

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

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



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PRIVILEGED AND CONFIDENTIAL

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

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SECTION 1

SUMMARY

1.1 BACKGROUND

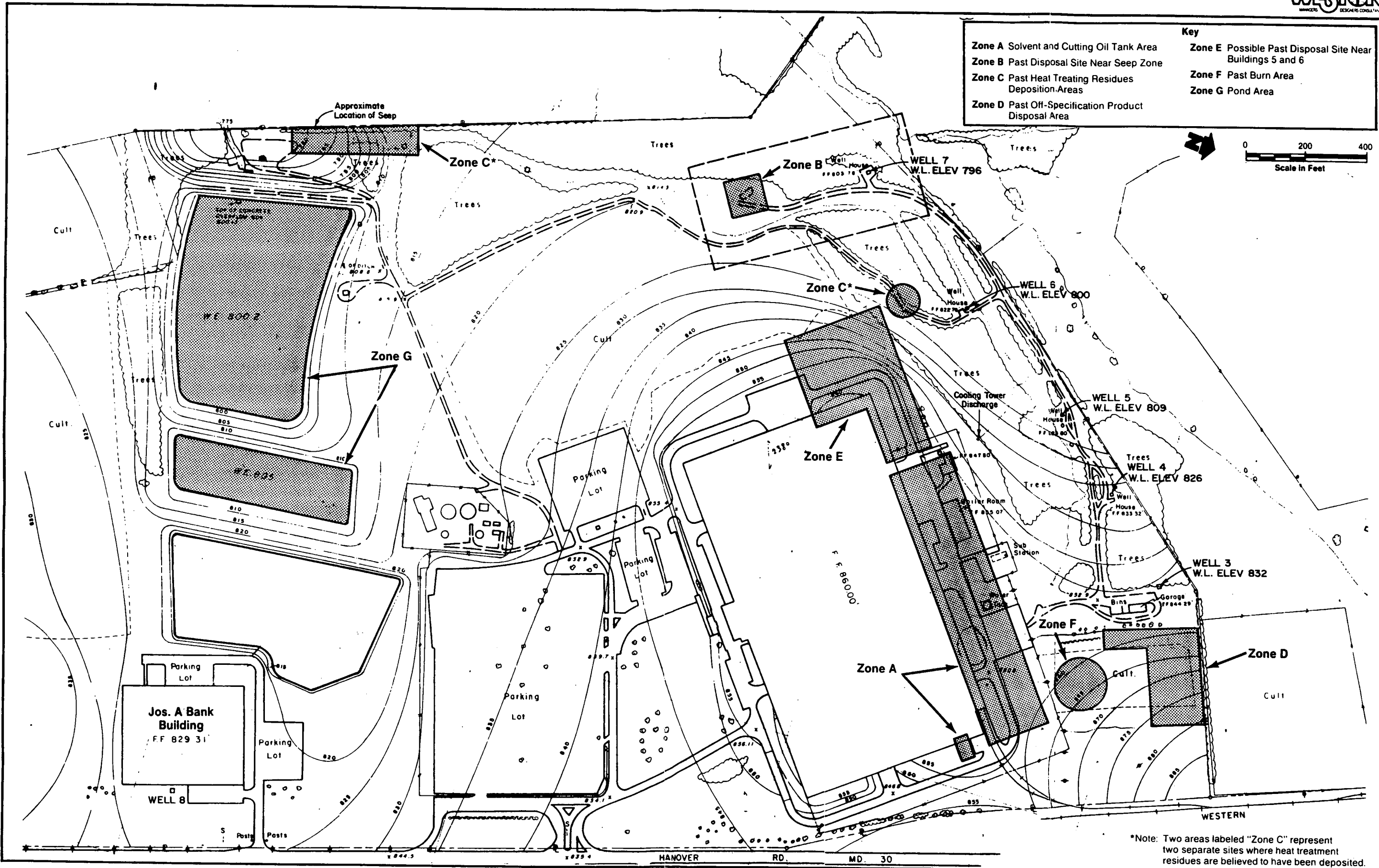
