2 Sampling History

A total of fourteen surface soil samples were collected from Subparcel 35.5. Five of these were SS samples (SS33C, SS33D, SS33E, SS33F, and SB33C); five were RI samples (SS32B, SS32C, SS32D, SS32E, and SS32F); three were Law Environmental samples (SS16, SS17, and SS19); and one was a BRAC sample, A(35.2).

Three borings were located at this subparcel: the SS boring sample SB33C, the RI boring sample SB32A, and the Law Environmental boring sample STB-5.

6.3 Findings

Building S1091

ACM was identified in Building S1091 from earlier surveys (Woodward-Clyde, 1996). ACM products were found in poor or friable condition as a result of physical damage or natural deterioration. Restricted access to the areas with ACM in poor condition was recommended until a proper abatement or removal plan is implemented. Although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Building S1088

There was no ACM identified in Building 1088 from earlier surveys. And, although LBP was not specifically tested for in this building, testing in the housing units indicated that any building constructed before 1978 at DDMT is believed to contain LBP.

Sand Blasting Waste Accumulation Area (RI Site 32)

The surface and subsurface soils in this area have elevated concentrations of metals, PAHs, and PCBs. Some detections of chromium and lead were greater than 10 times the screening level values.

The PRE results for this area (CH2M HILL, January 1998) indicate that carcinogenic risks were well above 1 in a million levels for both the industrial and residential scenarios, primarily from the presence of arsenic and a PAH. The noncarcinogenic ratio was below a value of 1.0 for the industrial scenario and was above 1.0 for a residential scenario, due to the presence of metals. The observed metals were related to the site operations of painting or sandblasting.

6.4 Summary of Environmental Concerns

In summary, the environmental concerns of this subparcel are ACM and LBP in the building interiors, and soil contamination.

ACM was identified in Building 1091. In addition, Building 1091 and Building 1088 may have been painted with LBP.

Due to the significantly elevated levels of metals in the shallow soils, RI Site 32 is a candidate for early removal.

6.5 Identified Data Gaps

Testing for LBP has not occurred at Buildings 1091 and 1088.

6.6 Recommendations

The BCT recommends that this subparcel be classified as a CERFA Category 6 (Meeting Minutes, October 1997).

XRF testing, wipe testing, paint chip sampling, or soil testing may be necessary in this subparcel to assess the extent of LBP in or on the outside of Building 1091 and 1088.

Works Cited

Works Cited

A.T. Kearney, Inc. *RFA Report*. DDMT. Prepared for U.S. Environmental Protection Agency, Region IV. January 1990.

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FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE