Remedial Investigation and Focused Feasibility Study
Sauer Dump, MD-181
4225 Lynhurst Road
Baltimore, Baltimore County, Maryland

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PART 1: REMEDIAL INVESTIGATION

EXECUTIVE SUMMARY

Environmental Service and Technology Corporation (ENSAT) was retained by the Maryland Department of the Environment, Environmental Restoration and Redevelopment Program (MDE/ERRP) to perform a Remedial Investigation of the Sauer Dump Site (Site) under the State Superfund Program. The Site is located adjacent to/behind 4225 Lynhurst Road in the North Point section of Baltimore (Dundalk) in Baltimore County, Maryland (Figure 1). The purpose of this report is to document the results of the Remedial Investigation activities that were used to develop recommendations for a site remedy. The scope of this report was developed specifically to comply with requirements for evaluating chemical releases as defined in Code of Maryland Annotated Regulations (COMAR) 26.14.02.06(E).

The Site is an inactive, privately owned, unpermitted, former dump. The historical use of the Site as a salvage/dump operation from the 1960's until the 1980's resulted in the improper storage and disposal of hazardous substances. The Site is 2.48 acres in size at an elevation from just above mean sea level (AMSL) to 17 feet AMSL. Back River, a tributary of the Chesapeake Bay, borders the Site to the south. A tidal wetland area is present along the southern border of the Site adjacent to Back River. Non-tidal wetland areas are present on adjacent properties along the northwestern, southwestern, and southeastern borders of the Site. A pond is present in the non-tidal wetland area northwest of the Site. The static groundwater level of the majority of the Site is within the waste fill.

During past investigations, salvage items such as scrap metal, empty tanks and drums, abandoned trucks, tractor-truck trailers, open roll-off containers, heavy construction equipment, and junked cars were observed at the Site. In addition to the dumped debris and salvage items, charred areas, burned paint waste, a wood chip mound, and large-diameter circular concrete conduit sections were observed at the Site. Oily sheen/oil spill areas were observed on-site and in adjacent wetland areas. Early reports suggest that the Site had been used to store up to 250 drums, which were thought to have contained residual quantities of motor oil and lubricants.

Previous studies conducted at the site between 1985 and 1999 by NUS Corporation/Halliburton NUS and the MDE indicated that concentrations of semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides in soil and sediment exceeded various risk-based screening levels and that PCBs were the primary Contaminants of Potential Concern (COPCs).

Field investigation was performed in December 2001 and June 2002 to augment the prior analytical data and to fill data gaps from past investigations at the Site. Field investigation consisted of a topographical survey, wetland delineation, water level monitoring, geotechnical testing of soil from 5 soil borings, installation of 5 groundwater monitoring wells, immunoassay and laboratory analyses from 123 test pits, and laboratory analyses of 5 surficial soil samples, 18 sediment samples, and groundwater and soil from the 5 monitoring wells.

Observations from the test pits indicate that the fill at Sauer Dump contains miscellaneous debris (wood, plastic, metal, rubber, brick, sand, black sand/soil, concrete/concrete castings, asphalt, ash, electrical transformer parts, paint/paint containers, batteries, crushed drums, railroad ties, Styrofoam, and a white/gray powdery substance) contained in a soil matrix. Sampling grids for the test pits were established in two investigation areas where PCB concentrations exceeded 100 parts per million (ppm) (Figure 7). A grid interval of 3 meters (m) was chosen in accordance with Toxic Substances and Control Act (TSCA) regulations (40 CFR 761) for sampling bulk PCB remediation waste [§761.265(a)]. The horizontal and vertical extent of PCB contamination above 100 ppm has not yet been fully delineated in the area of the larger grid (Figures 20 and 21).

During water level monitoring in May and June 2002, a mixed tide existed in Back River with a maximum daily tide of approximately 1.9 feet. The maximum recorded tidal fluctuation from the highest high tide to the lowest low tide was approximately 2.6 feet during the monitoring period. Apparent tidal influence was observed in the pond and in 3 of the 4 wells monitored. A precipitation event appeared to have a marked effect on the water levels of the more upland monitoring points.

Based on results of this Remedial Investigation, the COPCs at the Site include SVOCs, metals, pesticides, and PCBs. PCBs are the primary COPCs in surficial soil, subsurface soil, and sediment. SVOCs and pesticides are considered minor COPCs in these same media. Additional evaluation of background metals concentrations is required before a determination can be made as to whether metals in these media should be retained as COPCs. COPCs were not identified in groundwater or surface water. Thus, groundwater and surface water have been ruled out for remedial consideration.

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PART 1: REMEDIAL INVESTIGATION

1.0 INTRODUCTION AND BACKGROUND

The Maryland Department of the Environment, Environmental Restoration and Redevelopment Program (MDE/ERRP) is managing the investigation and remediation of the Sauer Dump Site (Site) under the State Superfund Program. The Site is located adjacent to/behind 4225 Lynhurst Road in the North Point section of Baltimore (Dundalk) in Baltimore County, Maryland (Figure 1). Environmental Service and Technology Corporation (ENSAT) was retained to perform a Remedial Investigation and Focused Feasibility Study as defined in ENSAT Proposal Nos. PC01-1417R, PC02-1505, PC02-1506R2, PC02-1507, and PC02-1585. MDE/ERRP prepared a Risk Assessment based on historical and current analytical laboratory data for the Site. The purpose of this report is to document the results of those activities and make recommendations for a site remedy. The scope of this report was developed specifically to comply with requirements for evaluating chemical releases as defined in Code of Maryland Annotated Regulations (COMAR) 26.14.02.06(E) and requirements for remedy evaluation and selection as defined in COMAR 26.14.02.06(F). The Remedial Investigation is presented in Part 1 of this report, the Risk Assessment is presented in Part 2 of this report and the Focused Feasibility Study is presented in Part 3 of this report.

1.1 Introduction

The Site is an inactive, privately owned, unpermitted, former dump. The Site is comprised of former marshy land which was stabilized by the owner of an adjacent property, Mr. Frederick Sauer (deceased 1990), in the 1960's and 1970's by fill material. Mr. Sauer used the site as a salvage/dump yard in the 1960's, 1970's, and 1980's. The Site's historical usage as a salvage/dump operation resulted in the improper storage and disposal of hazardous substances. Previous studies conducted at the site between 1985 and 1999 by a United States Environmental Protection Agency (U.S. EPA) contractor (NUS Corporation/Halliburton NUS Corporation) and MDE indicated that concentrations of semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides in soil and sediment exceeded various risk-based screening levels and that PCBs are the primary contaminants of concern (COC). Based on the results of these sampling events, MDE determined that remedial action was required at the Site to address the impacts to soil and sediment. Because no viable Responsible Party (i.e., entity responsible for the environmental impacts) exists, MDE is performing the remedial action under its State Superfund Program.

The Remedial Investigation activities documented in Part 1 of this report include a review of historical documents regarding the Site, excavation of test pits, installation of groundwater monitoring wells, sampling and laboratory analysis of surficial and subsurface soil, sediment, and groundwater, wetland delineation, water level monitoring, and site characterization.

1.2 Physical And Physiographic Setting

The Site is 2.48 acres in size. Figure 1 shows the location of the Site and the surrounding regional topography and surface water hydrology as depicted on the United States Geological Survey (USGS) 7.5-minute-series Middle River Quadrangle Map. The topography of the Site is shown on Figure 2. The elevation of the Site ranges from approximately mean sea level to nearly 17 feet above mean sea level (AMSL). A mounded area, present in the western and central portions of the Site, exhibits the irregular topography typically associated with dump sites. The topography along the eastern and southern portions of the Site is generally more level.

Back River, a tributary of the Chesapeake Bay, borders the Site to the south. A tidal wetland area is present along the southern border of the Site adjacent to Back River. Non-tidal wetland areas are present on adjacent properties along the northwestern, southwestern and southeastern borders of the Site. A pond is present in the non-tidal wetland area northwest of the Site. For the purpose of this investigation the wetland areas have been segregated into the following operable units as shown on Figure 2: Pond Area, Southwest Finger, Shoreline Area, and Southeast Finger. Additional discussion of these areas in presented in Section 2.2.1.

The Site is currently owned by Wittstadt Hunting Club, Inc. which acquired the property on January 16, 1997 (Maryland Department of Assessments and Taxation Internet Site). According to correspondence from the Baltimore County Department of Permits and Development Management, the Site is predominately zoned as RC 20 Resource Conservation (Critical Area). The Site is surrounded by residential and undeveloped properties. Residential properties border the Site to the northeast, east, and southeast. Undeveloped land borders the Site to the northwest, west, and southwest. A portion of the tax map, which shows the relationship between the Site and the adjacent properties is included in Appendix A.

According to the "Geologic Map of Maryland" (Maryland Geologic Survey, 1968), the Site is situated within the Atlantic Coastal Plain Physiographic Province and is underlain by Quaternary age Lowland Deposits which consist of interbedded gravels, sands, silts, and clays. The Lowland Deposits overlay Cretaceous age Potomac Group sediments.

1.3 Site History

1.3.1 Aerial Photography Review

Available aerial photography was reviewed to assist in determining the history of site activities. Sixteen (16) aerial photographs, listed in Table B-1 (Appendix B), were reviewed. Enlarged aerial photographs were purchased from the USGS, the National Ocean Service (NOS), and the United States Department of Agriculture (USDA). The Baltimore County Planning Office (BC) aerial photographs were viewed and photocopied at its office in Towson, Maryland. Information regarding the conditions observed on each photograph is included in Appendix B. A summary of this information is included herein.

The adjacent Lusk and Razauskas properties, shown on the tax map in Appendix A, are comprised of man-made land created by fill activities. The fill activities were initiated on these properties at some point between April 1938 and January 1954 and appear to have been completed by September 1957.

Minor fill activity appeared to have occurred at the entrance of the Site between January 1954 and September 1957. Significant fill activities began at the Site at some point between February 1966 and September 1968. Fill activities appear to have continued at the Site until some point between October 1974 and April 1977 at which point the Site appeared to be nearly 100% filled.

Fill encroached off-site into the Southwest Finger beginning at some point between October 1971 and April 1972. The fill appeared to have been removed from this area at some point between October 1974 and April 1977.

The fill activities on the Lusk and Razauskas properties and at the Site modified drainage patterns on the Site and on land adjacent to the Site. The pond, located northwest of the Site, appeared to have formed on previously low lying land at some point between April 1977 and June 1979. The Southwest Finger appeared to have begun to form between October 1974 and April 1977, after fill that had apparently been placed in this area had been removed. The Southeast Finger formed on low lying land between the on-site fill and the fill on the Lusk Property.

1.3.2 Previous Investigations

Sauer Dump came to the attention of the Baltimore County Health Department (BCHD) and MDE in 1984. A series of Environmental Site Investigations were performed at the Site between 1985 and 1999. The investigations have included the collection and analysis of surficial and subsurface soil, sediment, surface water, and groundwater samples. The following is a summary of prior investigative activities performed at the Site and the results of the investigations. Discussion regarding the comparison of historic analytical laboratory results with risk-based screening levels is included in Section 5.0.

1985-86 MDE (Waste Management Administration) conducted a Preliminary Assessment (PA) and a Site Investigation (SI) and NUS Corporation (NUS) conducted a Site Inspection under contract with the U.S. EPA. Salvage/dump operations were observed on-site. The Site was observed as being relatively flat with mounds of dumped domestic and construction debris. Salvage items such as scrap metal, empty tanks and drums, abandoned trucks, tractor-truck trailers, open roll-off containers, heavy construction equipment, and junked cars were observed on-site. In addition to the dumped debris and salvage items, charred areas, burned paint waste, a wood chip mound, and large-diameter circular concrete conduit sections were observed on-site. Oily sheen/oil spill areas were observed on-site and in adjacent wetland areas. Early reports suggest that the Site had been used to store up to 250 drums, which were thought to have contained residual quantities of motor oil and lubricants. Mr. Sauer was ordered by BCHD in 1984 "to properly close the Site and no longer accept waste." Mr. Sauer reportedly removed the drums in the summer of 1984 and most of the remaining material by September 1985, as required by BCHD. With the exception of the perimeter slopes, the Site was observed to have been graded and contained little remaining debris in September 1985. However, reports indicate that miscellaneous materials (scrap metal, wood, and pieces of equipment) continued to be brought on-site for salvage or reuse. Surficial and subsurface soil, sediment, and surface water samples were obtained in 1985 during the SI and analyzed for volatile organic compounds (VOCs), SVOCs, total metals, pesticides, and PCBs. Impacts to surficial soil (SVOCs, metals, and PCBs), subsurface soil (SVOCs, metals, pesticides, and PCBs), sediment (SVOCs, metals, and PCBs), and surface water (total metals and PCBs) were detected above respective risk-based screening levels.

1990 MDE recorded that piles of scrap metal, tanks, and a 3 to 8-foot deep pile of rubble/fill were present on-site. MDE collected surficial soil and sediment samples for analysis of VOCs, total metals, pesticides, and PCBs. Impacts to surficial soil (metals and PCBs) and sediment (metals and PCBs) were detected above respective risk-based screening levels.

1991-94 Halliburton NUS (HNUS) conducted an Expanded Site Inspection (ESI) under contract with the U.S. EPA. In February 1991, HNUS reported "that a large portion of the site had been covered with about 10 feet of fill consisting of soil and debris." Additionally, a tractor-truck trailer, construction/demolition debris (concrete, bricks, rebar, concrete conduit), tires, drums, a 1,000-gallon storage tank, and oily sheens were observed on-site and/or in adjacent wetland areas during various site visits in 1991. Surficial soil, sediment, and surface water samples were obtained in 1992 and analyzed for VOCs, SVOCs, total metals, pesticides, and PCBs. Impacts to surficial soil (SVOCs, metals, and PCBs), sediment (SVOCs, metals, pesticides, and PCBs), and surface water (total metals and PCBs) were detected above respective risk-based screening levels.

1996 MDE collected surficial soil, sediment, and surface water samples for analysis of total metals and PCBs. Impacts to surficial soil (metals and PCBs), sediment (metals and PCBs), and surface water (total metals) were detected above respective risk-based screening levels. MDE determined that surface water was not impacted as previously reported and concluded that excess turbidity contributed to the elevated levels reported in earlier surface water analytical results.

1999	MDE collected surficial and subsurface soil, sediment, groundwater, and surface water samples for analysis of VOCs, SVOCs, total metals (solid samples), dissolved metals (aqueous samples), pesticides, and PCBs. Impacts to surficial soil (SVOCs, metals, and PCBs), subsurface soil (SVOCs, metals, and PCBs), sediment (metals, and PCBs), and surface water (dissolved iron in one sample) were detected above respective risk-based screening levels.
Other	A representative of MDE reported that Mr. Sauer worked at a facility by the name of Kane & Lombard, a site listed on the National Priorities List (NPL). Kane & Lombard is located adjacent to a facility by the name of Flynn and Emmerick. The potential exists that foundry sand and other material potentially associated with these facilities was brought on-site (MDE verbal correspondence, Spring 2002).

1.4 Current Site Conditions

The Site is land-locked (i.e., no direct access from public land). The Site can be accessed from Lynhurst Road via a driveway between 4225 and 4227 Lynhurst Road. Both of these residential properties are owned by descendants of the late Mr. Sauer. A gate extends across the driveway 40 to 50 feet northeast of the boundary between the Site and these residential properties. A garage on the 4227 Lynhurst Road property, is located approximately 40' east of the property boundary. With the exception of the immediate area of the entrance to the Site, the Site is heavily overgrown with vegetation (primarily trees, scrubs, tall grasses, and phragmites) and exhibits irregular surface topography. Portions of the Site continue to serve as storage space for large items (boats, vehicles, heavy construction equipment, and other large items) owned by Sauer family members. Accumulations of scrap metal are present in a number of areas on-site. Miscellaneous debris and domestic refuse, contained in a soil matrix, is present across most of the Site and extends off-site in some areas. Concrete construction demolition debris is present along the northern border of the Site, in the steep bank along the southwestern property line along the Southwest Finger, and in the Southeast Finger.

1.5 Report Organization

This report consists of seven sections. Brief summaries of Sections 2.0 through 7.0 are provided below:

- Section 2.0 summarizes the methodology of field activities associated with this investigation and presents observations made during those activities.
- Section 3.0 presents the results of laboratory analyses of samples collected during this investigation.
- Section 4.0 presents a characterization of the various medium sampled at the Site during this and prior investigations.
- Section 5.0 presents conclusions from this investigation.
- Section 6.0 presents limitation to this investigation.
- Section 7.0 includes a list of references used to develop this report.

2.0 FIELD INVESTIGATION - METHODOLOGY AND FIELD OBSERVATIONS

2.1 December 2001 Field Investigation

Analytical data generated for the Site during prior investigations were reviewed prior to continued field investigation at the Site. Discussion regarding this data is presented in Section 4.0. The December 2001 Field Investigation was performed to augment the prior analytical data and to fill data gaps. The December 2001 Field Investigation consisted of the following:

- Topographic survey of the Site and immediately surrounding land;

- Collection of five (5) surficial soil samples and one (1) duplicate surficial soil sample for analytical laboratory analysis;
- Excavation of nine (9) test pits and collection of eight (8) subsurface soil samples and one (1) duplicate subsurface soil sample for analytical laboratory analysis;
- Installation of five (5) groundwater monitoring wells and collection of five (5) subsurface soil samples and one (1) duplicate subsurface soil sample for analytical laboratory analysis;
- Advancement of five (5) soil borings and collection of eight (8) subsurface soil samples for geotechnical laboratory analysis;
- Collection of eighteen (18) sediment samples and two (2) duplicate sediment samples for analytical laboratory analysis; and
- Collection of five (5) groundwater samples and one (1) duplicate groundwater sample for analytical laboratory analysis.

A Health and Safety Plan (HASP), dated November 12, 2001, and a Sampling and Analysis Plan (SAP), dated December 4, 2001, were prepared for the Site. A brief discussion of the methodology used to perform each phase of this work is presented below. Detailed methodology of sampling activities is presented in the SAP. Departures from the SAP are noted below. The surficial soil sampling locations, the test pits, the groundwater monitoring wells, and the sediment sampling locations are shown in Figure 3. The soil borings were advanced adjacent to each groundwater monitoring well boring.

2.1.1 Topographic Survey/Sampling Location Survey

W. Duvall & Associates, Inc. (Duvall) of Towson, Maryland was retained by MDE/ERRP to perform a boundary survey of the Site. The boundary survey map generated by Duvall is dated January 9, 2001. ENSAT retained Duvall in October 2001 to perform a topographic survey of the interior of the Site and to survey the December 2001 sampling locations. ENSAT retained Capitol Development Design, Inc. (CDDI) in February 2002 to perform a topographic survey of the land immediately adjacent to the Site. The topography of the Site and the surrounding area is shown in Figure 3.

2.1.2 Surficial Soil Sampling

The surficial soil samples were collected on December 12, 2001 from a depth of 4 to 5 inches below grade at the locations shown on Figure 3. The surficial soil sampling locations were chosen to evaluate two areas of the site where prior sampling did not appear to have been performed. The location of SS-4 was modified due to the presence of macadam and concrete debris at the originally proposed location. The surficial soil samples were submitted to Envirosystems, Inc. (Envirosystems) in Columbia, Maryland for laboratory analysis of VOCs (U.S. EPA Method 8260), SVOCs (U.S. EPA Method 8070), total metals (U.S. EPA Methods 200 series and 335.3), and pesticides and PCBs (U.S. EPA Method 8081/8082). The duplicate sample was obtained from SS-3 and analyzed for the same analytes. All sampling was conducted according to ENSATs Quality Assurance/Quality Control (QA/QC) guidelines, including proper chain-of-custody documentation.

2.1.3 Excavation of Test Pits

ENSAT excavated the test pits using a backhoe on December 11 and 12, 2001 at the locations shown on Figure 3 to either the water table or to native soil. The test pit locations were chosen to evaluate site features observed on the aerial photographs, discussed in the prior investigation reports, and/or depicted on the topographic map for the Site. Test pit locations TP-7 and TP-8 were chosen to evaluate an area potentially referenced as a drum storage area in a prior report. TP-2 was excavated at the location for MW-1 due to a field error. TP-2, as shown in the SAP, was renamed TP-9. The sample from TP-2 was submitted for laboratory analysis in lieu of the sample from TP-8 due to conditions observed in TP-2 and the proximity of

TP-8 to TP-7. The depths of the test pits ranged from 3.5 to 11.5 feet below grade. Backhoe refusal, possibly due to the road that bisected the Site during its operation, was encountered in TP-9. A visual description of the material encountered in each test pit was recorded by the field geologist. Miscellaneous debris (wood, plastic, metal, rubber, brick, sand, black sand/soil, concrete/concrete castings, asphalt, ash, electrical parts, paint/paint containers, batteries, crushed drums, railroad ties, Styrofoam, and a white/gray powdery substance) contained in a soil matrix was observed in all of the test pits. The fill was observed to extend below the water table in seven (7) of the nine (9) test pits. Native materials were encountered above the water table in TP-5 and TP-7. Subsurface soil samples were collected from depths ranging from 3.5 to 11.5 feet below grade. The subsurface soil samples were collected just above the water table in TP-1, TP-2, TP-3, TP-4, and TP-6. Subsurface soil samples were collected in relation to specific items in TP-5 (below a crushed drum) and in TP-7 and TP-9 (black sand interval). The open test pits were photographed and backfilled. The subsurface soil samples were submitted to Envirosystems for laboratory analysis of VOCs (U.S. EPA Method 8260), SVOCs (U.S. EPA Method 8070), total metals (U.S. EPA Methods 200 series and 335.3), and pesticides and PCBs (U.S. EPA Method 8081/8082). The duplicate sample was obtained from TP-7 and analyzed for the same analytes. All sampling was conducted according to ENSAT's QA/QC guidelines, including proper chain-of-custody documentation. Test Pit logs are included in Appendix C.

2.1.4 Installation of Groundwater Monitoring Wells/Advancement of Soil Borings

CT&E of Baltimore, Maryland was retained by MDE/ERRP to install the groundwater monitoring wells and collect the subsurface soil samples for geotechnical laboratory analysis. The well borings and the adjacent geotechnical soil borings were advanced by CT&E between December 19 and December 20, 2001 using an ATV Hollow-Stem Auger (HSA) drilling rig at the locations shown on Figure 3. The monitoring well locations were chosen to investigate conditions across the Site. The well borings were advanced to 9.5 to 14 feet below the water table. Attempts were made to obtain continuous split-spoon soil samples from the well borings. However, due to the debris encountered in the well borings, sample recovery in the fill was poor. Better sample recovery in the native unit was generally achieved. A visual description of the recovered material was recorded by the field geologist. Miscellaneous debris (wood, plastic, metal, wire, rubber, brick, sand, rock fragments/gravel, glass, concrete, asphalt, ceramic tile, mattress pieces, and paper) contained in a soil matrix was observed in all of the well borings. The fill was observed to extend below the water table in four (4) of the five (5) well borings. Native materials were encountered above the water table in the MW-4 well boring. Soil samples obtained from near the top of the native unit were collected for laboratory analysis, in lieu of samples obtained from the fill as proposed in the SAP, due to poor sample recovery in the fill and adequate sampling of the fill during excavation of the test pits. The subsurface soil samples were collected from depths ranging from 8 to 15 feet below grade. The subsurface soil samples were submitted to Envirosystems for laboratory analysis of VOCs (U.S. EPA Method 8260), SVOCs (U.S. EPA Method 8070), total metals (U.S. EPA Methods 200 series and 335.3), and pesticides and PCBs (U.S. EPA Method 8081/8082). The duplicate sample was obtained from the MW-1 well boring and analyzed for the same analytes. All sampling was conducted according to ENSAT's QA/QC guidelines, including proper chain-of-custody documentation.

Two-inch diameter wells, with 10 to 20-foot long screened intervals, were installed in each well boring. The depths of the monitoring wells ranged from 12 to 25 feet below grade. The monitoring wells were completed with sand packs and bentonite seals. Because the wells were designed to be temporary, grout was not placed above the bentonite seals in the annular space around the well. Well/boring logs are included in Appendix D.

The soil sampling for geotechnical testing was performed to gather data which will be used during the design of the chosen remedy for the Site. The geotechnical soil borings were advanced following the completion of well construction activities. Nine (9) Shelby-tube samples were collected from the five (5) geotechnical soil borings. Five (5) of the samples were collected from fill materials, and the remaining four

(4) samples were collected from the native unit. Recovery of samples in the Shelby tubes was poor. Two (2) of the Shelby tubes were crushed during driving of the tubes rendering the samples unusable. Discussion of the geotechnical testing is presented in Section 3.2.

Cuttings from drilling operations were placed on poly sheeting adjacent to each well. The geotechnical soil borings were backfilled upon completion. The monitoring wells were developed by CT&E on December 21, 2001. As authorized by MDE/ERRP, well development water was treated by pumping the water through a granular activated carbon (GAC) unit and discharged on-site.

2.1.5 Sediment Sampling

The sediment samples were collected on December 18 and 19, 2001 at the nine (9) sediment sampling locations shown on Figure 3. The sediment sampling locations were arranged in a grid pattern to determine the distribution of contaminants roughly parallel and perpendicular to the shore line. The sediment depositional pattern observed in the 1974 aerial photograph was utilized in conjunction with analytical results from prior reports to determine the sediment sampling locations. The 1974 aerial photograph shows that the shallow sediment extends approximately 100 feet south of the Site. The prior sampling events indicated that contaminants of potential concern (COPCs) are distributed along the shoreline. The results of the 1999 sampling event suggested that the COPCs may extend further offsite near the southwestern corner of the site. The prevailing downstream current would be expected to carry sediment from the site somewhat southwest of the site. The sediment sampling grid was, therefore, skewed somewhat toward the southwest.

Back River high tide extends approximately to the southern boundary of the Site. Depending on wind direction and speed, low tide can extend to 80 to 100 feet offshore. The sediment sampling locations were accessed by wading to each location. The sediment sampling was performed during times of higher tide to take advantage of the buoyancy created by the water. A shallow sediment sample and a deeper sediment sample were collected from each sediment sampling location using a 20-inch long, 2-inch diameter sediment sampler equipped with a *lexan* liner, nosepiece, and core catcher. The depth to the base of the loose sediment was determined at each location prior to sampling. In cases where this depth interval was less than 30 inches, the depth interval was divided in half and samples were obtained from each half of the depth interval. In cases where this depth interval exceeded 30 inches, a shallow sample was obtained from the top 20 inches of the depth interval, and a deeper sample was obtained from the bottom 10 inches of the depth interval. The depth to the base of the loose sediment ranged from 7 to over 30 inches. Debris (concrete blocks, logs, and tires) were observed in the sediment. The sediment samples were submitted to Phase Separation Science, Inc. (PPS) in Baltimore, Maryland for laboratory analysis of SVOCs (U.S. EPA Method 8070), total metals (U.S. EPA Methods 200 series and 335.3), and pesticides and PCBs (U.S. EPA Method 8081/8082). Duplicate samples were obtained from SDMT-6 (0-4") and from SDMT-4 (20-30") and analyzed for the same analytes. The deeper duplicate sediment sample was obtained from SDMT-4, as opposed to SDMT-6 as proposed in the SAP, due to the relatively shallow refusal observed at SDMT-6. All sampling was conducted according to ENSAT's QA/QC guidelines, including proper chain-of-custody documentation.

A representative of MDE/ERRP collected two (2) sediment samples from the pond in December 2001. The sediment samples were taken by MDE/ERRP to the MDE laboratory for immunoassay analysis of total PCBs. The pond sediment sampling locations are shown on Figure 3.