Following a 1984 gasoline spill at the Hampstead, Maryland Exxon service station, production wells on the Black & Decker property were sampled and analyzed by Carroll County Health Department personnel. The results revealed the presence of several organic halogen compounds. Subsequent sampling and testing 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
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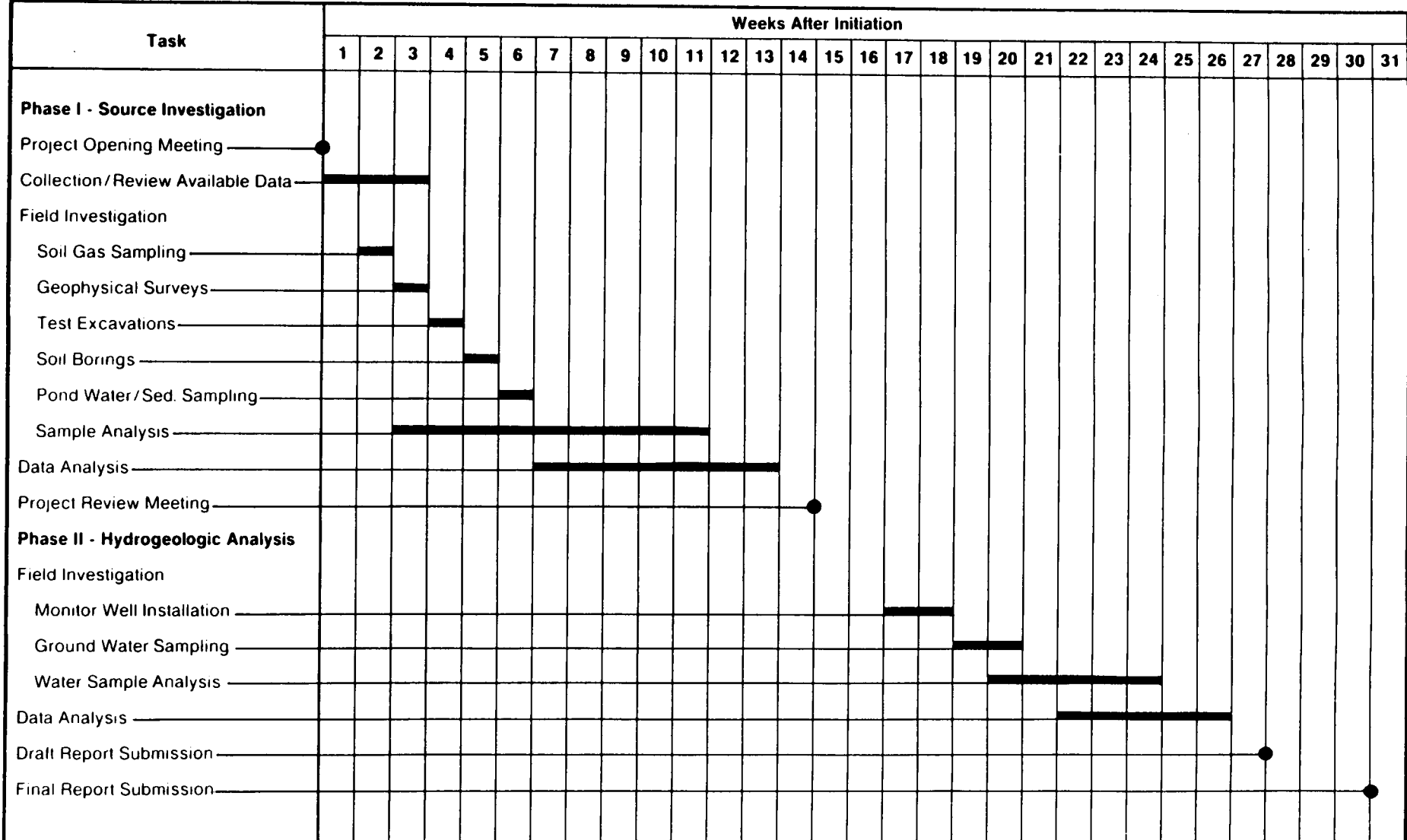


