

Black and Decker (U.S.), Inc.

Work Plan for:  
**Environmental Investigation at the  
Black and Decker, Incorporated  
Hampstead, Maryland Facility**



W03628



PRIVILEGED AND CONFIDENTIAL

Draft Work Plan For:  
ENVIRONMENTAL INVESTIGATION AT THE  
BLACK & DECKER, INCORPORATED  
HAMPSTEAD, MARYLAND FACILITY

Prepared For:

Black & Decker (U.S.), Inc.  
10 North Park Drive  
P.O. Box 798  
Hunt Valley, Maryland 21030

September 1987

Prepared By:

ROY F. WESTON, INC.  
Weston Way  
West Chester, Pennsylvania 19380

Work Order No. 2501-02-01

1363B

W02792

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
	LIST OF TABLES	v
	LIST OF FIGURES	vi
1	SUMMARY	1-1
1.1	Background	1-1
1.2	Introduction	1-1
1.3	Objectives	1-1
1.4	Summary Description of Study Areas	1-4
1.4.1	Zone A - Storage Tank Area	1-4
1.4.2	Zone B - Site Near the Seep Zone	1-4
1.4.3	Zone C - Potential Heat Treatment Residue Disposal Areas	1-4
1.4.4	Zone D - Potential Product Disposal Area	1-4
1.4.5	Zone E - Site Near the Corner of Buildings 5 and 6	1-5
1.4.6	Zone F - Past Potential Burn Area	1-5
1.4.7	Zone G - Pond Areas	1-5
2	ENVIRONMENTAL INVESTIGATION - GENERAL	2-1
2.1	Introduction to Investigative Techniques	2-1
2.2	Elevation Surveys	2-1
2.3	Soil Gas Analyses	2-1
2.4	Magnetometer and EM Surveys	2-1
2.5	Backhoe Test Excavations	2-2
2.6	Soil Sampling and Analyses	2-2
2.7	Pond Water and Sediment Sampling	2-3
2.8	Monitor Well Installation	2-3
2.9	Water Sampling and Analyses	2-3
2.10	Decontamination Procedures	2-6
2.11	Other Activities - Phase I	2-6
3	ZONE A - STORAGE TANK AREA INVESTIGATION	3-1
3.1	Problem Definition	3-1
3.2	Field Activities	3-1
3.2.1	Soil Gas Analysis Plan	3-1
3.2.2	Soil Sampling and Analysis Plan	3-1
3.3	Evaluation of Potential as Source	3-1

TABLE OF CONTENTS  
(continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
4	ZONE B - SITE NEAR THE SEEP AREA INVESTIGATION	4-1
4.1	Problem Definition	4-1
4.2	Field Activities	4-1
	4.2.1 Backhoe Test Excavation Plan	4-1
	4.2.2 Soil Sampling and Analysis Plan	4-1
4.3	Evaluation of Potential as Source	4-1
5	ZONE C - POTENTIAL HEAT TREATING RESIDUES DISPOSAL AREA INVESTIGATION	5-1
5.1	Problem Definition	5-1
5.2	Field Activities	5-1
	5.2.1 Soil Sampling and Analysis Plan	5-1
5.3	Evaluation of Potential as Source	5-2
6	ZONE D - POTENTIAL PRODUCT DISPOSAL AREA INVESTIGATION	6-1
6.1	Problem Definition	6-1
6.2	Field Activities	6-1
	6.2.1 Geophysical Survey Plan	6-1
	6.2.2 Soil Sampling and Analysis Plan	6-1
6.3	Evaluation of Potential as Source	6-2
7	ZONE E - SITE NEAR THE CORNER OF BUILDINGS 5 and 6 INVESTIGATION	7-1
7.1	Problem Definition	7-1
7.2	Field Activities	7-1
	7.2.1 Soil Gas Analysis Plan	7-1
	7.2.2 Soil Sampling and Analysis Plan	7-1
7.3	Evaluation of Potential as Source	7-3
8	ZONE F - PAST POTENTIAL BURN AREA INVESTIGATION	8-1
8.1	Problem Definition	8-1
8.2	Field Activities	8-1
	8.2.1 Geophysical Survey Plan	8-1
	8.2.2 Soil Sampling and Analysis Plan	8-1
8.3	Evaluation of Potential as Source	8-2



TABLE OF CONTENTS  
(continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
9	ZONE G - POND AREAS INVESTIGATION	9-1
	9.1 Problem Definition	9-1
	9.2 Field Activities	9-1
	9.3 Evaluation of Potential as Source/ Receptor	9-3
10	EVALUATION OF RESULTS FROM THE PHASE I ENVIRONMENTAL INVESTIGATION	10-1
	10.1 Data Analysis	10-1
	10.2 Evaluative Meeting: Phase II Investigation	10-1
11	PHASE II - HYDROGEOLOGIC ANALYSIS	11-1
	11.1 Monitor Well Installation Plan	11-1
	11.1.1 Overview	11-1
	11.1.2 Selection of Monitor Well Locations	11-1
	11.1.3 Elevation Survey of New Wells	11-2
	11.2 Water Level Measurement Plan	11-2
	11.3 Groundwater Sampling and Analysis Plan	11-2
	11.4 Contingency for Two Additional Monitor Wells	11-2
12	PREPARATION AND SUBMISSION OF FINAL REPORT	12-1
	12.1 Draft Report Submission to Black & Decker	12-1
	12.2 Submission of Final Report	12-1
	APPENDIX A - SOIL GAS PROCEDURES	
	APPENDIX B - MAGNETOMETER AND EM SURVEY PROCEDURES	
	APPENDIX C - QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM	
	APPENDIX D - HEALTH AND SAFETY PLAN	

LIST OF TABLES

<u>Table No.</u>	<u>Title</u>	<u>Page</u>
2-1	Summary of Analyses Planned for Soil Samples	2-4
2-2	Summary of Analyses Planned for Water Samples	2-5
D-1	Primary Chemical Contaminants to Be Tested	D-3
D-2	Levels of Protection/Action Levels	D-10
D-3	Personnel Decontamination Procedures	D-11

## LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	<u>Page</u>
1-1	Areas of Investigation: Phase I Source Evaluation	1-2
1-2	Project Schedule	1-3
3-1	Planned Soil Gas Sampling Locations, Zone A	3-2
7-1	Planned Soil Gas Sampling Locations, Zone E	7-2
9-1	Approximate Sample Locations, Zone G	9-2
C-1	Sample Chain of Custody Form	C-5
D-1	Example Health and Safety Sign-Off Sheet	D-6

## SECTION 1

## SUMMARY

1.1 BACKGROUND

Following a 1984 gasoline spill at the Hampstead, Maryland Exxon service station, production wells on the Black & Decker property were sampled and analyzed by Carroll County Health Department personnel. The results revealed the presence of several organic halogen compounds. Subsequent sampling and testing were followed by meetings with the County and with State of Maryland Department of Health and Mental Hygiene (MDHMH) personnel, which confirmed the findings and led to subsequent environmental investigations. These efforts did not clearly identify potential sources of contamination ~~causing the groundwater contamination.~~ ~~may be~~

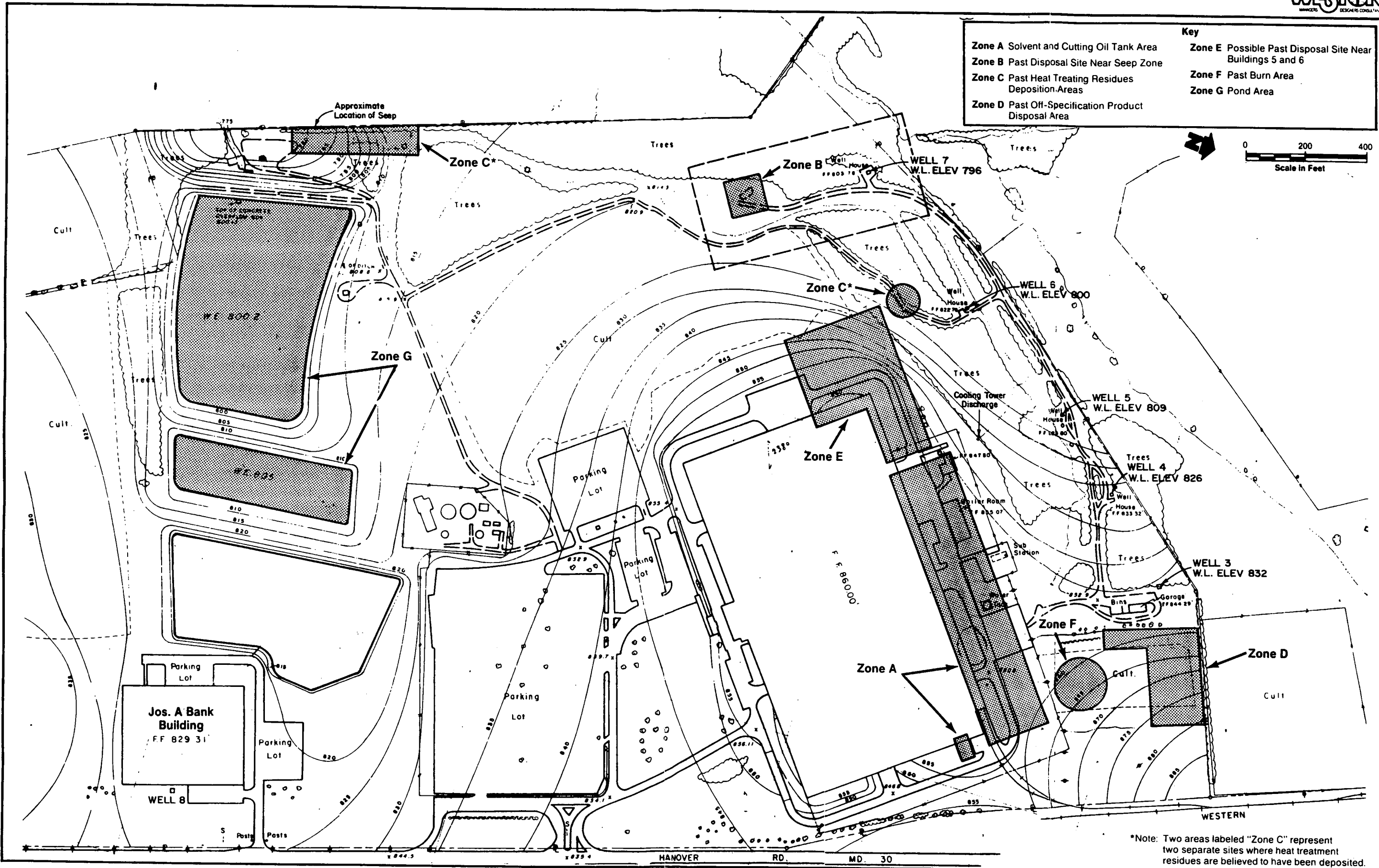
1.2 INTRODUCTION

As a result of the previously-completed investigations and other analyses, seven areas within the plant property have been targeted for further investigation. These areas are shown in Figure 1-1. A schedule of activities is presented in Figure 1-2.

1.3 OBJECTIVES

The objectives of this environmental investigation are twofold. A first phase of investigation is intended to clearly identify sources or potential sources of contamination. After completion of this phase of investigation, the data will be evaluated and summarized for review with MDHMH prior to finalizing and implementing the second phase of this investigation. The second phase, which is to include supplemental monitor well installation and sampling/testing, is intended to further define the presence of contaminants, evaluate contaminant migration pathways, if any, both on and off-site, and to provide preliminary data for consideration of remedial alternatives if such is deemed necessary at the site.





**FIGURE 1-1 AREAS OF INVESTIGATION  
PHASE I SOURCE EVALUATION  
W02799**

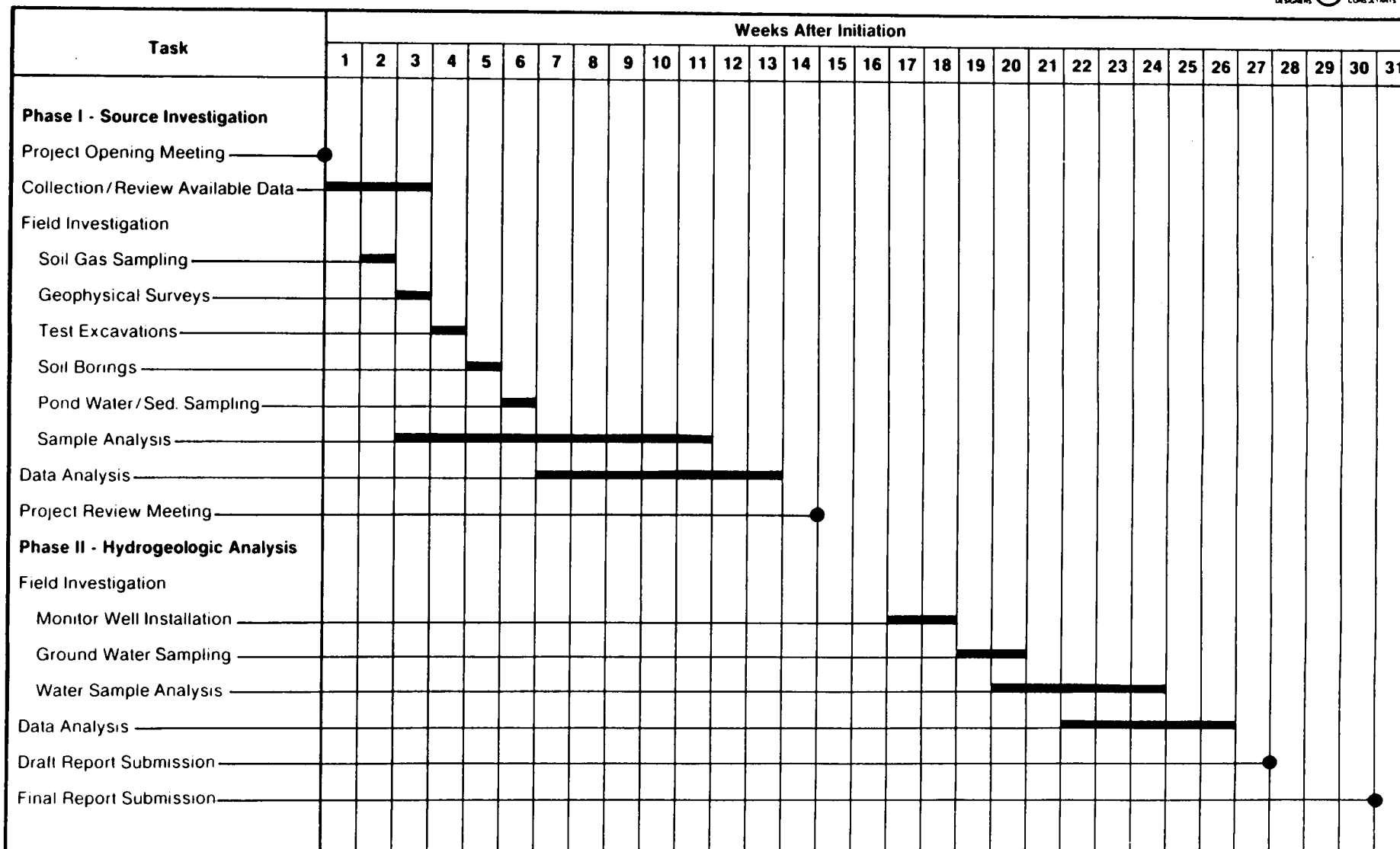


FIGURE 1-2 PROJECT SCHEDULE

1-3

MO-500

In Section 2, the investigative techniques which will be applied to achieve these objectives are briefly described. In Sections 3 through 9, the work elements for each area of concern are discussed in detail. Sections 10 and 11 address the evaluation methodology for the first phase and expectations for the second phase efforts. Section 12 deals with report submission, and the Appendices describe QA/QC and Health and Safety procedures.

## 1.4 SUMMARY DESCRIPTION OF STUDY AREAS

Presented below are brief descriptions of each area of concern which will be evaluated in the first phase characterization studies.

### 1.4.1 Zone A - Storage Tank Area

Two areas have been identified where storage tanks which previously contained solvents and cutting oils were previously located (see Figure 1-1). These two areas are to be investigated as potential sources.

### 1.4.2 Zone B - Site Near the Seep Zone

Characterized in previous studies, this area (see Figure 1-1) may have served for disposal of wastes early in the plant's history. Soil analyses to date have suggested that significant levels of organic compounds are not present in the unsaturated zone in the immediate area; however, fill areas have been identified, but not directly evaluated.

### 1.4.3 Zone C - Potential Heat Treatment Residue Disposal Areas

This zone (see Figure 1-1) includes two areas where heat treatment residues or demolition debris from heat-treating furnaces may have been buried. Definitive boundaries of these areas are unknown.

### 1.4.4 Zone D - Potential Product Disposal Area

In this area, products not meeting required specifications may have been buried. Boundaries of the disposal area, as well as the potential for the presence of contaminants in the area, are unknown.

## 1.4.5 Zone E - Site Near the Corner of Buildings 5 and 6

Available information suggests that the Zone E area could have been used for disposal of various materials (see Figure 1-1). This possibility is, as yet, unconfirmed. The proximity of this site to well No. 7 has raised a concern for its potential contribution to the contamination identified in the well.

## 1.4.6 Zone F - Past Potential Burn Area

This area (see Figure 1-1) may have been used to disable off-specification products, plastic parts, and other materials prior to disposal. Compounds which may be of concern for investigation in the area are volatile organics and petroleum hydrocarbons.

## 1.4.7 Zone G - Pond Areas

The two ponds (see Figure 1-1) have served as a surge/detention basin for wastewater, and as a receiving pond for treated and non-contact cooling water which then served as a source of water for fire protection. Water and bottom sediments in the ponds (particularly the surge/detention basin) could potentially contain contaminants of concern as a result of these uses.

## SECTION 2

### ENVIRONMENTAL INVESTIGATION - GENERAL

#### 2.1 INTRODUCTION TO INVESTIGATIVE TECHNIQUES

In Phase I, each of these areas will be evaluated using a combination of soil gas analysis, surface geophysical surveying, backhoe test excavations, soil borings, soil sample screening and analysis, and surface water and bottom sediment analysis. In Phase II, contaminant migration pathways, if any, will be evaluated using hydrogeologic data (groundwater measurement and sampling) obtained from monitor wells.

#### 2.2 ELEVATION SURVEYS

The top of the casing of each of the existing on-site wells (including monitor wells and production wells), and all monitor wells to be constructed, will be located with respect to National Geodetic Vertical Datum (NGVD) elevation by a surveyor licensed in Maryland. All elevations will be measured to within plus or minus 0.01 foot, and a permanent benchmark will be established on-site. The elevations obtained will be utilized in conjunction with water level measurements in the wells (and, where possible, in the test pits and at the pond surfaces) to allow evaluation of groundwater flow directions.

#### 2.3 SOIL GAS ANALYSES

Soil gas analyses will be conducted in Zones A and E. Soil gas sampling involves extracting a gas sample from the vadose zone by using a slim probe with a microporous tip. The gas sample is immediately analyzed in the field using a gas chromatograph. In this manner, soils can be relatively quickly screened for the presence of target volatile organic compounds. Low or background readings indicate the absence of significant levels of contaminants of concern. High positive readings, indicating the presence of contaminants, can be reinforced by coincident soil sampling and analysis, thus delineating the source or "hot" areas. Details regarding soil gas collection and analysis procedures are included in Appendix A.

#### 2.4 MAGNETOMETER AND EM SURVEYS

Magnetometer and electromagnetic conductivity (EM) surveys will be conducted in Zones D and F. The magnetometer and EM units are surface geophysical instruments utilized to identify shallow

subsurface metals and ionic species. Data provided will allow delineation of subsurface boundaries of these disposal areas. Details regarding magnetometer and EM survey procedures are presented in Appendix B.

#### 2.5 BACKHOE TEST EXCAVATIONS

Backhoe excavations will be performed at Zones B, C, D, and F. Backhoe excavations provide a means of evaluating relatively large subsurface areas for signs of soil contamination and, in places, groundwater contamination. Excavations may be continued into the saturated zone, where, utilizing a thermocouple flow meter, along with direct measurement of the water surface elevation, groundwater flow direction(s) can be evaluated. Soil and groundwater will be field screened, utilizing an organic vapor analyzer (OVA) or photoionization indicator (HNU) to determine the likelihood that organic contamination is present.

#### 2.6 SOIL SAMPLING AND ANALYSES

Soil samples will be collected in Zones A, B, C, D, E, and F. Soil samples will be collected from borings and from backhoe test excavations. Borings will be advanced by a truck-mounted hollow-stem auger drilling rig. As each boring is advanced, soils will be screened for indications of volatile organic compounds (VOC's) using an OVA or HNU. In the borings, samples will be continuously collected using a split-spoon sampler and standard penetration techniques (ASTM D-1586). Soil samples taken from test excavations will be collected directly using stainless steel trowels. The total number of soil samples collected for analysis will be approximately 15 during Phase I activities.

A summary of analyses planned for soil samples obtained from the borings and pits is presented in Table 2-1. Although all samples will be collected from the vadose zone soils, the depth at which the samples will be collected will be determined in the field by the site geologist. The decision regarding the sampling depth for each sample will be based on OVA or HNU screening which indicates VOC levels, visual and other field observations, as well as the proximity to potential sources. All soil samples will be analyzed according to accepted methods by the WESTON Lionville Laboratory following U.S. EPA Contract Laboratory Program (CLP) analysis guidelines. According to discussions with MDHMH, the full CLP data documentation package will not be necessary. The WESTON Laboratory is a certified CLP laboratory for the U.S. EPA.

## 2.7 POND WATER AND SEDIMENT SAMPLING

Samples of surface water and sediments will be collected from the two impoundments located in the southern part of the site (Zone G). Sampling of pond water will be performed by use of a Kemmer Sampler, or a similar device, permitting the collection of water samples from discrete depths in the water column. Sediment samples will be collected using an impact coring device, a Ponar dredge sampler or equivalent device, or a driven split-spoon, all of which would permit collection of discrete samples with minimal disturbance of the sediment. Distribution of sampling points and other more-detailed information is included in Section 9. Analyses planned for samples obtained from the ponds are shown in Tables 2-1 and 2-2.

## 2.8 MONITOR WELL INSTALLATION

Monitor well installation will be performed as part of the planned Phase II activities following evaluation of data obtained during the planned Phase I investigations. Monitor wells will be constructed in borings advanced using hollow-stem augers and roller bit methods. The wells will be constructed of 4-inch ID, schedule 40 PVC casing and screen using typical gravel pack, bentonite pellet, and pressure grouting techniques. Protective surface casings with locking caps will be installed. The elevation of the top of casing of each well will be determined using the survey data developed as part of the Phase I efforts. Further detail is provided in Section 11.

## 2.9 WATER SAMPLING AND ANALYSES

Groundwater samples will be collected from the monitor wells constructed during the planned Phase II activities, and from selected plant production wells and previously-existing monitor wells. It is anticipated that 20 to 25 groundwater samples will be collected. Accepted purging and sampling techniques will be employed. A summary of analyses planned for water samples to be obtained from the ponds and the wells is presented in Table 2-2. All water samples will be analyzed according to accepted procedures by the WESTON Lionville Laboratory following U.S. EPA CLP analysis guidelines. The WESTON Laboratory is a certified CLP facility for the U.S. EPA.

Table 2-1

Summary of Analyses Planned for Soil Samples

Zone	Description	No. of Soil Samples	Analysis <sup>1</sup>
A	Storage Tank Area	2	VOC, petroleum hydrocarbons
B	Site Near Seep Zone	4	VOC, EP Toxicity for metals
C	Possible Heat Treatment Residue Areas	4 <sup>3</sup>	EP Toxicity for metals
		1	VOC
		4	CN
D	Possible Product Disposal Area	3	EP Toxicity for metals
		1	VOC
E	Bldg. 5/6 Disposal (possible)	7	VOC, CN
F	Past Potential Burn Area	4 <sup>3</sup>	VOC, petroleum hydrocarbons
G <sup>2</sup>	Pond Area	8	VOC, EP Toxicity for metals, nitrate

<sup>1</sup>All analysis according to CLP approved methods to be performed by the WESTON Lionville Laboratory.

<sup>2</sup>Soil sample collection in Zone G is described in Subsection 9.2.

<sup>3</sup>In Zones C and F, the actual number of soil samples collected may be reduced if no indications of soil contamination are identified in the test excavations.



Table 2-2

Summary of Analyses Planned for Water Samples

Zone	No. of Water Samples	Analysis <sup>1</sup>
G	5	VOC, metals, nitrate, specific conductivity, pH
Monitor and production wells <sup>2</sup>	25	VOC, specific conductivity, pH

<sup>1</sup>All analysis according to CLP guidelines to be performed by the WESTON Lionville Laboratory.

<sup>2</sup>Planned Phase II activity; estimated number of wells.

## 2.10 DECONTAMINATION PROCEDURES

All equipment which could potentially contact soil or water samples during borings, excavations, or sample collection will be thoroughly decontaminated before each activity is begun. The rear of the backhoe, the backhoe bucket, the rear of the drilling rig, the augers and other drilling tools will be steam cleaned to remove grease, oil, gasoline and soil using a portable steam generator before each excavation or boring is begun. The split-spoons, trowels, and all other sample collection tools will be cleaned using a soap (Alconox) and tap water scrub, followed by a tap water rinse, followed by a deionized water rinse, and will be allowed to dry. A fresh pair of gloves will be worn by sampling personnel for each sample collection. All sample containers will be certified laboratory cleaned, and opened only during sample collection. All fluids generated from the decontamination procedures will be discharged into the plant wastewater treatment system.

## 2.11 OTHER ACTIVITIES - PHASE I

As part of the Phase I evaluation, historical aerial photographs of the plant area will be obtained and examined for evidence of fracture traces and other surface expressions of subsurface geologic features. In addition, appropriate county and state agencies will be contacted to attempt to locate any information regarding local off-site water supply wells.

## SECTION 3

## ZONE A - STORAGE TANK AREA INVESTIGATION

3.1 PROBLEM DEFINITION

Of concern in Zone A is potential soil and groundwater contamination which may have occurred as a result of inadvertent spills and, possibly, underground tank leakage in the area. Compounds of concern are VOC's and petroleum hydrocarbons.

3.2 FIELD ACTIVITIES3.2.1 Soil Gas Analysis Plan

A total of approximately 20 soil gas samples will be collected in Zone A. Sample locations will be concentrated, based on plans provided by Black & Decker, around the distribution pipes and underground tanks, and in areas where spills of solvents and oils may have occurred. Figure 3-1 shows planned locations for collection of soil gas samples in Zone A. Details regarding soil gas procedures are presented in Appendix A.

3.2.2 Soil Sampling and Analysis Plan

Because the soil gas analyses will provide immediate indications of possible soil contamination, it will be possible to locate borings for collection of confirmatory soil samples without awaiting laboratory turnaround delays. A maximum of four borings will be performed in Zone A, at sites where soil contamination is likely based on results of the soil gas survey. One sample will be retained from each boring. The sample depth will be selected on the basis of HNu/OVA screening procedures outlined in Subsection 2.6. The two samples obtained will be submitted to the laboratory and analyzed for VOC's.

3.3 EVALUATION OF POTENTIAL AS SOURCE

Field and laboratory data generated by the investigations at Zone A will be used to evaluate whether past activities have contributed in any way to <sup>any</sup> soil contamination in the area. This, in turn, will determine the need to investigate potential contaminant migration from the particular source, if any, through groundwater and, perhaps, surface water pathways. Recommendations for further investigation will be made accordingly.

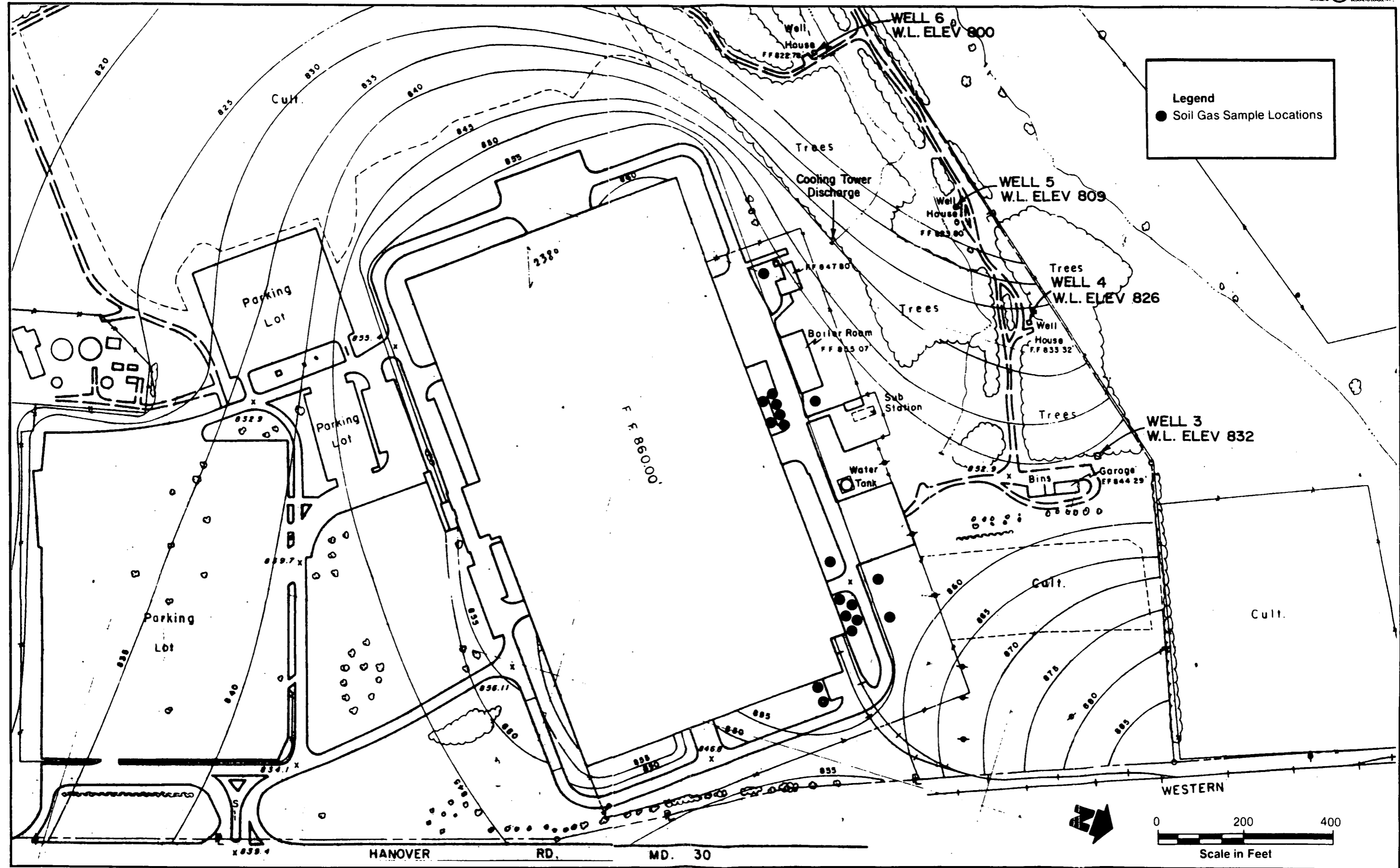


FIGURE 3-1 PLANNED SOIL GAS SAMPLING LOCATIONS, ZONE A  
W02810

## SECTION 4

### ZONE B - SITE NEAR THE SEEP AREA INVESTIGATION

#### 4.1 PROBLEM DEFINITION

Of concern in Zone B is potential soil and groundwater contamination which may have occurred as a result of past disposal practices. The boundaries of the fill area have been delineated by previous geophysical surveys. Compounds to be analyzed for are VOC's and EP Toxic metals.