2.1.6 Groundwater Sampling

The five (5) groundwater monitoring wells were sampled on December 27, 2001. The monitoring wells were purged via low flow purging methodology using a peristaltic pump and dedicated tubing. The purge water was monitored in the field for stabilization of pH, temperature, and conductivity prior to sampling. The groundwater samples were submitted to PPS for laboratory analysis of VOCs (U.S. EPA Method 8260), SVOCs (U.S. EPA Method 8070), total and dissolved metals (U.S. EPA Methods 200 series and 335.3), and pesticides and PCBs (U.S. EPA Method 8081/8082). The duplicate sample was obtained from MW-1 and analyzed for the same analytes. All sampling was conducted according to ENSAT's QA/QC guidelines, including proper chain-of-custody documentation. The purge water, generated during well purging, was placed in a 55-gallon drum and left on-site.

2.1.7 Groundwater Monitoring Well Gauging

The depth to water in the groundwater monitoring wells was gauged on December 20, 2001, December 27, 2001, and January 17, 2002. The results of well gauging are shown in Table 1. Groundwater elevations were calculated using top-of-casing (TOC) elevations reported by CDDI. Figure 4 shows a groundwater contour map developed from the January 17, 2002 well gauging data. The groundwater contour map generally indicates the direction of groundwater flow to be from the interior of the Site outward toward the adjacent wetland areas (i.e., Southwest Finger, Shoreline Area, and Southeast Finger). Additional water level monitoring was performed at the Site in May/June 2002 to monitoring tidal fluctuations. This information is discussed in Section 2.2.2.

2.2 Spring 2002 Field Investigation

The Spring 2002 Field Investigation was performed to gather data which will be used during the design of the chosen remedy for the Site. The Spring 2002 Field Investigation consisted of the following:

- Wetland Delineation of the Site and immediately surrounding land;
- Water level monitoring in the groundwater monitoring wells, Back River, and the pond;
- Excavation of additional test pits/collection of additional surficial and subsurface soil samples.

2.2.1 Wetland Delineation

EA Engineering, Science, and Technology (EA) was retained by MDE/ERRP to perform a wetland delineation of the Site. The wetland delineation report generated by EA is dated February 19, 2001. ENSAT retained Versar, Inc. (Versar) in April 2002 to expand the wetland delineation onto the properties adjacent to the Site to the west and east. The results of the wetland delineation performed by Versar are shown in Figure 5. The wetland delineation report generated by Versar is included in Appendix E. The wetland delineation performed by Versar correlates well with the wetland delineation performed previously by EA in the areas where the two delineations overlap.

Two distinct wetland areas were identified by Versar. Figure 5 shows the two wetland areas, the 25-foot buffer zone around the non-tidal wetland areas, and the high water marks associated with the pond located northwest of the Site and Back River located south of the Site. Wetland #1 is a small isolated non-tidal wetland, 0.7 acres in size, which is centered around the pond. Wetland #2 is a larger wetland area, 1.39 acres in size, which encompasses the Southwest Finger, the Shoreline Area, and the Southeast Finger. Wetland #2 is comprised of both a tidal wetland area along the shoreline (i.e., below the high water mark) and non-tidal wetland areas in the Southwest Finger and the Southeast Finger (i.e., above the high water mark).

2.2.2 Groundwater Level Monitoring

The groundwater levels in four of the existing groundwater monitoring wells (MW-1, MW-3, MW-4, and MW-5) and the water levels in the Back River and the pond were monitored over a 2-week period between May 21 and June 3, 2002 to determine the daily tidal fluctuation, the groundwater response to the tidal fluctuation, and water level fluctuations in the pond.

The monitoring was performed using a Hermit data logger with a series of pressure transducers. Monitoring well MW-2 was not included in the monitoring network because it was anticipated that the response in MW-

2 would mimic the response in MW-1, given its similar distance to open water. Temporary piezometers were constructed in the Back River sediment south of the Site and in the sediment in the pond to provide a stable mounting platform for the pressure transducers and allow monitoring of water levels that may have been below the top of the sediment at low tide. The piezometers were constructed by hand augering/digging an opening into the sediment, placing a length of 2-inch PVC screen into the opening and backfilling the opening around the screen with sand. The Back River piezometer (Piez-1) was constructed near the pier which extends into the Back River cove immediately south of the site from the Lusk Property. The pond piezometer (Piez-2) was constructed near the location of Pond Sed-2. Top-of-casing elevations of the two piezometers were determined and precipitation data for the same time interval were obtained from the closest weather station (i.e., Baltimore-Washington International Airport).

The groundwater contour map shown in Figure 4, demonstrates that the configuration of the water table at MW-4 is different than the configuration of the water table at the four (4) other wells. The water table was encountered in the native unit in MW-4 and in the fill in the remaining wells. The screened portion of MW-4 extends into a sandy native unit whereas the screened portions of the remaining wells extend into a silty native unit.

Water level elevation graphs from the water level monitoring, as well as the corresponding precipitation graph, are shown in Figure 6. Raw water level monitoring data and expanded water level elevation graphs for each monitoring point are included in Appendix F. Water level data demonstrate that tidal fluctuations in Back River influence groundwater levels in MW-4. Water levels in MW-4 varied with the twice-daily tide (i.e., semi-diurnal tide). The three sets of gauging data presented in Table 1 suggest that the water table is lower at MW-4 than in the remaining wells. However, the water level elevation data shown in Figure 6 demonstrate that the groundwater level in MW-4 is higher than the groundwater levels in MW-1 and MW-3 during times of higher high tide (during most of the 2 week monitoring period), and that the groundwater level in MW-4 is lower than the groundwater levels in MW-1 and MW-3 during times of lower high tide (during the end of the monitoring period).

Back River monitoring data from Piez-1 indicate a mixed tide (i.e. a twice-daily tide with a large difference in the amplitude of the 2 daily high tides). Groundwater level elevation data in MW-1 and MW-3, and surface water elevation data from the pond, show daily variations. This may indicate that only the higher high tide influences the water levels in MW-1, MW-3, and the pond. Water levels in MW-1, MW-3, and the pond also show a marked decrease during the end of the monitoring period at lower high tide. The apparent daily tidal influence in the pond is dominated by a much larger effect(s) on water level. Reportedly, the pond is fed from another off-site pond. The precipitation event on May 31, 2001 can clearly be seen as a spike in the water level of the more upland monitoring points, MW-4 and MW-5, and the pond. No tidal influence was observed in MW-5. The groundwater level in MW-5 shows a relatively constant decrease during the monitoring period.

In summary, a mixed tide existed in Back River with a maximum daily tide of approximately 1.9 feet. The maximum recorded tidal fluctuation from the highest high tide to the lowest low tide was approximately 2.6 feet during the monitoring period. Water levels in MW-4 varied with the twice-daily tide. Water levels in MW-1, MW-3, and the pond showed daily variations which may indicate that only the higher high tide influenced these monitoring points. The apparent daily tidal influence in the pond is dominated by a much larger effect(s) on water level. No tidal influence was observed in MW-5. Precipitation events appear to have a marked effect on the water levels of the more upland monitoring points, MW-4 and MW-5, and the pond.

2.2.3 Excavation of Test Pits

Review of analytical results from prior investigations and from the December 2001 Field Investigation indicated two areas on the Site where total PCB concentrations in soil exceed 100 parts per million (ppm). Additional surficial and subsurface soil sampling was performed in these two areas to gain information regarding the horizontal and vertical extent of soil with PCB concentrations that exceed 100 ppm.

A SAP, dated May 30, 2002, was prepared for this phase of work. A brief discussion of the methodology used to perform this work is presented below. Detailed methodology of sampling activities is presented in the SAP. Departures from the SAP are noted below. The soil sampling locations are shown in Figure 7.

Sampling grids were established in the two investigation areas. A grid interval of 3 meters (m) was chosen in accordance with Toxic Substances Control Act (TSCA) regulations (40 CFR 761) for sampling bulk PCB remediation waste [§761.265(a)]. The first grid was centered over TP-1 (ENSAT December 2001) where the total PCB concentration was 115 ppm. The dimensions of this grid were 6 m by 6 m and included nine (9) sampling points. The four (4) corners of this grid were surveyed.

The second grid was arranged to include TP-2 and TP-3 (ENSAT December 2001) where the total PCB concentrations were 84 and 800 ppm, respectively. The second grid was expanded to include the areas where samples S-2 (MDE 1990), S-2 (MDE 1999), S-3/10 (MDE 1999), and S-9 (HNUS 1992) appear to have been located. The locations of prior sampling points will be discussed in Section 4.0. The total PCB concentrations for these samples were 110, 85, 81, and 150 ppm, respectively. The dimensions of this grid were 42 m by 18 m and included 105 sampling points. The four (4) corners and two mid-points of this grid were surveyed.

Test pits were chosen as the means for sampling both surficial and subsurface soil during this phase of work. The test pits provided good sample recovery and provided increased visual access to the subsurface.

The test pits were excavated between June 5 and 11, 2002. Two (2) field teams worked simultaneously to excavate the 114 test pits within the allotted time frame. The test pits were excavated using backhoes to the depth of groundwater. The depths of the test pits/depth to the water table ranged from 2 to 10 feet below grade. Backhoe refusal, possibly due to the road that bisected the Site during its operation and/or other large debris was encountered in test pits excavated at the following locations: D-2, D-3, D-4, D-5, D-9, D-9, D-11, E-3, E-9, E-10, and G-3. Miscellaneous debris similar to that described in Section 2.1.3 was encountered in all of the test pits. The fill was observed to extend below the water table in most of the test pits.

A surficial soil sample was composited from soil obtained from each test pit between the depths of 0 to 2 feet. A subsurface soil sample was composited from soil obtained from each test pit between the depths of 2 to 4 feet in test pits where the depth to groundwater exceeded 2 feet. A second subsurface soil sample was composited from soil obtained from each test pit between the depths of 4 feet and the water table in test pits where the depth to groundwater exceeded 4 feet.

A transformer was encountered at the G-6 sampling location. An off-white oily fluid was observed leaking from the transformer. A sample of the fluid and of the soil immediately below the transformer were collected. The transformer and the soil immediately below the transformer were excavated from the test pit and wrapped in poly sheeting. A total of 285 soil samples and one (1) fluid sample were collected during this 5-day sampling event.

Field errors occurred during this phase of work. One (1) sample container was not labeled. This sample is presumed to be the soil sample from H-9 (4-6 feet). Three sets of samples were labeled with the same designation. The two samples designated as G-3 (2-4 feet) are presumed to be the soil samples from G-3 (2-

4 feet) and F-3 (2-4 feet). The two samples designated as J-5 (0-2 feet) are presumed to be the soil samples from J-2 (0-2 feet) and J-5 (0-2 feet). And the two samples designated as J-5 (2-4 feet) are presumed to be the soil samples from J-2 (2-4 feet) and J-5 (2-4 feet). Departures from the established grid occurred at sampling points D-8 and E-8. Additional test pits were excavated at the correct sampling locations and designated as D-8II and E-8II.

The open test pits were photographed and backfilled. The backfilled test pit locations were flagged. The surficial and subsurface soil samples were transferred at the Site to representatives of MDE/ERRP who transported the samples to the MDE laboratory for immunoassay analysis of total PCBs. The results of the immunoassay analyses are presented in Section 3.0. Based on the results of immunoassay analysis, MDE/ERRP selected and submitted thirty (30) samples and three (3) duplicate samples with chain-of-custody documentation to Envirosystems for laboratory analysis of PCBs (U.S. EPA Method 8082). MDE/ERRP selected the following thirty-three (33) samples for laboratory analysis: the twenty (20) soil samples with the highest immunoassay total PCB concentrations; five (5) soil samples with mid-range immunoassay total PCB concentrations; five (5) soil samples with low immunoassay total PCB concentrations; and one (1) duplicate soil sample from each of these three (3) groups.

3.0 LABORATORY RESULTS

3.1 Analytical Laboratory Results

The analytical results from the December 2001 Field Investigation are summarized in Tables 2 through 6. The results are reported in milligrams per kilogram (mg/Kg) for solid samples (i.e., soil and sediment) and milligrams per liter (mg/L) for aqueous samples (i.e., groundwater). Both mg/Kg and mg/L are equivalent to parts per million (ppm). Concentrations for detected analytes are shown in red text. The laboratory results for surficial and subsurface soil were screened against the MDE Residential and Non-Residential Cleanup Standards. The laboratory results for sediment were screened against the National Oceanic and Atmospheric Administration (NOAA) Sediment Effects Range Low (ERL) and Sediment Effects Range Median (ERM) Benchmarks. The laboratory results for groundwater were screened against the MDE Groundwater Cleanup Standards for Type I and II Aquifers, which were developed based on drinking water standards [i.e., U.S. EPA Maximum Contaminant Levels (MCLs) and Secondary Drinking Water Regulations (SDWR)]. The results of the screening are shown in Tables 2 through 6. Detected analyte concentrations which exceed the respective MDE Residential Cleanup Standard for soil or the NOAA ERL Benchmarks for sediment are shown as red text with blue highlighting. Detected analyte concentrations which exceed the respective MDE Non-Residential Cleanup Standard for soil or the NOAA ERM Benchmarks for sediment are shown as red text with yellow highlighting. Detected analyte concentrations which exceed the respective MDE Groundwater Cleanup Standards are shown as red text with yellow highlighting.

3.1.1 Surficial Soil Sample Results

Tables 2a through 2d summarize the results of the surficial soil sample laboratory analyses. The laboratory report and chain-of-custody documentation are included in Appendix G.

VOCs	Detected VOC concentrations did not exceed MDE Residential Cleanup Standards for soil.
SVOCs	MDE Residential Cleanup Standards were exceeded for the following SVOCs: benzo(a)pyrene and benzo(b)fluoranthene.
Metals	MDE Residential Cleanup Standards were exceeded for the following metals: aluminum, antimony, iron, manganese, and thallium.

MDE Non-Residential Cleanup Standards were exceeded for the following metals: arsenic, lead, and mercury.

Pesticides Detected pesticide concentrations did not exceed MDE Residential Cleanup Standards for soil.