FIGURE 1-2 PROJECT SCHEDULE

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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 ¹
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 ³	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 ³	VOC, petroleum hydrocarbons
G ²	Pond Area	8	VOC, EP Toxicity for metals, nitrate

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

²Soil sample collection in Zone G is described in Subsection 9.2.

³In 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 ¹
G	5	VOC, metals, nitrate, specific conductivity, pH
Monitor and production wells ²	25	VOC, specific conductivity, pH

¹All analysis according to CLP guidelines to be performed by the WESTON Lionville Laboratory.

²Planned 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 ^{any} 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.

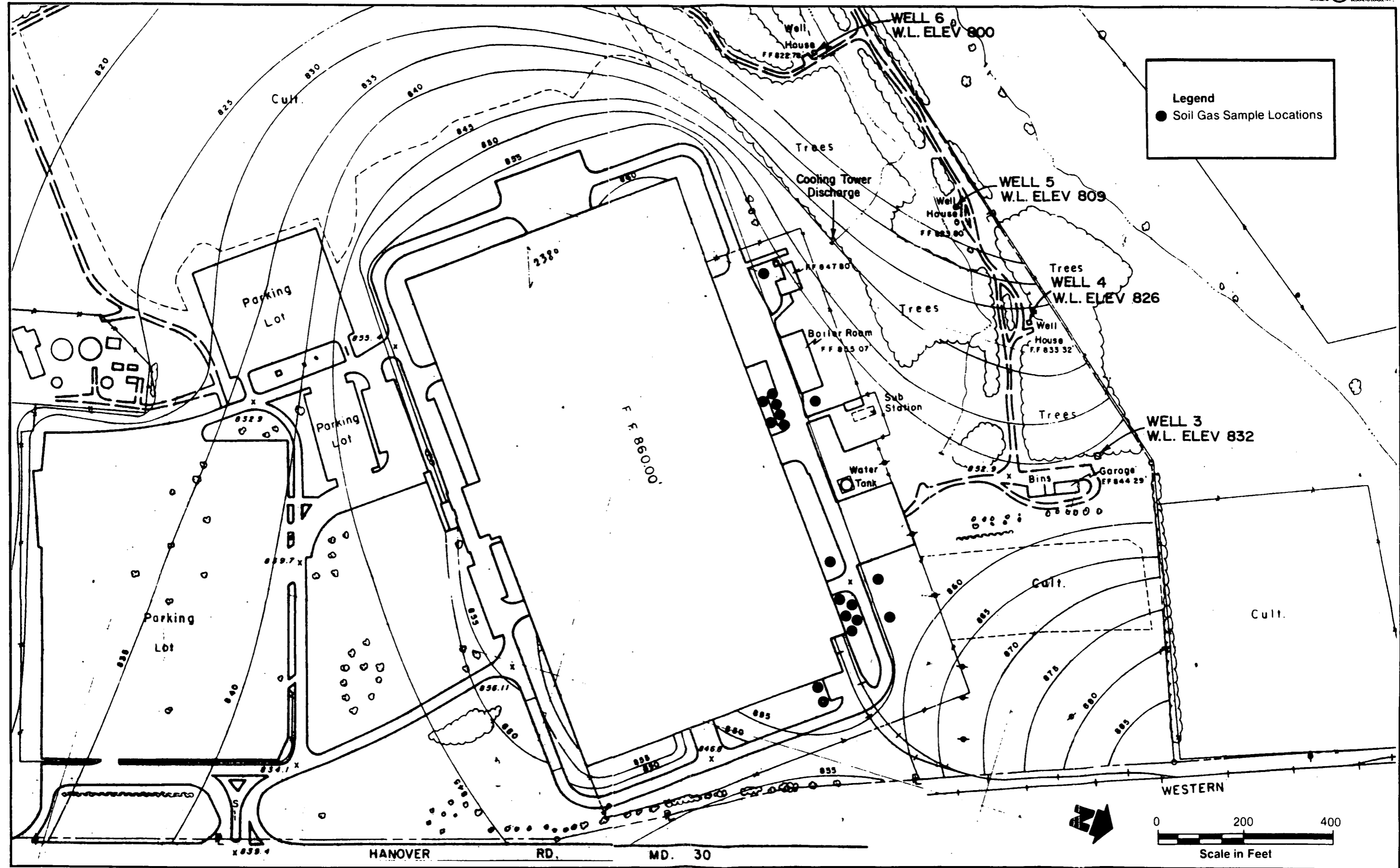


FIGURE 3-1 PLANNED SOIL GAS SAMPLING LOCATIONS, ZONE A
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SECTION 4

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.