#### 4.2 FIELD ACTIVITIES

##### 4.2.1 Backhoe Test Excavation Plan

A total of 6 to 10 backhoe trenches will be excavated into the saturated zone in and around the seep area to allow description and screening of soils, as well as screening of shallow groundwater for VOC's. The depth and exact number of excavations will be determined in the field based on the depth to groundwater and on observations made by the site geologist. Two to four excavations will be completed through the fill areas. If field screening of excavated fill material and soils indicates the presence of VOC's, one soil sample will be collected from each excavation, either from the fill or from underlying soils.

##### 4.2.2 Soil Sampling and Analysis Plan

A total of four soil samples will be collected from the Zone B excavations. All four will be analyzed for VOC's and EP Toxic metals. The backhoe bucket and all equipment utilized for sample collection will be decontaminated before each sampling following protocols presented in Subsection 2.10. Excavated materials will be backfilled after sampling is completed.

#### 4.3 EVALUATION OF POTENTIAL AS SOURCE

Groundwater data collected by others have suggested that the Zone B disposal area may be a source of PCE and TCE identified in groundwater samples collected from production well No. 7 and from nearby monitor wells. This, however, has not been confirmed by soil or source material testing. The field and laboratory data obtained from planned soils samples collected from within and around the waste areas will be used to evaluate whether Zone B is potentially a source area. If significant concentrations of VOC's and leachable metals are identified in the soils, recommendations will be made for further efforts in the Zone B area.

## SECTION 5

### ZONE C - POTENTIAL HEAT TREATING RESIDUES DISPOSAL AREA INVESTIGATION

#### 5.1 PROBLEM DEFINITION

Zone C consists of two areas where material may have been deposited from heat treating furnaces which were previously operated at the facility. The two areas are shown in Figure 1-1. The northern area, closest to the plant building, may have received wastes from the furnaces. The southern area, near the ponds, may have received furnace fragments, brick, and other debris from the furnaces. In each area, whether or not contamination exists is unknown.

#### 5.2 FIELD ACTIVITIES

##### 5.2.1 Soil Sampling and Analysis Plan

In each of the two areas, a backhoe will be utilized to perform excavations into and, where possible, through the buried fill to allow visual description of fill materials and soils and collection of soil samples from or immediately beneath the fill.

In the northern area (nearest the plant building), two test excavations will be completed through the fill. One soil sample will be collected from each excavation, and will be analyzed for cyanide (CN).

In the southern area (near the ponds), deposition of debris may have taken place in a gully. The debris remains visible at the surface. One excavation will be completed near the head of the gully to allow visual description of the debris. If appropriate, one sample will be collected from the debris. The excavation will then be continued through the debris, if possible, and a soil sample collected immediately beneath the debris. A similar excavation will be performed near the toe of the gully, from which one soil sample will be collected. Additionally, one stream sediment sample will be collected approximately 50 feet downstream from the fill area.

All samples collected will be analyzed for CN and EP Toxic metals. One sample, selected on the basis of field screen measurements obtained from the OVA or HNu, will be analyzed for VOC's.

The backhoe bucket, as well as all other sampling equipment utilized, will be decontaminated before each sample is collected according to protocols presented in Subsection 2.10. Excavated materials will be backfilled after sampling is completed.

### 5.3 EVALUATION OF POTENTIAL AS SOURCE

The field and laboratory data obtained will be used to evaluate the possible effects of heat treating furnace residue and debris disposition in Zone C. If contamination is indicated, recommendations for further evaluation of the possible pathways of contaminant migration, if any, will be made.

## SECTION 6

### ZONE D - POTENTIAL PRODUCT DISPOSAL AREA INVESTIGATION

#### 6.1 PROBLEM DEFINITION

Past activity at Zone D may have been limited to deposition and burial of off-specification products (e.g., small appliances) produced at the facility. The subsurface boundaries of the disposal area, as well as the potential for soil and ground-water contamination, are unknown.

#### 6.2 FIELD ACTIVITIES

##### 6.2.1 Geophysical Survey Plan

Magnetometer and EM surveys will be performed in Zone D on a 50-foot grid spacing. The grid will be created utilizing standard surveying techniques, will be marked by wooden stakes, and will be located relative to a known, fixed reference point. Potential physical interferences, such as fences and buried conduits, will be identified and avoided. Magnetic and conductivity (EM) data will be evaluated, and maps will be produced showing geophysical intensities, which are expected to delineate the approximate subsurface boundaries of buried debris, if any.

##### 6.2.2 Soil Sampling and Analysis Plan

Upon completion and evaluation of the Zone D surface geophysical boundary mapping, soil samples will be collected from selected locations in Zone D. Utilizing either a backhoe or a truck-mounted hollow-stem auger, excavations (or borings) will be completed through the buried materials to allow collection of soil samples immediately beneath the material. The decision to use a backhoe or an auger rig will be made once subsurface conditions have been more clearly defined by the geophysical survey.

A total of four (4) soil samples will be collected. Three (3) samples will be analyzed for EP Toxicity (metals only) and one sample will be analyzed for VOCs. The VOC sample will be selected based on field screen measurements obtained from the OVA or HNu.



## SECTION 7

ZONE E - SITE NEAR THE CORNER  
OF BUILDINGS 5 and 6 INVESTIGATION7.1 PROBLEM DEFINITION

Available information suggests a potential past disposal site near the corner of Buildings 5 and 6. Contaminants which could potentially be present in this area, termed Zone E, are VOCs and CN. Documentation regarding the nature of past activities in Zone E is unavailable, and past disposal is unconfirmed.

7.2 FIELD ACTIVITIES7.2.1 Soil Gas Analysis Plan

A total of approximately 30 soil gas samples will be collected in Zone E. Because of the proximity of the seep zone and well No. 7 to Zone E, the sampling area will be expanded to the south and west to allow for evaluation of potential lateral migration of organics toward these areas. In addition, samples will be collected above historical construction fill areas along the northern edge of the cleared area north of the main building. Planned soil gas sample collection points are shown in Figure 7-1. Details regarding soil gas procedures are presented in Appendix A.

7.2.2 Soil Sampling and Analysis Plan

The soil gas analyses will provide immediate indications of the presence/absence and concentrations of volatile organics in the soil. Therefore, it will be possible to locate borings for collection of confirmatory soil samples for laboratory analysis immediately after reviewing the soil gas concentration data.

A total of seven (7) soil borings are planned for Zone E. From each of the borings, one (1) sample will be selected based on OVA/HNu field screening procedures and be submitted for VOC and CN analysis. Borings will be continued to a depth of 15 feet, or to the indicated water table, whichever is reached first.

Borings will be performed utilizing a truck-mounted hollow-stem auger rig. Samples will be collected utilizing a split-spoon sampler. Standard decontamination procedures presented in Subsection 2.10 will be followed. Holes will be backfilled with cuttings after collection of the last sample from each boring.