PCBs MDE Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1254 and Aroclor-1260.

MDE Non-Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1254.

3.1.2 Test Pits Soil Sample Results (December 2001)

Tables 3a through 3d summarize the results of the test pit subsurface soil sample laboratory analyses. The laboratory report and chain-of-custody documentation are included in Appendix G.

VOCs Detected VOC concentrations did not exceed MDE Residential Cleanup Standards for soil.

SVOCs MDE Residential Cleanup Standards were exceeded for the following SVOCs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

MDE Non-Residential Cleanup Standards were exceeded for the following SVOCs: benzo(a)pyrene and dibenzo(a,h)anthracene.

Metals MDE Residential Cleanup Standards were exceeded for the following metals: aluminum, antimony, barium, cadmium, copper, iron, manganese, nickel, selenium, thallium, vanadium, and zinc.

MDE Non-Residential Cleanup Standards were exceeded for the following metals: antimony, arsenic, iron, lead, manganese, mercury, and zinc.

Pesticides Detected pesticide concentrations did not exceed MDE Residential Cleanup Standards for soil.

PCBs MDE Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1248, Aroclor-1254, and Aroclor-1260.

MDE Non-Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260.

3.1.3 Groundwater Monitoring Well Soil Sample Results

Tables 4a through 4d summarize the results of the groundwater monitoring well subsurface soil sample laboratory analyses. The laboratory report and chain-of-custody documentation are included in Appendix H.

VOCs Detected VOC concentrations did not exceed MDE Residential Cleanup Standards for soil.

SVOCs Detected SVOC concentrations did not exceed MDE Residential Cleanup Standards for soil.

Metals MDE Residential Cleanup Standards were exceeded for the following metals: aluminum, arsenic, copper, iron, manganese, vanadium, and zinc.

MDE Non-Residential Cleanup Standards were exceeded for the following metals: arsenic and mercury.

Pesticides Pesticides were not detected.

PCBs MDE Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1254 and Aroclor-1260.

3.1.4 Sediment Sample Results

Tables 5a through 5c summarize the results of the sediment sample laboratory analyses. The laboratory report and chain-of-custody documentation are included in Appendix I.

SVOCs Detected SVOC concentrations did not exceed NOAA ERL Benchmarks for sediment.

Metals NOAA ERL Benchmarks were exceeded for the following metals: copper, lead, nickel, and zinc.

NOAA ERM Benchmarks were exceeded for the following metals: mercury.

Pesticides Pesticides were not detected.

PCBs PCBs were not detected.

3.1.5 Groundwater Sample Results

Tables 6a through 6e summarize the results of the groundwater sample laboratory analyses. The laboratory report and chain-of-custody documentation are included in Appendix J.

VOCs MDE Groundwater Cleanup Standards were exceeded for the following VOC: Chloroethane.

SVOCs Detected SVOC concentrations did not exceed MDE Groundwater Cleanup Standards.

Metals MDE Groundwater Cleanup Standards were exceeded for the following total metals: aluminum, arsenic, iron, lead, and manganese.

MDE Groundwater Cleanup Standards were exceeded for the following dissolved metals: iron and manganese.

Pesticides Pesticides were not detected.

PCBs PCBs were not detected.

3.1.6 Test Pits Soil Sample Results (June 2002)

Table 7 summarizes the results of the immunoassay analyses performed on the June 2002 test pit soil samples and the results of the laboratory analyses performed on the subset of test pit soil samples. The laboratory report and chain-of-custody documentation are included in Appendix K.

PCBs MDE Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1016, Aroclor-1254, and Aroclor-1260.

MDE Non-Residential Cleanup Standards were exceeded for the following PCBs: Aroclor-1016, Aroclor-1254, and Aroclor-1260.

3.2 Geotechnical Laboratory Results

A total of seven (7) soil samples collected during monitoring well installation activities were submitted for geotechnical testing. The soil samples were collected on December 20, 2001, and were shipped to Geotechnics, Inc. in East Pittsburgh, Pennsylvania for testing. A summary of the geotechnical tests conducted is included in Table 8, and the results of the geotechnical testing are included in Appendix L. Portions of the geotechnical soil samples were submitted to PSS for analysis of total organic carbon. The PPS laboratory report and chain-of-custody documentation are also included in Appendix L. The geotechnical data will be used during the design of the chosen remedy for the Site.

4.0 SITE CHARACTERIZATION

4.1 Surficial Soil

Surficial soil sample analytical results from the June 27, 1985, October 24, 1990, December 8, 1992, April 3, 1996, September 29, 1999, December 15, 1999, December 12, 2001, and June 2002 sampling events were compared against MDE Residential Cleanup Standards and MDE Non-Residential Cleanup Standards to determine if analytes detected in surficial soil should be considered as Contaminants of Potential Concern (COPCs). Table 9 presents a summary of the analytes that exceeded the respective standards. Standards were exceeded for SVOCs, metals, pesticides, and PCBs. Table 9 lists the analytes in each of these analyte groups that exceeded the standards, the ranges of concentrations detected for each analyte, and the respective residential and non-residential standard.

A series of maps were developed to show the distribution of sampling points where standards were exceeded. The distribution of SVOCs, metals, pesticides, and PCBs for the surficial soil samples are shown on Figures 8 through [illegible] respectively. It should be noted that maps depicting the accurate locations of historical sampling points were not generated during these prior sampling events. The sampling location maps included in the prior reports were typically hand drawn sketches showing sampling locations relative to site features that no longer exist. The historical sampling points depicted on Figures 8 through 11, should *therefore be considered as approximate.*

Figure 8 shows that SVOC standards were exceeded in following areas of the Site: northern, southeastern, and southern. Table 9 shows maximum SVOCs concentrations that range from 0.41 to 7.0 ppm and which exceed respective cleanup standards by one order of magnitude or less. SVOCs in surficial soil will be retained as minor COPCs.

Figure 9 shows that metal standards were exceeded throughout the entire Site. Table 9 shows maximum metals concentrations that range from 8.1 to 191,564 ppm and which exceed respective cleanup standards by less than one to close to two orders of magnitude. Metals were detected in the background surficial soil samples obtained during the December 8, 1992 and December 15, 1999 sampling events. Additional evaluation of background metals concentrations is required before a determination can be made as to whether metals in surficial soil should be retained as COPCs.

Figure 10 shows that standards for pesticides were exceeded for one (1) analyte at one (1) location on the Site. Table 9 shows that this concentration (0.244 ppm) exceeded the respective cleanup standard by less than one order of magnitude. This analyte will be retained as a minor COPC.

Figure 11 shows that PCB standards were exceeded in following areas of the Site: northern, central, southeastern, and southern. Table 9 shows maximum PCB concentrations that range from 6.3 to 4,600 ppm and which exceed respective cleanup standards by more than two to five orders of magnitude. PCBs will be retained as the primary COPCs in surficial soil at the Site.

4.2 Subsurface Soil

Subsurface soil sample analytical results from the June 27, 1985, September 29, 1999, December 15, 1999, December 2001, and June 2002 sampling events were compared against MDE Residential Cleanup Standards and MDE Non-Residential Cleanup Standards to determine if analytes detected in surficial soil should be considered as COPCs. Table 10 presents a summary of the analytes that exceeded the respective standards. Standards were exceeded for SVOCs, metals, pesticides, and PCBs.

The distribution of sampling points where standards for the SVOCs, metals, pesticides, and PCBs were exceeded in subsurface soil samples are shown on Figures 12 through 15, respectively. As discussed in Section 4.1, the historical sampling points depicted on these maps should be considered as approximate.

Figure 12 shows that SVOC standards were exceeded in following areas of the Site: northern, central, southeastern, and southern. Table 10 shows maximum SVOC concentrations that range from 1.5 to 7.3 ppm and which exceed respective cleanup standards by one order of magnitude or less. SVOCs in subsurface soil will be retained as minor COPCs.

Figure 13 shows that metal standards were exceeded throughout the entire Site. Table 10 shows maximum metals concentrations that range from 2.8 to 140,000 ppm and which exceed respective cleanup standards by less than one to more than two orders of magnitude. As discussed in Section 4.1, metals were detected in the background surficial soil samples obtained during the December 8, 1992 and December 15, 1999 sampling events. Additional evaluation of background metals concentrations is required before a determination can be made as to whether metals in subsurface soil should be retained as COPCs.

Figure 14 shows that standards for pesticides were exceeded for one (1) analyte at one (1) location on the Site. Table 10 shows that this concentration (0.085 ppm) exceeded the respective cleanup standard by less than one order of magnitude. This analyte will be retained as a minor COPC.

Figure 15 shows that PCB standards were exceeded in following areas of the Site: northern, central, southeastern, and southern. Table 10 shows maximum PCB concentrations that range from 8.8 to 33,000 ppm and which exceed respective cleanup standards by more than two to six orders of magnitude. PCBs will be retained as the primary COPCs in subsurface soil at the Site.

4.3 Sediment

Sediment sample analytical results from the June 27, 1985, October 24, 1990, December 8, 1992, April 4, 1996, September 29, 1999, October 1, 1999, December 15, 1999, and December 2001 sampling events were compared against NOAA ERL and NOAA ERM Benchmarks for sediment to determine if analytes detected in sediment should be considered as COPCs. Table 11 presents a summary of the analytes that exceeded the respective benchmarks. Standards were exceeded for SVOCs, metals, pesticides, and PCBs.

The distribution of sampling points where benchmarks for the SVOCs, metals, pesticides, and PCBs were exceeded in sediment samples are shown on Figures 16 through 19, respectively. As discussed in Section 4.1, the historical sampling points depicted on these maps should be considered as approximate.

Figure 16 shows that SVOC benchmarks were exceeded in the following areas adjacent to the Site: the Pond Area, the Southwest Finger, the Shoreline Area, and the Southeast Finger. Table 11 shows maximum SVOC concentrations that range from 0.11 to 12 ppm and which exceed respective NOAA ERM Benchmarks by one order of magnitude or less. SVOCs in sediment will be retained as minor COPCs.

Figure 17 shows that metal benchmarks were exceeded in the following areas adjacent to the Site: the Pond Area, the Southwest Finger, the Shoreline Area, and the Southeast Finger. Table 11 shows maximum metals concentrations that range from 5.5 to 2,360 ppm and which exceed respective NOAA ERM Benchmarks by less than one order of magnitude. Metals were detected in the background sediment sample obtained during the October 1, 1999 sampling events. Additional evaluation of background metals concentrations is required before a determination can be made as to whether metals in sediment should be retained as COPCs.

Figure 18 shows that NOAA ERM benchmarks for pesticides were exceeded for one (1) analyte at one (1) location adjacent to the Site. Table 11 shows that this concentration (2.8 ppm) exceeded the respective ERM Benchmark by less three orders of magnitude. This analyte will be retained as a minor COPC.

Figure 19 shows that PCB Benchmarks were exceeded in the following areas adjacent to the Site: the Pond Area, the Southwest Finger, the Shoreline Area, and the Southeast Finger. Table 11 shows maximum total PCB concentrations in sediment that range from 0.07 to 268 ppm and which exceeds the NOAA ERM Benchmark by more than three orders of magnitude. PCBs will be retained as the primary COPCs in sediment adjacent to the Site.

4.4 Groundwater

Groundwater analytical results from the September 29, 1999, December 15, 1999, and December 27, 2001 groundwater sampling events were compared against MDE Groundwater Clean-up Standard for Type I and II Aquifers to determine if analytes detected in groundwater should be considered as COPCs. Chloroethane is the only organic compound detected in groundwater that exceeds its MDE Groundwater Clean-up Standard for Type I and II Aquifers. Chloroethane was detected in one (1) monitoring well (i.e., MW-2) during the groundwater sampling event on December 27, 2001 at a concentration of 0.006 mg/L. Of the inorganic metals that exceeded the MDE Groundwater Clean-up Standards for Type I and II Aquifers (i.e., aluminum, arsenic, iron, lead, and manganese), the only dissolved metals that exceeded these Standards were iron and manganese. These two dissolved metals are naturally occurring, and detected groundwater concentrations are within the range of expected background concentrations.

According to the State of Maryland, Department of the Environment, Cleanup Standards for Soil and Groundwater (August 2001), if there is no current or projected future groundwater use within one-half mile of the Site, if there is no risk posed by current or future land use at the Site, and if impacted groundwater does not exceed MDE Groundwater Clean-up Standards by more than one order of magnitude, the MDE Groundwater Clean-up Standards are not applicable to the Site.

Based on information presented in the Final Expanded Site Inspection report dated March 21, 1994 (NUS 1994), 20 wells are located within one mile of the Site. The closest of these wells is located approximately 0.5 mile northwest of the Site. No private domestic wells were identified. Based on these findings, the MDE Groundwater Clean-up Standard for Chloroethane is not applicable to the Site. COPCs were not identified in groundwater. Thus, groundwater has been ruled out for remedial consideration.

4.5 Surface Water

Surface water analytical results from the April 4, 1996 and September 29, 1999 surface water sampling events were compared against EPA Chronic Ambient Water Quality Criteria Surface Water Benchmarks to determine if analytes detected in surface water should be considered as COPCs. Surface water analytical results from the June 27, 1985 and the December 8-9, 1992 surface water sampling events were not included in this evaluation due to MDE/ERRP's conclusion that excess turbidity in these samples contributed to the elevated concentrations reported in these earlier surface water analytical results.

No organic compounds, detected in the April 4, 1996 and September 29, 1999 surface water samples, exceed the EPA Chronic Ambient Water Quality Criteria Surface Water Benchmarks. Total aluminum and iron exceeded the EPA Chronic Ambient Water Quality Criteria Surface Water Benchmarks, but only dissolved iron exceeded the Benchmark. Dissolved iron was detected above the Benchmark in one (1) surface water sample (i.e., SW-1) during the surface water sampling event on September 29, 1999 at a concentration of 2.12 mg/L. Dissolved iron is naturally occurring in surface water, and it was detected within the range of expected background concentrations. COPCs were not identified in surface water. Thus, surface water has been ruled out for remedial consideration.

4.6 Initial Hot Spot Characterization

In June 2002, the excavation of test pits and sampling and analysis of soil samples collected from the test pits confirmed the presence of total PCB contamination above 100 ppm. Total PCB concentrations in all of the soil samples were determined by immunoassay. A select subset of soil samples were submitted to Envirosystems for laboratory analysis of PCBs. The results of the immunoassay and laboratory analyses are summarized in Table 7. It should be noted that the immunoassay testing was reportedly calibrated for total PCB concentrations between 25 and 125 ppm. It should also be noted that at test pit D-4 (0-2'), immunoassay analysis yielded a total PCB concentration of 14.8 ppm, while laboratory analysis of the same sample yielded a total PCB concentration of 330 ppm. Likewise, at test pit J-13 (0-2'), immunoassay analysis yielded a total PCB concentration of 64.8 ppm, while laboratory analysis of the same sample yielded a total PCB concentration of 105 ppm.

An isoconcentration map was developed for the highest total PCB concentrations detected via immunoassay analysis in each of the test pits (Figure 20). As shown on Figure 20, the highest total PCB concentration was detected in soil from test pit G-6. A pole-mount type of electrical transformer was unearthed during excavation of test pit G-6. As shown on Figure 20, the 100 ppm total PCB concentration limit was not fully delineated. The central-western and southeastern areas of the sampling grid require further investigation to determine the lateral extent of 100 ppm PCB contamination. In addition, further investigation near test pit D-4 may be warranted based on the total PCB concentration yielded by laboratory analysis.

Figure 21 presents an isoconcentration map developed for the total PCB concentrations detected in the soil sample collected from the bottom portion of each test pit. As shown on Figure 21, the highest total PCB concentration was detected in soil from test pit G-6 (location where transformer was unearthed). As shown on Figure 21, the 100 ppm total PCB concentration limit was not fully delineated. The central-western and southeastern areas of the sample grid require further investigation to determine the vertical extent of 100 ppm PCB contamination.

Figures 22 and 23 present cross-sections developed for grid lines "I" (i.e., test pits I-1 through I-15) and "7" (i.e., test pits D-7 through J-7). Isoconcentration contours were drawn to indicate areas where total PCB concentrations exceed 75 ppm as detected via immunoassay analysis.

5.0 CONCLUSIONS

Based on the results of this Remedial Investigation, ENSAT concludes the following:

1. The Site is an inactive, privately owned, unpermitted, former dump. The Site's historical usage as a salvage/dump operation from the 1960's until the 1980's resulted in the improper storage and disposal of hazardous substances.

2. The Site is 2.48 acres in size at an elevation from just above mean sea level to 17 feet AMSL. Back River, a tributary of the Chesapeake Bay, borders the Site to the south. A tidal wetland area is present along the southern border of the Site adjacent to Back River. Non-tidal wetland areas are present on adjacent properties along the northwestern, southwestern, and southeastern borders of the Site. A pond is present in the non-tidal wetland area northwest of the Site. The static groundwater level of the majority of the Site is within the waste fill.

3. During past investigations, salvage items such as scrap metal, empty tanks and drums, abandoned trucks, tractor-truck trailers, open roll-off containers, heavy construction equipment, and junked cars were observed at the Site. In addition to the dumped debris and salvage items, charred areas, burned paint waste, a wood chip mound, and large-diameter circular concrete conduit sections were observed at the Site. Oily sheen/oil spill areas were observed on-site and in adjacent wetland areas. Early reports suggest that the Site had been used to store up to 250 drums, which were thought to have contained residual quantities of motor oil and lubricants.

4. Previous studies conducted at the site between 1985 and 1999 by NUS Corporation/Halliburton NUS and the MDE indicated that concentrations of SVOCs, metals, PCBs, and pesticides in soil and sediment exceeded various risk-based screening levels and that PCBs were the primary COPCs.

5. Field investigation was performed in December 2001 and June 2002 to augment the prior analytical data and to fill data gaps from past investigations at the Site. Field investigation consisted of a topographical survey, wetland delineation, water level monitoring, geotechnical testing of soil from 5 soil borings, installation of 5 groundwater monitoring wells, immunoassay and laboratory analyses from 123 test pits, and laboratory analyses of 5 surficial soil samples, 18 sediment samples, and groundwater and soil from the 5 monitoring wells.

6. Observations from the test pits indicate that the fill at Sauer Dump contains miscellaneous debris (wood, plastic, metal, rubber, brick, sand, black sand/soil, concrete/concrete castings, asphalt, ash, electrical transformer parts, paint/paint containers, batteries, crushed drums, railroad ties, Styrofoam, and a white/gray powdery substance) contained in a soil matrix. Sampling grids for the test pits were established in two investigation areas where PCB concentrations exceeded 100 ppm (Figure 7). A grid interval of 3 m was chosen in accordance with TSCA regulations (40 CFR 761) for sampling bulk PCB remediation waste [§761.265(a)]. The horizontal and vertical extent of PCB contamination above 100 ppm has not yet been fully delineated in the area of the larger grid (Figures 20 and 21).

7. During water level monitoring in May and June 2002, a mixed tide existed in Back River with a maximum daily tide of approximately 1.9 feet. The maximum recorded tidal fluctuation from the highest high tide to the lowest low tide was approximately 2.6 feet during the monitoring period. Apparent tidal influence was observed in the pond and in 3 of the 4 wells monitored. A precipitation event appeared to have a marked effect on the water levels of the more upland monitoring points.

8. Based on results of this Remedial Investigation, the COPCs at the Site include SVOCs, metals, pesticides, and PCBs. PCBs are the primary COPCs in surficial soil, subsurface soil, and sediment. SVOCs and pesticides are considered minor COPCs in these same media. Additional evaluation of background metals concentrations is required before a determination can be made as to whether metals in these media should be retained as COPCs. COPCs were not identified in groundwater or surface water. Thus, groundwater and surface water have been ruled out for remedial consideration.

6.0 LIMITATIONS

The work performed in conjunction with this project, and that data developed, are intended as a description of available information at the sample locations indicated and the dates specified. Generally accepted industry standards were used in the preparation of this report.

Laboratory data are intended to approximate actual conditions at the time of sampling. Results from future sampling and testing may vary significantly as a result of natural conditions, a changing environment, or the limits of analytical capabilities. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a specific location not investigated. The limited sampling conducted is intended to approximate subsurface conditions by extrapolation between data points. Actual subsurface conditions may vary.

ENSAT has based its conclusions and recommendations on observable conditions and analytical results from an independent analytical laboratory that is solely responsible for the accuracy of its methods and results.

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TABLES

TABLE - 1
Well Gauging Data

Sauer Dump Site
Baltimore, MD

Monitoring Well	Elevation (Grade)	Elevation (TOC)	Depth to Water (ft)	Groundwater Elevation (ft)
December 20, 2001				
MW-1	4.64	7.42	6.10	1.32
MW-2	4.10	7.29	6.50	0.79
MW-3	11.28	15.28	14.20	1.08
MW-4	11.71	12.00	12.80	-0.80
MW-5	9.24	9.64	8.25	1.39
December 27, 2001				
MW-1	4.64	7.42	6.37	1.05
MW-2	4.10	7.29	6.51	0.78
MW-3	11.28	15.28	14.20	1.08
MW-4	11.71	12.00	12.27	-0.27
MW-5	9.24	9.64	8.25	1.39
January 17, 2002				
MW-1	4.64	7.42	6.45	0.97
MW-2	4.10	7.29	6.60	0.69
MW-3	11.28	15.28	14.18	1.10
MW-4	11.71	12.00	12.07	-0.07
MW-5	9.24	9.64	8.03	1.61

Create Sample Data Summary ~~using~~ Table starting with table 2c in the attached, then Table 2b, 2d. It is pretty much copying. Sample S-12 will be in the first column it is background, only list the Metal concentrations for this sample which were faxed to you

TABLE

~~Release~~ Surface Soil Concentrations

get from fax

Sample ID	S-12	SS-1	SS-3	SS-4	SS-5
Sample Depth					
Sample Date					
Sample Location					
Analyte - Use Table 2c and list metals					
Aluminum	~~ND~~				
Antimony	~~ND~~				
Arsenic					
etc...					
Semivolatile Organic Compounds - use Table 2B only what is detected					
benzo(b)Fluoranthene	ND				
butyl benzyl phthalate	ND				
bis(2)ethylhexyl phthalate	ND				
Fluoranthene	ND				
PCBs use Table 2d					
Aroclor-1254	ND				
Aroclor-1260	ND				

There are 2 SS-3s use the highest concentration

Get concentrations from table

TABLE - 2a
Surficial Soil Sample Analytical Results
Volatile Organic Compounds
December 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification	SS-1		SS-2		SS-3		SS-3 (dup)		SS-4		SS-5	
Analyte					Concentration (ppm)							
Acetone	0.018	U	0.06	U	0.013	U	0.003	J	0.011	U	0.004	J
Benzene	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Bromodichloromethane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Bromoform	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Bromomethane	0.018	U	**0.06**	**U**	0.013	U	0.013	U	0.011	U	0.013	U
2-Butanone	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Carbon Disulfide	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Carbon Tetrachloride	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Chlorobenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Chloroethane	0.018	U	**0.06**	**U**	0.013	U	0.013	U	0.011	U	0.013	U
Chloroform	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Chloromethane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Cyclohexane	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Dibromochloromethane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
1,2-Dibromo-3-chloropropane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
1,2-Dibromoethane	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1,2-Dichlorobenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,3-Dichlorobenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,4-Dichlorobenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Dichlorodifluoromethane	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,1-Dichloroethane	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,2-Dichloroethane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
1,1-Dichloroethene	0.004	J	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
cis-1,2-Dichloroethene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
trans-1,2-Dichloroethene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,2-Dichloropropane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
cis-1,3-Dichloropropene	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
trans-1,3-Dichloropropene	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Ethylbenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
2-Hexanone	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Isopropylbenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Methyl Acetate	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Methylcyclohexane	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Methylene Chloride	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4-Methyl-2-Pentanone	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U

TABLE - 2a
Surficial Soil Sample Analytical Results
Volatile Organic Compounds
December 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification	SS-1		SS-2		SS-3		SS-3 (dup)		SS-4		SS-5	
Analyte					Concentration (ppm)							
Methyl-t-Butyl Ether	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Styrene	*0.018*	*U*	*0.06*	*U*	*0.013*	U	0.013	U	0.011	U	0.013	U
1,1,2,2-Tetrachloroethane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Tetrachloroethene	0.018	U	**0.06**	**U**	0.013	U	0.013	U	0.011	U	0.013	U
Toluene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,2,4-Trichlorobenzene	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
1,1,1-Trichloroethane	0.018	U	0.06	U	0.013	U	0.013	U	0.002	J	0.013	U
1,1,2-Trichloroethane	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Trichloroethene	**0.018**	**U**	**0.06**	**U**	0.013	U	0.013	U	0.011	U	0.013	U
1,1, 2-Trichloro-1, 2, 2-trifluoroethane	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Trichlorofluoromethane	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U
Vinyl Chloride	**0.018**	**U**	**0.06**	**U**	**0.013**	**U**	**0.013**	**U**	**0.011**	**U**	**0.013**	**U**
Xylenes (Total)	0.018	U	0.06	U	0.013	U	0.013	U	0.011	U	0.013	U

Notes.
Analytical Method. U.S EPA Method 8260 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SS-3 identified as "SS-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL.
B - Analyte detected in blank
Red Text - **Concentration at which analyte was detected**
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

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TABLE - 2b
Surficial Soil Sample Analytical Results
Semi-Volatile Organic Compounds
December 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SS-1		SS-2		SS-3		SS-3 (dup)		SS-4		SS-5	
Analyte					Concentration (ppm)							
Acenaphthene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Acenaphthylene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Acetophenone	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Anthracene	0.098	J	1.8	U	0.4	U	0.41	U	0.4	U	0.049	J
Benzaldehyde	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Benzo(a)Anthracene	0.57	J	0.58	J	0.14	J	0.19	J	0.18	J	0.19	J
Benzo(a)Pyrene	[redacted]	[redacted]	[redacted]	[redacted]	0.15	J	0.17	J	0.16	J	0.21	J
Benzo(b)fluoranthene	[redacted]	[redacted]	0.64	J	0.15	J	0.18	J	0.17	J	0.33	J
Benzo(g,h,i)Perylene	0.18	J	1.8	U	0.053	J	0.41	U	0.26	J	0.33	J
Benzo(k)fluoranthene	0.56	J	0.48	J	0.13	J	0.18	J	0.12	J	0.16	J
Butylbenzylphthalate	0.69	U	1.8	U	0.4	U	0.062		0.12	J	0.28	J
1,1'-Biphenyl	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
4-Bromophenyl-phenylether	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Caprolactam	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Carbazole	**0.69**	**U**	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
4-Chloroaniline	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
bis(2-Chloroethoxy)Methane	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
bis(2-Chloroethyl)Ether	[redacted]	[redacted]	[redacted]	[redacted]	**0.4**	**U**	**0.41**	**U**	**0.4**	**U**	**0.42**	**U**
4-Chloro-3-Methylphenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
2-Chloronaphthalene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
2-Chlorophenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
4-Chlorophenyl-phenylether	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Chrysene	0.81		0.57	J	0.15	J	0.2	J	0.18	J	0.31	J
Dibenzo(a,h)Anthracene	0.12	J	1.8	U	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	0.057	J
Dibenzofuran	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
3,3'-Dichlorobenzidine	**0.69**	**U**	[redacted]	[redacted]	**0.4**	**U**	**0.41**	**U**	**0.4**	**U**	**0.42**	**U**
2,4-Dichlorophenol	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
Diethylphthalate	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
2,4-Dimethylphenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Dimethyl Phthalate	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Di-n-Butylphthalate	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.1	J
4,6-Dinitro-2-Methylphenol	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2,4-Dinitrophenol	1.7	U	4.6	U	1	U	1	U	1	U	1.1	U
2,4-Dinitrotoluene	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
2,6-Dinitrotoluene	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
Di-n-Octyl Phthalate	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
bis(2-Ethylhexyl)Phthalate	0.79		0.38	J	0.11	J	0.28	J	0.28	J	0.16	J
Fluoranthene	0.88		0.48	J	0.38	J	0.38	J	0.36	J	0.4	J
Fluorene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Hexachlorobenzene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Hexachlorobutadiene	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
Hexachlorocyclopentadiene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Hexachloroethane	**0.69**	**U**	**1.8**	**U**	**0.4**	**U**	**0.41**	**U**	**0.4**	**U**	**0.42**	**U**
Indeno(1,2,3-cd)Pyrene	0.38	J	0.38	J	0.058	J	0.091	J	0.3	J	0.31	J