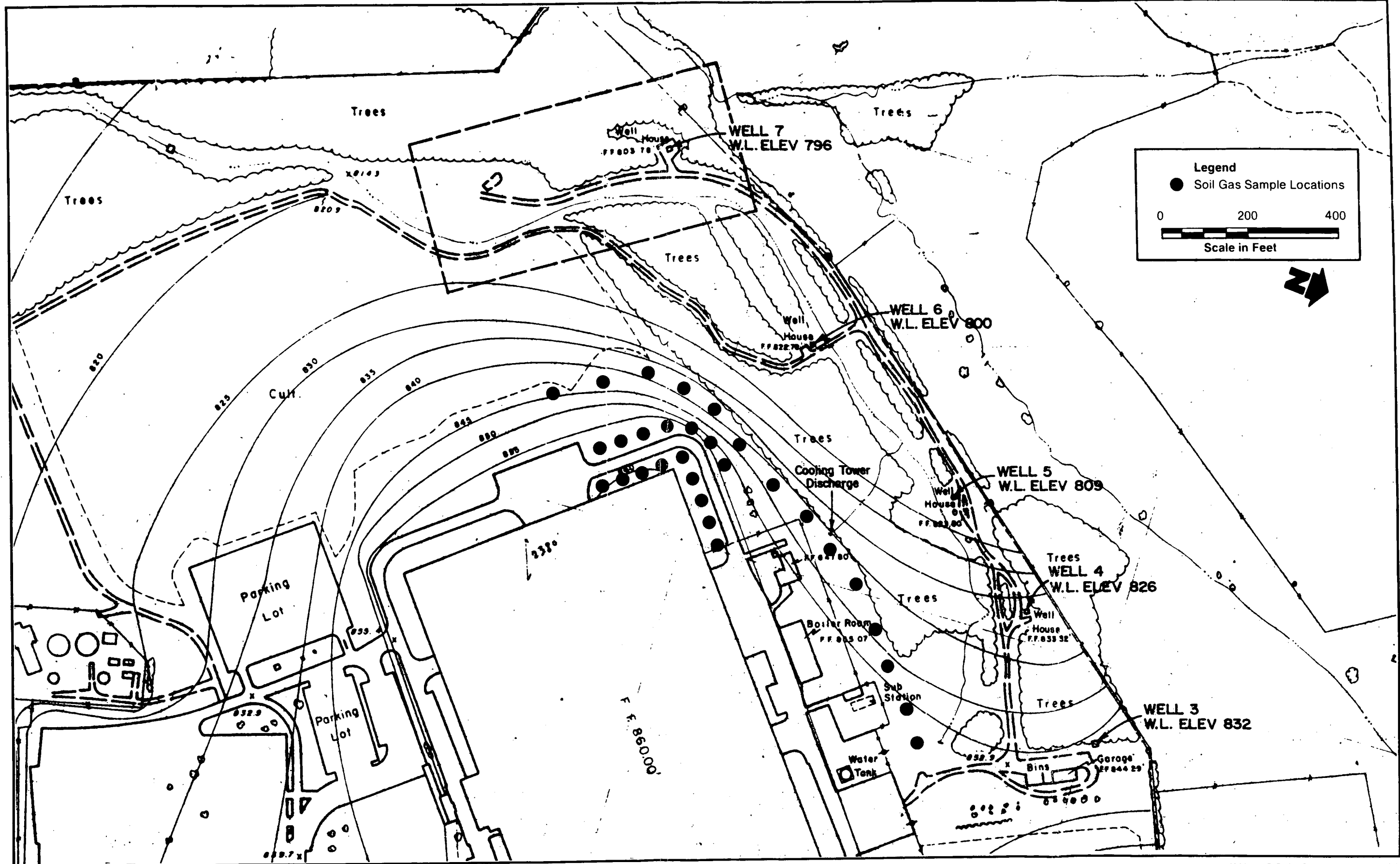


FIGURE 7-1 PLANNED SOIL GAS SAMPLING LOCATIONS, ZONE E

7.3 EVALUATION OF POTENTIAL AS SOURCE

Field and laboratory data generated will be used to evaluate the possible effects of potential waste deposition in Zone E. If contamination is indicated, recommendations for further evaluation of the possible pathways of contaminant migration, if any, will be made.

## SECTION 8

## ZONE F - PAST POTENTIAL BURN AREA INVESTIGATION

8.1 PROBLEM DEFINITION

Past activity at Zone F may have included the burning of off-specification products prior to deposition and burial in the Zone D area. The location of the potential burn area has not been clearly identified. The burning may have occurred in a slight depression surrounded by a berm in the open field northeast of the main plant (see Figure 1-1). Compounds of concern in Zone F are VOCs and petroleum hydrocarbons.

8.2 FIELD ACTIVITIES8.2.1 Geophysical Survey Plan

Magnetometer and EM surveys will be performed in Zone F on a 50-foot grid spacing in order to identify the burn area boundaries, if any, based on the presence of metal debris. The grid will be created utilizing standard surveying techniques, will be marked by wooden stakes, and will be located relative to a known, fixed reference point. Potential physical interferences, such as fences and buried conduits, will be identified and avoided. Magnetic and conductivity (EM) data will be evaluated and maps will be produced showing geophysical intensities, which are expected to delineate the burn area.

8.2.2 Soil Sampling and Analysis Plan

Based on the boundaries of the burn area, if any can be identified by the geophysical data, a backhoe will be utilized to perform an excavation in the approximate center of the burn area. Soils will be field-screened for volatile organics (using an OVA or HNu) and will be visually inspected for indication of stains, residue from burning, or other disturbances. A sample will be collected for VOC and petroleum hydrocarbon analysis based on OVA/HNu field screen measurements. If soil contamination seems possible, three additional test excavations will be performed at selected locations within the burn area, and a soil sample will be collected from each location and analyzed for VOCs and petroleum hydrocarbons. The backhoe and all sampling equipment will be decontaminated between each location following procedures presented in Subsection 2.10. Excavated materials will be backfilled following sample collection.

**8.3 EVALUATION OF POTENTIAL AS SOURCE**

The field and laboratory data obtained will be utilized to evaluate the possible effects of prior activities in Zone F. If the soil sample(s) indicate the absence of significant levels of the compounds of concern, no further investigation regarding source evaluation will be performed in Zone F. If soil contamination is identified, recommendations for the further evaluation of possible pathways of contaminant migration, if any, will be made.

## SECTION 9

## ZONE G - POND AREAS INVESTIGATION

9.1 PROBLEM DEFINITION

The two ponds located in the southern part of the facility are shown in Figure 1-1 and are termed Zone G. These ponds serve the following functions:

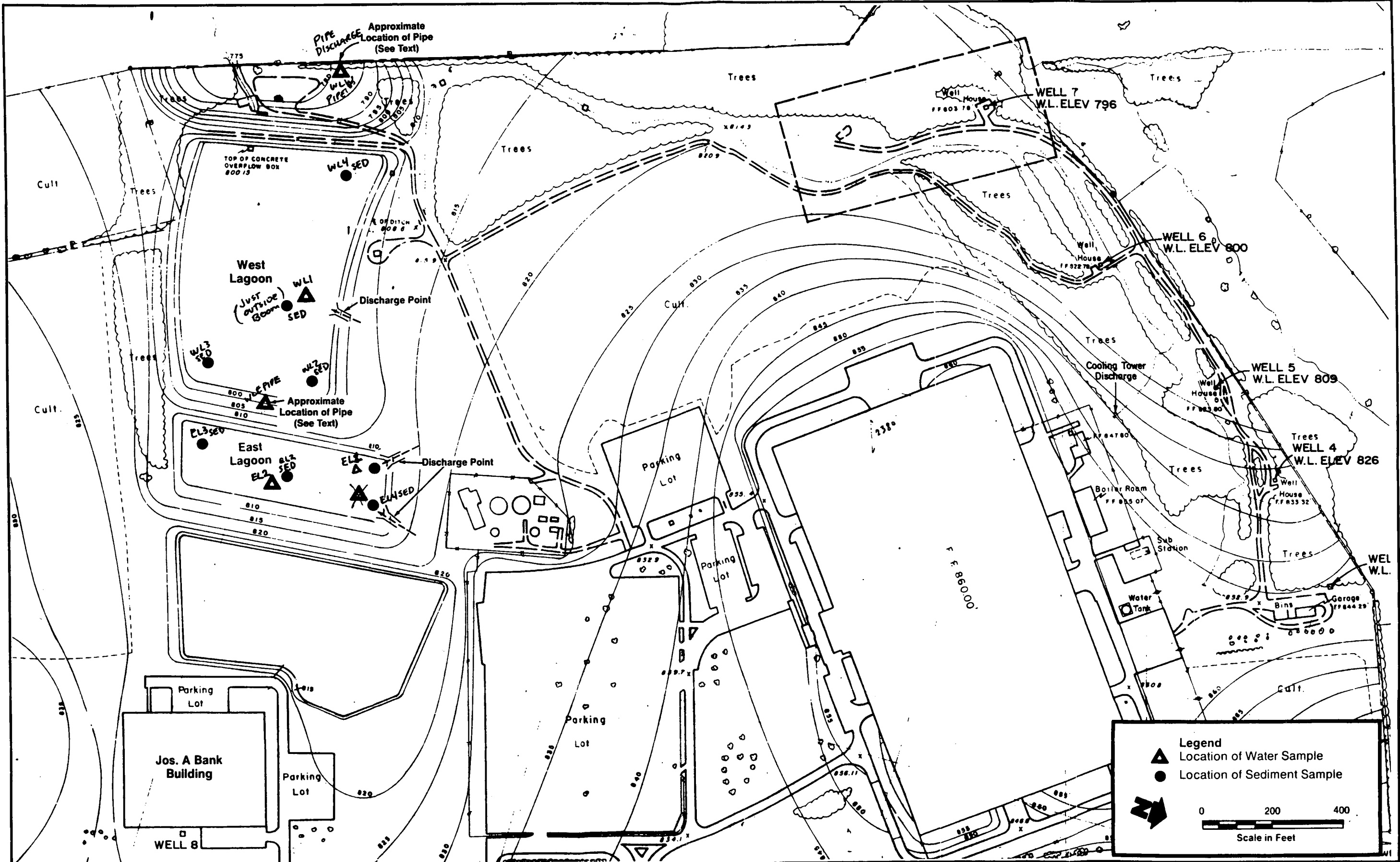
- Provide surge storage for the treated sanitary sewage and raw industrial wastewater.
- Detain treated wastewater and non-contact cooling water for reuse and discharge.

9.2 FIELD ACTIVITIES

Zone G will be characterized by the collection and analysis of water and sediment samples. A total of 5 water samples and 8 sediment samples will be collected. The water samples will be analyzed for VOCs, metals, nitrates, specific conductance, and pH. The sediment samples will be analyzed for VOCs, EP Toxic metals, and ionic species.

Samples will be located using a Poisson distribution technique. This means the sample locations will not be chosen to reflect the ponds' overall conditions, but selected to evaluate those areas deemed most likely to be contaminated. Sample stations will thus be skewed toward sewer and wastewater discharge points into the ponds, the areas most likely to have received contaminants, if any. At least four sediment samples will be collected from the east pond, which had served as a wastewater surge storage lagoon. Approximate sample locations are shown in Figure 9-1.

Sediment samples will be collected utilizing an impact coring device. In this manner, discrete samples can be collected at depths of up to 2 feet. If the impact device is ineffective in penetrating the pond bottoms, a Ponar dredge, or if necessary, a driven split-spoon apparatus will be utilized. Records will be kept in the field notebook recording the indicated depths of sludge present on the lagoon bottoms.



**FIGURE 9-1 APPROXIMATE SAMPLE LOCATIONS, ZONE G**  
W02521

Water samples will be collected from the ponds by using a Kemmer Sampler or similar device, permitting the collection of water samples at discrete depths from the water column. Samples will be collected approximately one foot from the bottom of the ponds. Two water samples are planned to be collected from the east pond and one water sample from the west pond. In addition, one sample will be collected from a pipe which is believed to drain the subsurface soil on the westernmost slope of the western pond, and one sample will be collected from a similar pipe draining the subsurface soil on the western slope of the east pond. Both samples will be collected directly into the appropriate laboratory-prepared bottles.