TABLE - 2b
Surficial Soil Sample Analytical Results
Semi-Volatile Organic Compounds
December 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SS-1		SS-2		SS-3		SS-3 (dup)		SS-4		SS-5	
Analyte	Concentration (ppm)											
Isophorone	**0.69**	**U**	**1.8**	**U**	0.4	U	**0.41**	**U**	0.4	U	**0.42**	**U**
2-Methylnaphthalene	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.052	J
2-Methylphenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
4-Methylphenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Naphthalene	**0.69**	**U**	**1.8**	**U**	**0.4**	**U**	**0.41**	**U**	**0.4**	**U**	**0.42**	**U**
2-Nitroaniline	1.7	U	4.6	U	1	U	1	U	1	U	1.1	U
3-Nitroaniline	1.7	U	4.6	U	1	U	1	U	1	U	1.1	U
Analytical Method U S EPA	1.7	U	4.6	U	1	U	1	U	1	U	1.1	U
Nitrobenzene	**0.69**	**U**	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
2-Nitrophenol	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
4-Nitrophenol	**1.7**	**U**	**4.6**	**U**	1	U	1	U	1	U	1.1	U
N-Nitroso-Di-*n*-Propylamine	[illegible]	[illegible]	1.8	U	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
N-Nitrosodiphenylamine	0.69	U	**1.8**	**U**	0.4	U	0.41	U	0.4	U	0.42	U
2,2-Oxybis(1-Chloropropane)	**0.69**	**U**	**1.8**	**U**	**0.4**	**U**	**0.41**	**U**	**0.4**	**U**	**0.42**	**U**
Pentachlorophenol	1.7	U	4.6	U	1	U	1	U	1	U	1.1	U
Phenanthrene	0.28	J	1.8	U	0.13	J	0.11	J	0.14	J	0.21	J
Phenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U
Pyrene	1.1		0.52	J	0.36	J	0.30	J	0.31	J	0.8	
2,4,5-Trichlorophenol	1.7	U	4.6	U	1	U	1	U	1	U	1.1	U
2,4,6-Trichlorophenol	0.69	U	1.8	U	0.4	U	0.41	U	0.4	U	0.42	U

Notes

Analytical Method U S EPA Method 8270 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SS-3 identified as "SS-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
Red Text - **Concentration at which analyte was detected**
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[illegible] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 2c
Surficial Soil Sample Analytical Results
Inorganic Compounds
December 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SS-1		SS-2		SS-3		SS-3 (dup)		SS-4		SS-5	
Analyte							Concentration (ppm)					
Aluminum	[redacted]		[redacted]		7200		[redacted]		[redacted]		[redacted]	
Antimony	[redacted]		[redacted]		10.	U	10.	U	[redacted]		10.	U
Arsenic	56		20.		7.3		8.2		6.5		7.2	
Barium	160		120		70		104		240		90	
Beryllium	0.93		1.5		1.5		0.93		2.6		1.6	
Cadmium	2.7		3.6		1.3		1.5		2		1.9	
Calcium	9500		5100		1900		12000		80000		32000	
Chromium	120		110		48		52		40		34	
Cobalt	8.2		14		11		4.4		4.7		4.8	
Copper	290		150		71		61		31		120	
Iron	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Lead	340		150		120		130		730.		160	
Magnesium	5800		5100		1600		3500		17000		6300	
Manganese	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Mercury	0.15	U	2.1		0.3		1.2		0.17		0.51	
Nickel	51		72		23		39		27		65	
Potassium	900		2800.	U	880		1000		2100		940	
Selenium	2.2		5.3		1.5		1.7		0.94		0.67	
Silver	0.7		6.	U	1.	U	1.	U	1.9		1.	U
Sodium	2200		9400		79		180		530		140	
Thallium	0.94		[redacted]		0.4	U	0.91		0.43	U	0.44	U
Vanadium	29		39		22		30		35		53	
Zinc	600		380		220		280		230		220	

Notes:

Analytical Method: U.S. EPA Methods 200 series and 335.2 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]

Duplicate of SS-3 identified as "SS-A" on laboratory data sheet

U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)

Red Text - Concentration at which analyte was detected

Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard

[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard

Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 2d
Surficial Soil Sample Analytical Results
PCBs and Pesticides
December 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SS-1		SS-2		SS-3		SS-3 (dup)		SS-4		SS-5	
Analyte					Concentration (ppm)							
Aldrin	0.018	U	0.0094	U	0.002	U	0.0021	U	0.002	U	0.0022	U
alpha-BHC	**0.018**	**U**	**0.0094**	**U**	0.002	U	0.0021	U	0.002	U	0.0022	U
beta-BHC	**0.018**	**U**	**0.0094**	**U**	0.002	U	0.0021	U	0.002	U	0.0022	U
delta-BHC	**0.018**	**U**	**0.0094**	**U**	0.002	U	0.0021	U	0.002	U	0.0022	U
gamma-BHC (Lindane)	**0.018**	**U**	**0.0094**	**U**	0.002	U	0.0021	U	0.002	U	0.0022	U
alpha-Chlordane	0.018	U	0.0094	U	0.002	U	0.0021	U	0.002	U	0.0022	U
gamma-Chlordane	0.018	U	[illegible]		0.002	U	0.0021	U	0.002	U	0.0022	U
4,4'-DDD	0.034	U	0.018	U	0.004	U	0.0041	U	0.004	U	0.0042	U
4,4'-DDE	0.034	U	0.018	U	0.004	U	0.0041	U	0.004	U	0.0042	U
4,4'-DDT	[illegible]		[illegible]		0.004	U	0.0041	U	[illegible]		[illegible]	
Dieldrin	**0.034**	**U**	**0.018**	**U**	**0.004**	**U**	**0.0041**	**U**	**0.004**	**U**	**0.0042**	**U**
Endosulfan I	0.018	U	0.0094	U	0.002	U	0.0021	U	0.002	U	0.0022	U
Endosulfan II	0.034	U	0.018	U	0.004	U	0.0041	U	0.004	U	0.0042	U
Endosulfan sulfate	0.034	U	0.018	U	0.004	U	0.0041	U	0.004	U	0.0042	U
Endrin	0.034	U	0.018	U	0.004	U	0.0041	U	0.004	U	0.0042	U
Endrin aldehyde	0.034	U			0.004	U	0.0041	U	0.004	U	0.0042	U
Endrin ketone	0.034	U	0.018	U	0.004	U	0.0041	U	0.004	U	0.0042	U
Heptachlor	0.018	U	0.0094	U	0.002	U	0.0021	U	0.002	U	0.0022	U
Heptachlor epoxide	0.018	U	0.0094	U	0.002	U	0.0021	U	0.002	U	0.0022	U
Methoxychlor	0.18	U	0.094	U	0.02	U	0.021	U	0.02	U	0.022	U
Toxaphene	[redacted]		[redacted]		0.2	U	0.21	U	0.2	U	0.22	U
Aroclor-1016	0.34	U	0.18	U	0.04	U	0.041	U	0.04	U	0.042	U
Aroclor-1221	[redacted]		[redacted]		0.081	U	0.084	U	0.081	U	0.085	U
Aroclor-1232	[redacted]		0.18	U	0.04	U	0.041	U	0.04	U	0.042	U
Aroclor-1242	[redacted]		0.18	U	0.04	U	0.041	U	0.04	U	0.042	U
Aroclor-1248	[redacted]		0.18	U	0.04	U	0.041	U	0.04	U	0.042	U
Aroclor-1254	[redacted]		0.18	U	[illegible]		[illegible]		0.04	U	0.042	U
Aroclor-1260	[redacted]		0.18	U	0.04	U	0.041	U	[illegible]		[redacted]	

Notes
Analytical Method U S EPA Methods 8081 and 8082 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SS-3 identified as "SS-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
D - Sample Diluted and Reanalyzed for Specified Analyte
P - Results differed by more than 25%, Lower Result Reported
[illegible] - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

Analytical Method U S EPA Method 8260 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]

Using Tables 3c, 3a, 3b, 3d Create Data Summary Table - Only List Detections a # with "U" next to it means Not detected (ND).

TABLE
Test Pit Waste Samples
Sauer Dump

get from text

Sample ID	~~SS~~ SS-12	TP-1(3.5')	TP-2(4')	etc... list
Sample Depth		3.5 feet	4 feet	All samples to
Sample Date				TP-9(10')
Sample Location	Background			
Analyte	Use Table 3c - Use Table 2c for sample SS-2			
Aluminum				
Antimony				
Arsenic				
Barium ↓ etc..				
Volatile Organic	Compounds - Use Table 3a			
Acetone	ND			
Don't use Benzene ~~Benzene~~ 2-Butanone	ND			
Carbon Disulfide	ND			
Ethylbenzene	ND			
Isopropylbenzene	ND			
Toluene	ND			
Xylenes (total)	ND			
Semivolatile Organic Compounds	- Use Table 3b			
Acetophenone	ND			
Anthracene	ND			

Semi-Volatile Organic Compounds Table 3b

Benzo(a) Anthracene
Benzo(b)Pyrene
Benzo(b) Fluoranthene
Benzo(g,h,i)Perylene
Benzo(K) Fluoranthene
etc.. ↓

PCBs Table 3d

Aroclor -1242
Aroclor -1248
Aroclor -1254
Aroclor -1260

TABLE - 3a
Test Pit Soil Sample Analytical Results
Volatile Organic Compounds
December 11 and 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	TP-1 (3.5')		TP-2 (4')		TP-3 (6.75')		TP-4 (11.5')		TP-5 (7')		TP-6 (7.5')		TP-7 (5')		TP-7 (5') (dup)		TP-9 (10')	
Analyte									Concentration (ppm)									
Acetone	0.025		0.019	U	0.013	U	0.054		0.06		0.033		0.024		0.028		0.17	
Benzene	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	0.006	J	0.003	J	0.01	J	0.002	J
Bromodichloromethane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Bromoform	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Bromomethane	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
2-Butanone	0.007	J	0.019	U	0.013	U	0.014		0.021		0.011	J	0.006	J	0.007	J	0.066	
Carbon Disulfide	0.014	U	0.019	U	0.013	U	0.002	J	0.004	J	0.009	J	0.013	U	0.004	J	0.051	
Carbon Tetrachloride	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Chlorobenzene	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Chloroethane	0.014	U	**0.019**	**U**	0.013	U	0.001	J	0.014	U	0.013	U	0.013	U	0.012	U	**0.019**	**U**
Chloroform	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Chloromethane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Cyclohexane	0.002	J	0.019	U	0.013	U	0.002	J	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Dibromochloromethane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
1,2-Dibromo-3-chloropropane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
1,2-Dibromoethane	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1,2-Dichlorobenzene	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
1,3-Dichlorobenzene	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
1,4-Dichlorobenzene	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Dichlorodifluoromethane	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
1,1-Dichloroethane	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
1,2-Dichloroethane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
1,1-Dichloroethene	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
cis-1,2-Dichloroethene	0.014	U	0.019	U	0.013	U	0.001	J	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
trans-1,2-Dichloroethene	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.002	J	0.019	U
1,2-Dichloropropane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
cis-1,3-Dichloropropene	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
trans-1,3-Dichloropropene	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Ethylbenzene	[illegible]	J	0.019	U	0.013	U	0.012	U	0.014	U	[illegible]		0.013	U	0.012	U	0.019	U
2-Hexanone	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Isopropylbenzene	0.014	U	0.019	U	0.013	U	[illegible]	[illegible]	0.014	U	0.013	U	0.013	U	0.012	U	[illegible]	
Methyl Acetate	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Methylcyclohexane	[illegible]	J	0.019	U	0.013	U	[illegible]	J	0.014	U	[illegible]	J	0.013	U	0.012	U	[illegible]	J
Methylene Chloride	[illegible]	J B	[illegible]	J B	[illegible]	J B	[illegible]	J B	[illegible]	J B	[illegible]	J B	[illegible]	J B	[illegible]	J B	[illegible]	J B
4-Methyl-2-Pentanone	0.014	U	0.019	U	0.013	U	[illegible]	J	0.014	U	0.013	U	0.013	U	0.012	U	0.015	J

TABLE - 3a
Test Pit Soil Sample Analytical Results
Volatile Organic Compounds
December 11 and 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	TP-1 (3.5')		TP-2 (4')		TP-3 (6.75')		TP-4 (11.5')		TP-5 (7')		TP-6 (7.5')		TP-7 (5')		TP-7 (5') (dup)		TP-9 (10')	
Analyte									Concentration (ppm)									
Methyl-t-Butyl Ether	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Styrene	0.002	J	0.019	U	0.013	U	0.012	U	0.014	U	0.003	J	0.013	U	0.012	U	0.019	U
1,1,2,2-Tetrachloroethane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Tetrachloroethene	0.014	U	0.004	J	0.001	J	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Toluene	0.002	J	0.019	U	0.013	U	0.012	U	0.014	U	0.014		0.013	U	0.001	J	0.005	J
1,2,4-Trichlorobenzene	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
1,1,1-Trichloroethane	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
1,1,2-Trichloroethane	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Trichloroethene	0.014	U	**0.019**	**U**	0.002	J	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	**0.019**	**U**
1,1,2-Trichloro-1,2,2-trifluoroethane	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Trichlorofluoromethane	0.014	U	0.019	U	0.013	U	0.012	U	0.014	U	0.013	U	0.013	U	0.012	U	0.019	U
Vinyl Chloride	**0.014**	**U**	**0.019**	**U**	**0.013**	**U**	**0.012**	**U**	**0.014**	**U**	**0.013**	**U**	**0.013**	**U**	**0.012**	**U**	**0.019**	**U**
Xylenes (Total)	0.006	J	0.019	U	0.013	U	0.012	U	0.014	U	0.180		0.013	U	0.012	U	0.015	J