All equipment used for sample collection in the ponds will be decontaminated before each sample is obtained, according to standard protocols.

As stated in Subsection 2.2, the pond surface elevations as well as any indications of high water marks will be surveyed relative to groundwater elevations, as measured in on-site production and monitor wells. Using this information, the role of the ponds in the site hydrologic system can be evaluated.

### 9.3 EVALUATION OF POTENTIAL AS SOURCE/RECEPTOR

The results of the field investigations and laboratory analyses will be used to evaluate whether Zone G has acted as a source or receptor of contamination. Relative pond surface and groundwater elevations will be used to evaluate whether the ponds are a possible source of outflow or a receptor of contaminants from area groundwater. If the elevations indicate outflow from the ponds, and the water and sediment samples show the presence of contaminants, the need to recommend further investigation of potential downstream impacts will then be evaluated. If no contamination is identified, no further investigation regarding the ponds will be made.





SECTION 10

EVALUATION OF RESULTS FROM THE PHASE I  
ENVIRONMENTAL INVESTIGATION

10.1 DATA ANALYSIS

Information gathered during the Phase I Environmental Investigation will be combined with previous data generated by others regarding the site. Preliminary findings regarding potential sources and receptors will be compiled and summarized graphically to permit evaluation of areas in need of further investigation. In general, it is believed that further investigation will predominantly involve construction and sampling of additional monitor wells to evaluate specific contaminant migration pathways and more-accurately delineate groundwater contaminant distribution.

10.2 EVALUATIVE MEETING: PHASE II INVESTIGATION

Following completion of the field efforts and data analyses described above, a meeting will be held among representatives of Black & Decker and WESTON to evaluate the findings and to establish a consensus for the implementation of a second phase of investigation. Once an agreement has been reached regarding the detailed needs and objectives of a second phase, work will proceed at the earliest possible date. At the request of Black & Decker, WESTON will participate in the Phase I status review meeting with MDHMH.

## SECTION 11

## PHASE II - HYDROGEOLOGIC ANALYSIS

11.1 MONITOR WELL INSTALLATION PLAN11.1.1 Overview

At present, it is envisioned that approximately 10 additional monitor wells will be constructed at the project site. Included will be at least three well "nests" consisting of a shallow and deep well located approximately 5 feet apart (horizontally). These nests will permit evaluation of vertical gradients between shallow and deeper hydrologic zones from which a determination can be made on the significance of potential off-site groundwater movement in the deeper deposits as a contaminant migration pathway. Depths of the wells will be determined after evaluation of Phase I data, and after further review of previous investigations completed by others.

It is anticipated that the Phase II monitor wells will be constructed in borings advanced by hollow-stem auger and, where necessary, roller-bit techniques. Wells will be constructed of 4-inch ID, Schedule 40, threaded, flush-joint PVC casing and screen. Screen lengths will be 10 feet. The annular space around each well screen will be backfilled with washed and graded sand to approximately 2 feet above the top of the screen. A bentonite pellet seal will be emplaced above the gravel pack (assuming the water table is above that elevation), and the remainder of the annular space will be pressure-grouted with a Portland cement/bentonite powder slurry. Drilling cuttings will remain on-site in an area provided by Black & Decker. Each well will be developed by surging and pumping until clean water is produced, or, in the opinion of the site geologist, no further cleaning will be achieved with additional efforts. Water produced during development will be routed to the site wastewater treatment facility.

11.1.2 Selection of Monitor Well Locations

Upon review and evaluation of the significance of data collected during the Phase I Environmental Investigation, more-detailed information regarding the groundwater flow systems beneath the site with respect to potential sources, and with respect to potential off-site concerns, will be available. Additionally, historic aerial photographs and site maps will have been obtained and studied during Phase I to aid in identifying previous site activities and to allow evaluation of surface indications of significant subsurface fracture zones.

The precise number and locations of the monitor wells will be selected based on the results of the Phase I source evaluations (soil gas, soil, water, sediment analysis, data from existing wells, and backhoe excavations), during the data review meeting among Black & Decker and WESTON.

#### 11.1.3 Elevation Survey of New Wells

All monitor wells installed as part of the Phase II activities will be located with respect to the vertical datum established during the Phase I activities by a surveyor licensed in Maryland.

#### 11.2 WATER LEVEL MEASUREMENT PLAN

After establishing vertical datum, it is planned that at least three (3) sets of water level measurements for all previously existing and new wells will be collected over a 6-week period. Such repetition will minimize the potential for misinterpretation caused by water level anomalies.

#### 11.3 GROUNDWATER SAMPLING AND ANALYSIS PLAN

Following well development and after allowing time for well stabilization, all new wells and approximately ten of the existing production and monitor wells will be sampled. The samples will be analyzed for pH, conductivity, and VOCs. Depending upon the results of Phase I analyses, some groundwater samples may also be analyzed for cyanide and metals.

All wells will be sampled according to standard protocols. Three (3) to five (5) well volumes will be removed from each well using a decontaminated submersible pump. Wells that do not yield three (3) to five (5) volumes will be pumped until dry, allowed to recover, then sampled. A decontaminated Teflon bailer will be used for the collection of each sample. As with other soil and groundwater samples collected for analysis, applicable protocols for preservation, holding times, and chain-of-custody will be strictly adhered to. These procedures are described in Subsection 2.10 and Appendix C.

#### 11.4 CONTINGENCY FOR TWO ADDITIONAL MONITOR WELLS

Based on information gathered during the Phase II investigations, the possibility exists that two (2) additional monitor wells may be constructed off-site. The exact depths and locations, as well as sampling details, will depend on data that has yet to be gathered.

## SECTION 12

## PREPARATION AND SUBMISSION OF FINAL REPORT

12.1 DRAFT REPORT SUBMISSION TO BLACK & DECKER

After completion of Phase II activities, a draft report will be submitted to representatives of Black & Decker for review and comment. Technical and editorial concerns/questions will be discussed and appropriate revisions will be made by WESTON. It is anticipated that one meeting will be held among representatives of Black & Decker and WESTON to discuss the draft report.

12.2 SUBMISSION OF FINAL REPORT

All revisions will be incorporated into a final report of investigations. This report will be submitted, via Black & Decker, to MDHMH. It is anticipated that one meeting will be held among representatives of Black & Decker, MDHMH, and WESTON to discuss the final report.

APPENDIX A  
SOIL GAS PROCEDURES

1363B

W02S27

## APPENDIX A

## SOIL GAS PROCEDURE

Sampling

Soil gas samples will be collected in Zones A and E at locations identified on Figures 3-1 and 7-1. Samples will be obtained by hand-driving small diameter (3/4-inch) steel probes with microporous tips to depths of 3 to 5 feet and aspirating gas through the probes using a battery-powered air pump. After a purge time of approximately 5 minutes, each sample will be collected through an in-line "T" fitting into a clean syringe (each syringe will be purged before sampling by heating in the GC oven to prevent any cross-contamination). A duplicate sample will be collected at a selected location in each zone.

Analysis

The soil gas samples will be analyzed in the field using a mobile GC unit with an appropriate detector specific to the target compounds. Because tetrachloroethylene and trichloroethylene have been the VOC's identified at the highest levels in groundwater samples from the site, these two compounds will be considered the target compounds, and an electron capture detector and appropriate standards will be utilized.

Detection limits will depend upon the interferences from other compounds present in the soil gas. Quantitation of the target compounds will be accomplished by the external standard method, with calibration check standards being run at least four times daily. All samples will be run in duplicate, usually with different sample volumes. Air, nitrogen, and hexane blanks will also be run frequently to check for and to minimize the effects of carryover or cross-contamination between separate runs.

The GC will be mounted in a vehicle which will be driven to the sampling sites. It is anticipated that approximately 15 samples will be collected and analyzed each day. Each sample probe will be used only once daily and decontaminated at the end of each day in accordance with the procedures presented in Subsection 2.10.

APPENDIX B  
MAGNETOMETER AND EM SURVEY PROCEDURES

1363B

W02829

## APPENDIX B

## MAGNETOMETER AND EM SURVEY PROCEDURES

Magnetometer and EM surveys will be performed in Zones D and F along grids which will be located, using a surveyor's level, to provide profiles at 50-foot spacings. Grid lines will be laid out to an accuracy of  $\pm 1$  foot; the perimeter of each grid square will be marked by wooden stakes. The magnetometer and EM surveys will be performed according to the following procedure:

1. Install survey grids, using monitor wells or other permanent reference markers as reference points. Reference points and the grid location will be documented.
2. Perform magnetometer survey.
3. Conduct swing sensor test daily prior to taking magnetometry survey measurements.
4. Take sequential readings at least three times a day in order to detect interference from magnetic storms.
5. Take daily background readings from all magnetic sources.
6. Take base station readings approximately once each hour during the field operation to detect variations in the earth's magnetic field.
7. Record the first and last station reading along each traverse in the field notebook; compare daily with data downloaded from the automatic recording device.
8. Download data from the magnetometer to a portable computer at the end of each day's survey.
9. Conduct an electromagnetic conductivity (EM) survey. Take measurements in both the horizontal and vertical dipole configurations.
10. Perform calibration checks twice each day at a selected location on-site.
11. Record data from the first and last station along each traverse in the field notebook and compare with the data downloaded from the automatic recording device.
12. Download data from the EM device at the end of each day to a portable computer.



APPENDIX C  
QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM

1363B

W02831

## APPENDIX C

### QUALITY ASSURANCE AND QUALITY CONTROL PROGRAM

#### INTRODUCTION

WESTON quality assurance and quality control (QA/QC) procedures are an integral part of the site characterization activities to be completed at the Black & Decker Hampstead facility. The QA/QC program will ensure that the monitor wells borings and backhoe test excavations are constructed according to the specifications and with a minimum of cross-contamination. The QA/QC program will ensure that the soil and water sampling programs provide representative samples of the subsurface environment. The QA/QC program will also ensure that soil gas sampling and analyses will be conducted to provide accurate semiquantitative results to minimize cross contamination.

The laboratory QA/QC procedures will ensure that the samples are properly analyzed and that any invalid data can be identified and discounted.

The following subsections outline the principles, responsibilities, and practices that will be incorporated into the QA/QC program.