Notes.
Analytical Method. U.S. EPA Method 8260 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of TP-7 (5') identified as "TP-A (5')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
B - Analyte detected in blank
Red Text - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
■ Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 3b
Test Pit Soil Sample Analytical Results
Semi-Volatile Organic Compounds
December 11 and 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	TP-1 (3 5')		TP-2 (4')		TP-3 (6 75')		TP-4 (11.5')		TP-5 (7')		TP-6 (7.5')		TP-7 (5')		TP-7 (5') (dup)		TP-9 (10')	
Analyte									Concentration (ppm)									
Acenaphthene	0.35	J	0.18	J	0.13	J	0 41	U	0.42	U	0.43	U	0 41	U	0 4	U	0.59	U
Acenaphthylene	0.21	J	0.67	U	0.41	U	0 41	U	0.42	U	0 43	U	0 41	U	0.4	U	0.59	U
Acetophenone	0.18	J	0.67	U	0.41	U	0.084	J	0 42	U	0.46		0.073	J	0.042	J	0.09	J
Anthracene	0.64		0.41	J	0.21	J	0.082	J	0 42	U	0.43	U	0.06	J	0 4	U	0 59	U
Benzaldehyde	0.46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0.41	U	0 4	U	0 59	U
Benzo(a)Anthracene	[redacted]		[redacted]		[redacted]		0.32	J	0.044	J	0.31	J	0.2	J	0.065	J	0.61	
Benzo(a)Pyrene	3.7		1 3		0.82		[redacted]		[redacted]		0.2	J	0.21	J	0.065	J	[redacted]	
Benzo(b)fluoranthene	[redacted]		[redacted]		[redacted]		0.31	J	0.047	J	0.22	J	0.24	J	0.089	J	0.53	J
Benzo(g,h,i)Perylene	2.3		1.3		0.83		0 41	U	0 42	U	0.17	J	0.21	J	0 4	U	0 59	U
Benzo(k)fluoranthene	2.7		0.97		0.73		0.21	J	0.051	J	0.23	J	0.14	J	0.067	J	0.36	J
Butylbenzylphthalate	39	D	4.2		0 41	U	0.16	J	0.087	J	0 43	U	0 41	U	0.057	J	0 59	U
1,1'-Biphenyl	0.099	J	0.67	U	0.058	J	0.41	U	0 42	U	0.43	U	0.14	J	0.096	J	0.59	U
4-Bromophenyl-phenylether	0 46	U	0 67	U	0 41	U	0 41	U	0.42	U	0.43	U	0 41	U	0 4	U	0.59	U
Caprolactam	0 46	U	0 67	U	0.41	U	0.41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
Carbazole	0.37	J	**0.67**	**U**	0.13	J	0.41	U	0 42	U	0 43	U	0 41	U	0 4	U	**0.59**	**U**
4-Chloroaniline	0 46	U	0.67	U	0 41	U	0.41	U	0.42	U	0 43	U	0 41	U	0 4	U	0.59	U
bis(2-Chloroethoxy)Methane	0.46	U	0.67	U	0 41	U	0 41	U	0.42	U	0 43	U	0.41	U	0.4	U	0 59	U
bis(2-Chloroethyl)Ether	**0.46**	**U**	[redacted]		**0.41**	**U**	**0.41**	**U**	**0.42**	**U**	**0.43**	**U**	**0.41**	**U**	**0.4**	**U**	[redacted]	
4-Chloro-3-Methylphenol	0 46	U	0.67	U	0.41	U	0 41	U	0.42	U	0 43	U	0 41	U	0 4	U	0.59	U
2-Chloronaphthalene	0.46	U	0 67	U	0.41	U	0 41	U	0 42	U	0 43	U	0.41	U	0.4	U	0 59	U
2-Chlorophenol	0 46	U	0.67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
4-Chlorophenyl-phenylether	0.46	U	0.67	U	0 41	U	0 41	U	0.42	U	0 43	U	0.41	U	0 4	U	0.59	U
Chrysene	4.1	DJ	1.6		1.1		0.17		0.056	J	0.36	J	0.22	J	0.1	J	0.61	
Dibenzo(a,h)Anthracene	1.5		[redacted]		0.25	J	0.16	J	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Dibenzofuran	0.22	J	0.13	J	0.17	J	0.41	U	0 42	U	0 43	U	0.07	J	0.053	J	0.59	U
3,3'-Dichlorobenzidine	**0.46**	**U**	**0.67**	**U**	**0.41**	**U**	**0.41**	**U**	**0.42**	**U**	**0.43**	**U**	**0.41**	**U**	**0.4**	**U**	**0.59**	**U**
2,4-Dichlorophenol	0 46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
Diethylphthalate	0.46	U	0 67	U	0.41	U	0 41	U	0.42	U	0 43	U	0.41	U	0 4	U	0 59	U
2,4-Dimethylphenol	0 46	U	0.67	U	0.41	U	0 41	U	0 42	U	0 43	U	0.41	U	0.066	J	0 59	U
Dimethyl Phthalate	0 46	U	0 67	U	0.56		0.41	U	0 42	U	0 43	U	2.2		2.2		0.59	U
Di-n-Butylphthalate	0.67		0 67	U	0.26	J	0.074	J	0 42	U	0.064	J	0.15	J	0.07	J	0.081	J
4,6-Dinitro-2-Methylphenol	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
2,4-Dinitrophenol	1 2	U	1 7	U	1	U	1	U	1.1	U	1 1	U	1.	U	1	U	1 5	U
2,4-Dinitrotoluene	0 46	U	0 67	U	0.41	U	0 41	U	0 42	U	0 43	U	0 41	U	0.4	U	0 59	U
2,6-Dinitrotoluene	0 46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
Di-n-Octyl Phthalate	0.46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
bis(2-Ethylhexyl)Phthalate	20	D	3.8		1.9		0.13		0 42	U	[illegible]		0.69		0.46		[illegible]	
Fluoranthene	6.4	D	5.8		1.8		0.11		0.063	J	0.62		0.29	J	0.19	J	0.79	
Fluorene	0.43	J	0.17	J	0.15	J	0 41	U	0 42	U	0.83		0.06	J	0.051	J	0 59	U
Hexachlorobenzene	0 46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0.4	U	0.59	U
Hexachlorobutadiene	0 46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
Hexachlorocyclopentadiene	0 46	U	0 67	U	0 41	U	0 41	U	0 42	U	0 43	U	0 41	U	0 4	U	0 59	U
Hexachloroethane	**0.46**	**U**	**0.67**	**U**	**0.41**	**U**	**0.41**	**U**	**0.42**	**U**	**0.43**	**U**	**0.41**	**U**	**0.4**	**U**	**0.59**	**U**
Indeno(1,2,3-cd)Pyrene	[redacted]		[redacted]		[redacted]		0.1	J	0 42	U	0.18	J	0.28	J	0 4	U	0.3	J
Isophorone	0.11	J	**0.67**	**U**	**0.41**	**U**	**0.41**	**U**	**0.42**	**U**	**0.43**	**U**	**0.41**	**U**	0 4	U	**0.59**	**U**

TABLE - 3b
Test Pit Soil Sample Analytical Results
Semi-Volatile Organic Compounds
December 11 and 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	TP-1 (3.5')		TP-2 (4')		TP-3 (6.75')		TP-4 (11.5')		TP-5 (7')		TP-6 (7.5')		TP-7 (5')		TP-7 (5') (dup)		TP-9 (10')	
Analyte									Concentration (ppm)									
2-Methylnaphthalene	0.33	J	0.3	J	0.2	J	0.17	J	0.42	U	2.2		1.7		1.2		0.13	J
2-Methylphenol	0.46	U	0.67	U	0.41	U	0.41	U	0.42	U	0.43	U	0.13	J	0.09	J	0.59	U
4-Methylphenol	0.46	U	0.67	U	0.41	U	0.41	U	0.42	U	0.43	U	0.23	J	0.2	J	0.1	J
Naphthalene	0.28	J	0.18	J	0.24	J	0.12	J	**0.42**	**U**	0.32	J	**1.1**		0.6		0.13	J
2-Nitroaniline	1.2	U	1.7	U	1	U	1	U	1.1	U	1.1	U	1	U	1	U	1.5	U
3-Nitroaniline	1.2	U	1.7	U	1	U	1	U	1.1	U	1.1	U	1.	U	1	U	1.5	U
Analytical Method U.S. EPA M	1.2	U	1.7	U	1	U	1	U	1.1	U	1.1	U	1	U	1.	U	1.5	U
Nitrobenzene	0.46	U	**0.67**	**U**	0.41	U	0.41	U	0.42	U	0.43	U	0.41	U	0.4	U	0.59	U
2-Nitrophenol	0.46	U	0.67	U	0.41	U	0.41	U	0.42	U	0.43	U	0.41	U	0.4	U	0.59	U
4-Nitrophenol	1.2	U	**1.7**	**U**	1.	U	1.	U	1.1	U	1.1	U	1	U	1.	U	1.5	U
N-Nitroso-Di-n-Propylamine	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
N-Nitrosodiphenylamine	0.46	U	0.67	U	0.41	U	0.41	U	0.42	U	0.43	U	0.41	U	0.4	U	0.59	U
2,2-Oxybis(1-Chloropropane)	**0.46**	**U**	**0.67**	**U**	**0.41**	**U**	**0.41**	**U**	**0.42**	**U**	**0.43**	**U**	**0.41**	**U**	**0.4**	**U**	**0.59**	**U**
Pentachlorophenol	1.2	U	1.7	U	1	U	1.	U	1.1	U	1.1	U	1	U	1	U	1.5	U
Phenanthrene	4.9	D	1.7		0.99		0.34	J	0.42	U	2.1		0.38	J	0.26	J	0.63	
Phenol	0.46	U	0.67	U	0.41	U	0.41	U	0.42	U	0.43	U	0.5		0.37	J	0.59	U
Pyrene	9.3	D	2.7		2.1		0.62		0.069	J	1.8		0.4	J	0.21	J	1	
2,4,5-Trichlorophenol	1.2	U	1.7	U	1	U	1	U	1.1	U	1.1	U	1.	U	1	U	1.5	U
2,4,6-Trichlorophenol	0.46	U	0.67	U	0.41	U	0.41	U	0.42	U	0.43	U	0.41	U	0.4	U	0.59	U

Notes

Analytical Method: U.S. EPA Method 8270 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of TP-7 (5') identified as "TP-A (5')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
D - Sample Diluted and Reanalyzed for Specified Analyte
Red Text - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
■ Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 3c
Test Pit Soil Sample Analytical Results
Inorganic Compounds
December 11 and 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	TP-1 (3.5')	TP-2 (4')	TP-3 (6.75')	TP-4 (11.5')	TP-5 (7')	TP-6 (7.5')	TP-7 (5')	TP-7 (5') (dup)	TP-9 (10')
Analyte					Concentration (ppm)				
Aluminum	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2300	2500	[illegible]
Antimony	90	[illegible]	10. U	[illegible]	[illegible]	[illegible]	10. U	10 U	[illegible]
Arsenic	43.	300.	16	6.5	6.2	25	5. U	5. U	11
Barium	[illegible]	[illegible]	190	[illegible]	82	100	26	40	140
Beryllium	1.4	1	1.4	1.4	0.58	0.73	0.39	0.35	1.6
Cadmium	[illegible]	[illegible]	[illegible]	1.1	1.2	1.6	0.5 U	0.6	2.8
Calcium	28000	25000	22000	21000	8100	37000	2000	2500	190000
Chromium	450	1300	66	680	27	120	33	27	67
Cobalt	30	21	7	18	4.6	13	1.2	2.1	8
Copper	[illegible]	[illegible]	[illegible]	280	[illegible]	190	19	33	150
Iron	140000	95000.	[illegible]	[illegible]	[illegible]	84000	[illegible]	[illegible]	[illegible]
Lead	3000.	4100.	420	940	210	110	40	57	430
Magnesium	9700	8100	7100	8100	2200	5200	840	950	83000
Manganese	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8900.	180	[illegible]	[illegible]
Mercury	14.	22.	[illegible]	0.09 U	[illegible]	0.21	0.18	0.09 U	0.18 U
Nickel	[illegible]	[illegible]	19	25. U	44	[illegible]	16	20	37
Potassium	570. U	700	880	6200. U	700	2100	500. U	400. U	4100 U
Selenium	22	[illegible]	7.8	3	13	4.6	0.5 U	0.5 U	0.5 U
Silver	1. U	2.7	1. U	12. U	1 U	1. U	1. U	1. U	8. U
Sodium	610	410	160	625. U	190	840	160	160	400. U
Thallium	0.94	1.7	0.56 U	0.58 U	0.93	[illegible]	0.4 U	0.5 U	0.65 U
Vanadium	[illegible]	[illegible]	30	46	18	1. U	2.8	12	16
Zinc	[illegible]	[illegible]	1000	110000	880	370	58	110	540

Notes.