#### LABORATORY QA/QC PROGRAM

The laboratory analytical program will be conducted in accordance with the U.S. EPA Contract Laboratory Program (CLP) procedures and standards. Data reporting to Black and Decker will include sample results, detection limits, equipment calibration information, and limited QA/QC analytical results; however, a complete CLP QA/QC data package will not be required. This limited data package will provide the data necessary for WESTON to screen the validity of the laboratory data. If questions arise about the validity of a particular analysis, compliance with the CLP procedures ensures that the additional QA/QC data needed to validate the analysis in question will be available.

#### PRINCIPLES

Quality assurance is a method for assessing the quality of results of a particular analytical process or field procedures by using control samples and statistical methods.

The reliability and credibility of analytical laboratory results are established by the inclusions, as an integral part of any analytical procedure, of a program of randomly scheduled replicate analyses and analysis of split samples by another laboratory.

Precision of analytical results may be established as the standard deviation from true values or from the mean of replicate analyses. Accuracy is reported as the percent recovery of a parameter from a sample of known value with a given analytical procedure and analyst.

The laboratory QA/QC program is designed to produce precise and accurate data from each analytical method and analyst. To ensure that reliable data continues to be produced, systematic checks must show that test results remain reproducible and that the methodology is actually measuring the quantity in each sample. Quality assurance will begin in the field with sample collection and soil gas analysis and not end until the resulting data have been analyzed and reported.

#### RESPONSIBILITIES

##### Project Manager

The Project Manager is responsible for implementation of the field and laboratory program including:

- Establishment of proper field and laboratory protocol with the field and laboratory QA/QC coordinators.
- Organization of field personnel and equipment.
- Overall responsibility for meeting the project and contractual requirements.
- Liaison with Black & Decker and MHDMMH representatives.

##### Field QA/QC Coordinator

The field QA/QC coordinator is responsible for all sampling procedures including:

- Proper sample bottle preparation.
- Proper sample bottle labeling.
- Sampling procedures.
- Sample preservation in the field.
- Soil gas analysis in the field.
- Sample chain-of-custody.

- Sample transportation.
- Field notebooks.
- Decontamination of sampling equipment.

## SAMPLING PROCEDURES

### Bottle Preparation

All sample bottles shall be prepared by the laboratory to ensure maximum cleanliness before the containers are sent to the field. Sufficient bottles to accommodate both laboratory and field blank requirements shall be prepared in a single-batch mode. Sample containers and preservatives appropriate for the analyses to be conducted will be prepared by the laboratory and will comply with EPA guidelines.

### Field Blanks

When sampling soil and sediment, WESTON will use the field-prepared blanks, replicate and spiked samples for the quality assurance program. Field blanks will demonstrate that the sample bottles and the sampling procedure did not contaminate the sample. After the sampling equipment is decontaminated, deionized water is taken to the sampling point and a sample of this deionized water is collected using the sampling equipment and protocol employed in collecting the field samples.

### Replicate Analyses

A minimum of 10 percent (10%) of the parameters of soil samples submitted to the laboratory will be analyzed in replicate (duplicate or triplicate). Samples for replicate analyses will be selected at random by the field QA/QC coordinator and so designated by field personnel at the time of sample collection. The identity of these samples, however, will not be revealed to the laboratory.

### Spiked Samples

A minimum of 10 percent of the samples submitted will be selected for spiking with a known concentration of a given parameter. The spike added to the sample will be of the same order of magnitude as the parameter in question found in the sample. Thus, the percent recovery will accurately reflect the accuracy of the analysis in a given range. Spiking will be done on samples randomly selected by the laboratory QA/QC coordinator.

### Trip Blanks

A trip blank is deionized water prepared in the laboratory in a septum vial. The trip blank accompanies the sample bottles from the laboratory, through the field, and back to the lab. In this way, it provides a check on whether samples are picking up volatile organic compounds from the atmosphere. A trip blank will be included in every sample container shipment. The trip blank will be analyzed using the same method as for environmental samples analyzed for VOC's. Trip blanks will be used during both soil and groundwater sampling.

### WATER SAMPLING PROCEDURES

The QA/QC requirements specified for the soil sampling program apply to the water sampling program.

### SOIL GAS SAMPLING AND ANALYSIS PROCEDURES

The QA/QC requirements for soil gas sampling and analysis are presented in Appendix A.

### CHAIN-OF-CUSTODY

Since they document the history of samples, chain-of-custody procedures are a crucial part of a sampling/analysis program. Chain-of-custody documentation enables identification and tracing of a sample from collection to analysis to reporting.

WESTON's chain-of-custody program utilizes EPA-approved sample labels, secure custody, and complete record-keeping. An example of the WESTON chain-of-custody form is shown in Figure C-1.

In essence, WESTON considers a sample in custody if:

- The sample is in a WESTON employee's physical possession.
- The sample is in view of that employee.
- The sample is secured by that employee to prevent tampering.
- The sample is secured by that employee in an area that is restricted to authorized personnel.

Implementation of the chain-of-custody plan shall be achieved through the use sample labels and chain-of-custody forms.



# Custody Transfer Record/Lab Work Request

Received By \_\_\_\_\_ Client \_\_\_\_\_ RFW Contact \_\_\_\_\_  
Date \_\_\_\_\_ Client Contact \_\_\_\_\_ Date Due \_\_\_\_\_  
Assigned to \_\_\_\_\_ Phone \_\_\_\_\_ Project Number \_\_\_\_\_

## SAMPLE IDENTIFICATION

## ANALYSES REQUESTED

Sample No.	Client ID No.	Description	Date Collected	Container/Preservative										

SPECIAL INSTRUCTIONS:

Item/Reason	Relinquished By	Received By	Date	Time	Item/Reason	Relinquished By	Received By	Date	Time

C-5

W02836

Figure C-1

## DATA HANDLING

Use of any analytical data should be preceded by an assessment of its quality. The assessment must be based on the accuracy, precision, completeness, representativeness, and comparability of the data. These criteria are assessed as follows:

- Accuracy - Is the data accuracy acceptable for the planned use? QA/QC shall measure the accuracy of all data.
- Precision - Is the data precision acceptable for the planned use? QA/QC shall reflect the reproducibility of the measurements.
- Completeness - Are the data sufficient for the planned use? QA/QC shall identify the quantity of data needed to match the goals.
- Representativeness - Do the data accurately reflect actual site conditions, sampling procedures, and analytical methods? The QA/QC program shall ensure this.

## DECONTAMINATION

Field decontamination of sampling and drilling equipment is discussed in Subsection 2.10 of this work plan.

APPENDIX D  
HEALTH AND SAFETY PLAN

1363B

W02838



## APPENDIX D

## HEALTH AND SAFETY PLAN

EMERGENCY INFORMATION

In case of an emergency, the following information should be utilized. Contacts have been provided to cover health emergencies, fire emergencies, and chemical emergencies.

Emergency Phone Numbers

Agency	Contact	Phone Number
Fire Department	Hampstead Fire Dept.	911 301-374-2424
Police Department	Hampstead Police	911 301-239-8954
24-Hr. Ambulance	Westminster Fire Dept.	301-848-4343
Hospital	Carroll County Hospital	301-848-3000
Poison Control	Maryland Poison Center	301-528-7701
Chemical Information	CHEMTREC	1-800-424-9300
Emergency Response Team	USEPA - ERT	201-321-6660
State Environmental Agency	MDHMH	301-225-6383
Safety	Weston Corp. Health and Safety (George Crawford) Site Safety Officer	215-430-7406 215-692-3030
Site Telephone		301-239-5000
Nearest Telephone Location:	Guard station, main entrance	301-239-5000

### Directions to Hospital

Carroll County Hospital  
Memorial Avenue  
Westminster, Maryland  
301-848-3000

Take Route 30 S. to 482 W. to Route 27 S. Follow Route 27 S. into Westminster (Route 27 becomes Liberty Street). Cross Main Street and at the next light, make a left on Green Street. Take Green Street to the first light and make a right onto Center Street. This will lead directly to hospital.

### EMERGENCY NOTIFICATION PROCEDURES

1. Attend to injured person and/or evacuate area.
2. Notify emergency agency, as appropriate. (Be prepared to give location of incident, details, and emergency assistance required.)
3. Notify WESTON Site Safety Officer (SSO) and/or WESTON Corporate Health and Safety Director.
4. Site Safety Officer will prepare a written report of incident at earliest convenience and circulate to distribution.

### HEALTH AND SAFETY RISK ASSESSMENT

Based on information obtained from Black & Decker and results of samples collected on the facility, WESTON has determined that a health and safety risk may exist for WESTON personnel performing site work at the Black & Decker facility.

The health risk is due to the presence of organic compounds and the potential presence of cyanide in the soil, water, and buried debris on-site. The specific compounds of concern are discussed in Table D-1. The health risk assessment indicates that WESTON personnel could be exposed to potentially harmful levels of organic compounds or cyanide as a result of inhalation, ingestion, or absorption. While metal may also be present in the soil and buried debris on the Black & Decker facility, the metal waste consists primarily of equipment castings. Thus, metals are not anticipated as posing a major health risk.

Table D-1

## Primary Chemical Contaminants To Be Tested

Chemical Name	Max. Observ. Conc. (ppb)	Source of Max. Conc.	TLV (ppm)	IDLH (ppm)	Symptoms Of Exposure
Tetrachloroethylene (PCE)	2700	Well 7	100	1,000	Irritation, nausea, vertigo, headache
Trichloroethylene	150	Well 3	50	500	Vertigo, headache, narcosis, nausea
1,2-trans-Dichloroethylene	110	Well 4	200	4,000	Irritation, depression
1,1,1-Trichloroethane	110	Well 3	350	1,000	Headache, irritation, CNS, depression
Trichlorofluoromethane	8	Well 4	1,000	10,000	Tremors, dermatitis, frostbite, cardiac arrest
Styrene	3800 (ppm)	Soil from scrap metal drum storage area (Zone A)	100	5,000	Irritation, weakness, drowsiness
Total Xylenes	24 (ppm)	Soil from scrap metal storage area (Zone A)	100	10,000	Excitement, irritation, dizziness
Ethylbenzene	5 (ppm)	Soil from scrap metal storage area (Zone A)	100	2,000	Narcosis, dermatitis, irritation, headache
Cyanide	Unknown	Potential burial site near buildings 5 and 6 (Zone E)	5 mg/m <sup>3</sup>	50 mg/m <sup>3</sup>	Weakness, headache, nausea, vomiting, asphyxia

D-3

W02831

WESTON

The major safety risks encountered during site work at the Black & Decker facility will be those normally associated with monitor well installation, sampling activities, and work in a congested plant location (heavy equipment, buried utilities, uneven ground surfaces, overhead obstacles). In addition, the use of personnel protective equipment poses added safety risks (e.g., hampered movement, heat exhaustion). Subsurface exploratory work will be done only after obtaining area-specific utility clearance from Black and Decker.

This Health and Safety Plan details what equipment and protocols WESTON will utilize to reduce or eliminate the health and safety risks in performing site investigation work.

#### FIELD SAFETY RESPONSIBILITIES AND IMPLEMENTATION

##### Project Manager and Site Safety Officer

As Project Manager, Mr. John Petura has direct responsibility to ensure that this HSP is fully and strictly implemented in the field. For specific field operations, such as monitor well installation, soil sampling, or water sampling, the Project Manager shall designate a Site Safety Officer (SSO). The SSO shall be a WESTON employee experienced in site safety plan (SSP) implementation. The SSP shall consist of those sections of this HSP that apply to the specific field work being conducted by WESTON personnel at Black & Decker's Hampstead, Maryland facility.

##### The Work Area and the Site Safety Plan

When field activities are conducted at the Black & Decker facility, the SSO shall establish a "work area" as described in a subsequent subsection. The SSO shall be responsible for the day-to-day implementation and enforcement of the SSO as it applies to all WESTON personnel in the work area. Any WESTON employee who is not in strict accordance with the established SSO shall not be permitted to enter into, or continue working in, the work area.

##### Stopping WESTON Work

If the SSO determines that conditions in the work area have become unsafe for WESTON personnel, the SSO will temporarily suspend WESTON operations until receiving further instructions from WESTON's Corporate Health and Safety Director (CHSD). An unsafe condition may arise due to high organic vapor levels, cyanide-contaminated soils, subcontractor activity, or other factors. The WESTON SSO will inform first verbally, then in writing Black & Decker's designated representative(s) and the subcontractor's designated representative(s), who will then take whatever actions they deem appropriate in directing others on the site.

### Responsibility of Other WESTON Personnel

Every WESTON employee working at the Black & Decker facility is responsible for adhering to all provisions of both the HSP and the SSP(s). Figure D-1 is provided for all WESTON personnel to sign and acknowledge that they have read and understood both the HSP and the SSP(s) prior to undertaking any field work at the Black & Decker facility.

### APPLICABILITY OF WESTON'S HSP AND SSP(S)

This HSP and the SSP(s) implemented by the WESTON SSO during work at the Black & Decker facility shall apply only to employees and subcontractors of Roy F. Weston, Inc. (WESTON). Neither this HSP nor any SSP(s) implemented by the WESTON SSO for employees or subcontractors of WESTON shall apply to any Black & Decker personnel or other Black & Decker Contractor regardless of their role in completing the on-site activities.

WESTON will not accept responsibility for the actions or activities of non-WESTON personnel and non-WESTON subcontractors at the Black & Decker facility.

### ROUTINE SITE SAFETY MEASURES

#### Medical Screening

All WESTON personnel completing field work at the Black & Decker facility will be: 1) medically certified as fit to perform field work required and as fit to wear required respiratory protection; 2) fit tested by WESTON's CHSD with the required respiratory protection equipment; and 3) trained in the use of personnel protective equipment and site safety procedures. These measures form the foundation of WESTON's Health and Safety Program and are in compliance with OSHA regulations.

#### Site Safety Plan Review Meeting

The review meeting will occur before each specific field program begins. All items in the HSP shall be reviewed and elements that will make up the Site Safety Plan will be emphasized. Any WESTON employee not present at this meeting shall review the HSP and SSP prior to commencing on-site work. After the meeting, all WESTON personnel present will sign the acknowledgment form included in Figure D-1. As site work and conditions change and the site safety plan is modified accordingly, a safety review meeting will be scheduled by the SSO.

An Emergency Phone Number List will be distributed to all WESTON project personnel at the first review meeting.



HEALTH AND SAFETY PLAN  
APPROVAL/SIGN OFF FORMAT

I have read, understood, and agreed with the information set forth in this Health and Safety Plan (and attachments) and discussed in the Personnel Health and Safety briefing.

_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date
_____	_____	_____
Name	Signature	Date

**DRAFT**

_____	_____	_____
Site Safety Co-ordinator	Signature	Date

_____	_____	_____
Director, Corporate Health and Safety	Signature	Date

_____	_____	_____
Project Manager	Signature	Date

_____	_____	_____
Project Director/ Department Manager	Signature	Date

Personnel Health and Safety Briefing Conducted By:

_____	_____	_____
Name	Signature	Date

### Establishing a Work Area

During all soil gas sampling and analysis, monitor well installation, soil boring, water sampling, or other on-site field work, the WESTON SSO will establish a work area in which WESTON personnel will conduct their work. The purpose of establishing the work area is to provide WESTON and Black & Decker with a clearly defined area inside of which all WESTON personnel must comply with all provisions of the SSP (especially those provisions relating to personnel protection). Once the work area is established, all personnel not in compliance with the SSP will be excluded from the work area. The work area will be cordoned off using banner guard tape, safety cones or safety flashers, or any combination as specific circumstances dictate.

### Eye Protection

At all times the WESTON SSO will keep at least two bottles of emergency eyewash solution available during monitor well installation, soil sampling, water sampling, sample filtration, or other on-site activities.

Eye protection will be worn by all WESTON on-site personnel when in the work area. Eye protection shall consist of safety glasses or a face shield unless a full face piece respirator is being used.

### PERSONNEL PROTECTIVE CLOTHING

#### Overview

In deciding on the appropriate level of personnel protective clothing for WESTON employees during the field work, WESTON used two sources of information: 1) chemical analytical data from samples previously collected at the site; and 2) NIOSH/OSHA guidelines or regulations for worker exposure to chemical and work place hazards.

Using this information and our experience, WESTON has designated the levels of protective clothing that are required in each zone to eliminate or limit the absorption and ingestion exposure pathways.

#### LEVEL D Protection

All WESTON personnel will wear a minimum of LEVEL D protective clothing while conducting field operations. The SSO will upgrade the level of protection depending on the requirements of specific work areas and assignments.

LEVEL D protective clothing will consist of:

- Hard hat.
- Work gloves.
- Safety glasses or face shield.
- Steel toe and shank work boots.
- Cotton coveralls or field clothes.
- Outer paper Tyvek brand coverall (as directed by SSO) work gloves.

LEVEL C Protection

LEVEL C personnel protection may be required in some zones as discussed below and will consist of the following:

- Hard hat (when in the work area).
- Steel toe and shank boots.
- Outer gloves-butyl rubber or neoprene.
- Inner vinyl disposable gloves.
- Paper outer Tyvek brand coverall.
- Chemical resistant over boots.
- Full face respirator with GMCH chemical cartridges, acid vapor cartridges as contingency.

During soil boring, test excavations, soil gas sampling, and monitor well installation, the WESTON worker breathing zone will be monitored by WESTON personnel using an HNu meter and an OVA (Organic Vapor Analyzer) or similar equipment. The HNu will be used with the 11.7 eV bulb and with the span set at 5.0. The OVA will be used with the "gas select" set at 3.0 and the instrument will be calibrated to methane.

The worker breathing zone is defined at the rear area of the drilling rig where the actual drilling operations are conducted. The perimeter of the work zone will also be monitored regularly by WESTON personnel to ensure that unsafe levels of organic vapors do not leave the work zone.



When WESTON's monitoring equipment detects levels of organic vapors above the action levels, the WESTON SSO will take appropriate action to protect the health and safety of WESTON employees. The action levels for adopting Level C respiratory protection will be one-half the lowest TLV (Threshold Limit Value) for any compound of concern at the site. Similarly, the action level for halting WESTON work and leaving the work area will be one-half the lowest IDLH (Immediately Dangerous to Life and Health) level for any compound of concern at the site. Table D-1 presents the TLV's and IDLH's for the primary contaminants of concern at the site. Table D-2 presents the anticipated levels of protection to be used for start-up at each area of investigation.

#### Monitor Well Installation and Sampling - Phase II

Groundwater monitor wells will be installed and sampled upon completion of all other field activities. Locations of the monitor wells will be determined based on the results of the previous activities. Since specific locations have not been determined, the level of protective equipment required is not defined; however, it is anticipated that wells will be installed and sampled in Level C or D attire. Specific levels utilized in each location will be determined when locations and field conditions are known.

#### PERSONNEL DECONTAMINATION

Table D-3 details the decontamination procedure that all WESTON personnel will follow after coming into contact with soils and/or water during drilling or sampling operations at the Black & Decker facility. A decontamination area will be set up at the edge of each work zone for personnel decontamination.

All sampling equipment and personnel protective equipment which may come in direct contact with the samples will be decontaminated/replaced between each specific sample location to avoid cross contamination.

Table D-2

Levels of Protection/Action Levels

Area	Initial Level of Protection	Activity	OVA HNU or Value: Action Level for Upgrade/Downgrade
Zone A	D	Soil Gas Sampling	25 Units-Level C
		Soil Borings	25 Units-Level C
Zone B	D	Test Excavations	25 Units-Level C
Zone C	D	Test Excavations	25 Units-Level C
Zone D	D	Geophysical Surveys	Not Anticipated
		Test Excavations	25 Units-Level C
Zone E	D	Soil Gas Sampling	25 Units-Level C
	C	Soil Borings	D Below 25 Units
Zone F	D	Geophysical Surveys	Not Anticipated
		Test Excavations	25 Units-Level C
Zone G	D	Surface water, lagoon	25 Units-Level C
		Sediment Sampling	

Table D-3

## Personnel Decontamination Procedures

---

Step	Description
1	Remove overboots - place in plastic bag
2	Remove Tyvek - dispose of in plastic trash bag
3	Wash off outer gloves in bucket - remove and place in plastic bag
4	Remove respirator, face shield or safety glasses
5	Remove inner gloves - dispose of in plastic trash bag
6	Exit work area

---