Analytical Method: U.S. EPA Methods 200 series and 335.2 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]

Duplicate of TP-7 (5') identified as "TP-A (5')" on laboratory data sheet

U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)

Red Text - Concentration at which analyte was detected

Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard

■ Concentration or SQL equals or exceeds MDE Residential Cleanup Standard

Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 3d
Test Pit Soil Sample Analytical Results
PCBs and Pesticides
December 11 and 12, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	TP-1 (3.5')		TP-2 (4')		TP-3 (6.75')		TP-4 (11.5')		TP-5 (7')		TP-6 (7.5')		TP-7 (5')		TP-7 (5') (dup)		TP-9 (10')	
Analyte									Concentration (ppm)									
Aldrin	0.024	U	0.0035	U	0.42	U	0.0021	U	0.011	U	0.0022	U	0.0021	U	0.0021	U	0.003	U
alpha-BHC	**0.024**	**U**	0.0035	U	[illegible]		0.0021	U	**0.011**	**U**	0.0022	U	0.0021	U	0.0021	U	0.003	U
beta-BHC	**0.024**	**U**	0.0035	U	[illegible]		0.0021	U	**0.011**	**U**	0.0022	U	0.0021	U	0.0021	U	0.003	U
delta-BHC	**0.024**	**U**	0.0035	U	**0.42**	**U**	0.0021	U	**0.011**	**U**	0.0022	U	0.0021	U	0.0021	U	0.003	U
gamma-BHC (Lindane)	**0.024**	**U**	0.0035	U	**0.42**	**U**	0.0021	U	**0.011**	**U**	0.0022	U	0.0021	U	0.0021	U	0.003	U
alpha-Chlordane	0.024	U	0.0035	U	0.42	U	0.0021	U	0.011	U	0.0022	U	0.0021	U	0.0021	U	0.003	U
gamma-Chlordane	0.024	U	0.0035	U	0.42	U	0.0021	U	0.011	U	0.0022	U	0.0021	U	0.0021	U	0.003	U
4,4'-DDD	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
4,4'-DDE	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
4,4'-DDT	0.046	U	0.0067	U	0.81	U	0.0041	U	0.096	PD	0.0042	U	0.0041	U	0.004	U	0.0059	U
Dieldrin	[illegible]		**0.0067**	**U**	**0.81**	**U**	**0.0041**	**U**	**0.021**	**U**	**0.0042**	**U**	**0.0041**	**U**	**0.004**	**U**	**0.0059**	**U**
Endosulfan I	0.024	U	0.0035	U	0.42	U	0.0021	U	0.011	U	0.0022	U	0.0021	U	0.0021	U	0.003	U
Endosulfan II	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
Endosulfan sulfate	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
Endrin	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
Endrin aldehyde	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
Endrin ketone	0.046	U	0.0067	U	0.81	U	0.0041	U	0.021	U	0.0042	U	0.0041	U	0.004	U	0.0059	U
Heptachlor	0.024	U	0.0035	U	[illegible]		0.0021	U	0.011	U	0.0022	U	0.0021	U	0.0021	U	0.003	U
Heptachlor epoxide	0.024	U	0.0035	U	[illegible]		0.0021	U	0.011	U	0.0022	U	0.0021	U	0.0021	U	0.003	U
Methoxychlor	0.24	U	0.035	U	4.2	U	0.021	U	0.11	U	0.022	U	0.021	U	0.021	U	0.03	U
Toxaphene	[illegible]		0.35	U	**42.**	**U**	0.21	U	[illegible]		0.22	U	0.21	U	0.21	U	0.3	U
Aroclor-1016	0.46	U	0.067	U	[illegible]		0.041	U	0.21	U	0.042	U	0.041	U	0.04	U	0.059	U
Aroclor-1221	[illegible]		0.14	U	**17.**	**U**	0.083	U	[illegible]		0.086	U	0.083	U	0.082	U	0.12	U
Aroclor-1232	[illegible]		0.067	U	**8.1**	**U**	0.041	U	0.21	U	0.042	U	0.041	U	0.04	U	0.059	U
Aroclor-1242	[illegible]		0.067	U	**8.1**	**U**	0.041	U	0.21	U	8.8	D	0.041	U	0.04	U	0.059	U
Aroclor-1248	[illegible]		0.067	U	**8.1**	**U**	3.1	PD	[illegible]		9.1	D	[illegible]		[illegible]		[illegible]	
Aroclor-1254	72.	D	84	D	800	D	5.6	PD	0.21	U	0.042	U	[illegible]		[illegible]		3.7	D
Aroclor-1260	43	D	0.067	U	**8.1**	**U**	0.041	U	[illegible]		0.042	U	0.041	U	0.31	P	0.059	U

Notes
Analytical Method: U.S. EPA Methods 8081 and 8082 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of TP-7 (5') identified as "TP-A (5')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
D - Sample Diluted and Reanalyzed for Specified Analyte
P - Results differed by more than 25%, Lower Result Reported
Red Text - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[illegible] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 4a
Monitoring Well Soil Sample Analytical Results
Volatile Organic Compounds
December 19 and 20, 2001

Sauer Dump Site
Dundalk, MD

Sample Identification (Depth)	MW-1 (8'-12')		MW-1 (8'-12') (dup)		MW-2 (9'-11')		MW-3 (13.5'-15')		MW-4 (11'-12')		MW-5 (12'-13.5')	
Analyte					Concentration (ppm)							
Acetone	0.048		0.022	J	0.086		0.015		0.021		0.015	U
Benzene	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Bromodichloromethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Bromoform	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Bromomethane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
2-Butanone	0.018	J	0.026	U	0.025	J	0.015	U	0.014	U	0.015	U
Carbon Disulfide	0.024	J	0.018	J	0.017	J	0.015	U	0.014	U	0.015	U
Carbon Tetrachloride	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Chlorobenzene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Chloroethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	0.015	U	0.014	U	0.015	U
Chloroform	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Chloromethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Cyclohexane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Dibromochloromethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
1,2-Dibromo-3-chloropropane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
1,2-Dibromoethane	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1,2-Dichlorobenzene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,3-Dichlorobenzene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,4-Dichlorobenzene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Dichlorodifluoromethane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,1-Dichloroethane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,2-Dichloroethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
1,1-Dichloroethene	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
cis-1,2-Dichloroethene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
trans-1,2-Dichloroethene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,2-Dichloropropane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
cis-1,3-Dichloropropene	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
trans-1,3-Dichloropropene	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Ethylbenzene	0.024	U	0.026	U	0.002	J	0.015	U	0.014	U	0.015	U
2-Hexanone	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Isopropylbenzene	0.024	U	0.026	U	0.005	J	0.015	U	0.014	U	0.015	U
Methyl Acetate	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Methylcyclohexane	0.024	U	0.026	U	0.006	J	0.015	U	0.014	U	0.015	U
Methylene Chloride	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	0.015	U	0.014	U	0.068	
4-Methyl-2-Pentanone	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U

TABLE - 4a
Monitoring Well Soil Sample Analytical Results
Volatile Organic Compounds
December 19 and 20, 2001

Sauer Dump Site
Dundalk, MD

Sample Identification (Depth)	MW-1 (8'-12')		MW-1 (8'-12') (dup)		MW-2 (9'-11')		MW-3 (13.5'-15')		MW-4 (11'-12')		MW-5 (12'-13.5')	
Analyte					Concentration (ppm)							
Methyl-t-Butyl Ether	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Styrene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,1,2,2-Tetrachloroethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Tetrachloroethene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Toluene	0.001	J	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,2,4-Trichlorobenzene	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,1,1-Trichloroethane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
1,1,2-Trichloroethane	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Trichloroethene	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	0.014	U	**0.015**	**U**
1,1, 2-Trichloro-1, 2, 2-trifluoroethane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Trichlorofluoromethane	0.024	U	0.026	U	0.032	U	0.015	U	0.014	U	0.015	U
Vinyl Chloride	**0.024**	**U**	**0.026**	**U**	**0.032**	**U**	**0.015**	**U**	**0.014**	**U**	**0.015**	**U**
Xylenes (Total)	0.006	J	0.026	U	0.003	J	0.015	U	0.014	U	0.015	U

Notes.
Analytical Method U.S. EPA Method 8260 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of MW-1 (8-12') identified as "MW-A (8-12')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
Red Text - **Concentration at which analyte was detected**
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or *SQL* equals or exceeds *MDE Non-Residential Cleanup Standard*

TABLE - 4b
Monitoring Well Soil Sample Analytical Results
Semi-Volatile Organic Compounds
December 19 and 20, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1 (8'-12')		MW-1 (8'-12') (dup)		MW-2 (9'-11')		MW-3 (13 5'-15')		MW-4 (11'-12')		MW-5 (12'-13 5')	
Analyte					Concentration (ppm)							
Acenaphthene	0 97	U	0 87	U	0.17	J	0.49	U	0 47	U	0.79	U
Acenaphthylene	0.97	U	0 87	U	1 1	U	0 49	U	0.47	U	0.79	U
Acetophenone	0 97	U	0.87	U	1 1	U	0.49	U	0 47	U	0 79	U
Anthracene	0 97	U	0.87	U	0.13	J	0.49	U	0.47	U	0 79	U
Benzaldehyde	0 97	U	0 87	U	1 1	U	0.49	U	0 47	U	0.79	U
Benzo(a)Anthracene	0.15	J	[redacted]	[redacted]	[redacted]	[redacted]	0.49	U	0 47	U	0.19	J
Benzo(a)Pyrene	0.11	J	**0.87**	**U**	**1.1**	**U**	[redacted]	[redacted]	[redacted]	[redacted]	0.17	J
Benzo(b)fluoranthene	0.14	J	[redacted]	[redacted]	[redacted]	[redacted]	0.49	U	0.47	U	0.2	J
Benzo(g,h,i)Perylene	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
Benzo(k)fluoranthene	0.11	J	0.87	U	1.1	U	0 49	U	0.47	U	0.15	J
Butylbenzylphthalate	0.97	U	0 87	U	1.1	U	0.49	U	0.47	U	0.79	U
1,1'-Biphenyl	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0.79	U
4-Bromophenyl-phenylether	0 97	U	0 87	U	1 1	U	0.49	U	0 47	U	0 79	U
Caprolactam	0.97	U	0 87	U	1.1	U	0 49	U	0.47	U	0.79	U
Carbazole	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	**0.49**	**U**	**0.47**	**U**	**0.79**	**U**
4-Chloroaniline	**0.97**	**U**	0.87	U	**1.1**	**U**	0 49	U	0.47	U	0 79	U
bis(2-Chloroethoxy)Methane	0.97	U	0 87	U	1.1	U	0.49	U	0.47	U	0.79	U
bis(2-Chloroethyl)Ether	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**0.49**	**U**	**0.47**	**U**	[redacted]	[redacted]
4-Chloro-3-Methylphenol	0.97	U	0 87	U	1 1	U	0 49	U	0.47	U	0 79	U
2-Chloronaphthalene	0.97	U	0 87	U	1.1	U	0 49	U	0.47	U	0 79	U
2-Chlorophenol	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
4-Chlorophenyl-phenylether	0.97	U	0.87	U	1.1	U	0 49	U	0.47	U	0 79	U
Chrysene	0.19	J	0 87	U	1 1	U	0.49	U	0 47	U	0.28	J
Dibenzo(a,h)Anthracene	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	[redacted]	[redacted]	[redacted]	[redacted]	**0.79**	**U**
Dibenzofuran	0.97	U	0 87	U	0.15	J	0 49	U	0.47	U	0 79	U
3,3'-Dichlorobenzidine	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	**0.49**	**U**	**0.47**	**U**	**0.79**	**U**
2,4-Dichlorophenol	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
Diethylphthalate	0.97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
2,4-Dimethylphenol	0.97	U	0.87	U	1 1	U	0 49	U	0 47	U	0 79	U
Dimethyl Phthalate	0 97	U	0 87	U	1 1	U	0 49	U	0.47	U	0 79	U
Di-n-Butylphthalate	0 97	U	0.13	JB	1.1	U	0.1	JB	0.47	U	0.12	JB
4,6-Dinitro-2-Methylphenol	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2,4-Dinitrophenol	2 4	U	2 2	U	2 7	U	1 2	U	1 2	U	2	U
2,4-Dinitrotoluene	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
2,6-Dinitrotoluene	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
Di-n-Octyl Phthalate	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
bis(2-Ethylhexyl)Phthalate	1.6	B	[illegible]	B	0.36	JB	0.28	JB	0.058	JB	3.3	B
Fluoranthene	0.33	J	0 87	U	0.37	J	0 49	U	0 47	U	0.39	J
Fluorene	0 97	U	0 87	U	0.16	J	0 49	U	0 47	U	0 79	U
Hexachlorobenzene	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
Hexachlorobutadiene	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
Hexachlorocyclopentadiene	0 97	U	0 87	U	1 1	U	0 49	U	0 47	U	0 79	U
Hexachloroethane	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	**0.49**	**U**	**0.47**	**U**	**0.79**	**U**
Indeno(1,2,3-cd)Pyrene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	0 49	U	0 47	U	0.11	J
Isophorone	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	**0.49**	**U**	**0.47**	**U**	**0.79**	**U**

TABLE - 4b
Monitoring Well Soil Sample Analytical Results
Semi-Volatile Organic Compounds
December 19 and 20, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1 (8'-12')		MW-1 (8'-12') (dup)		MW-2 (9'-11')		MW-3 (13.5'-15')		MW-4 (11'-12')		MW-5 (12'-13.5')	
Analyte					Concentration (ppm)							
2-Methylnaphthalene	0.97	U	0.87	U	0.43	J	0.49	U	0.47	U	0.22	J
2-Methylphenol	0.97	U	0.87	U	1.1	U	0.49	U	0.47	U	0.79	U
4-Methylphenol	0.97	U	0.87	U	1.1	U	0.49	U	0.47	U	0.79	U
Naphthalene	**0.97**	**U**	**0.87**	**U**	0.29	J	**0.49**	**U**	**0.47**	**U**	0.14	J
2-Nitroaniline	2.4	U	2.2	U	2.7	U	1.2	U	1.2	U	2	U
3-Nitroaniline	2.4	U	2.2	U	2.7	U	1.2	U	1.2	U	2	U
Analytical Method U.S. EPA M	2.4	U	2.2	U	2.7	U	1.2	U	1.2	U	2	U
Nitrobenzene	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	0.49	U	0.47	U	**0.79**	**U**
2-Nitrophenol	0.97	U	0.87	U	1.1	U	0.49	U	0.47	U	0.79	U
4-Nitrophenol	**2.4**	**U**	**2.2**	**U**	**2.7**	**U**	1.2	U	1.2	U	**2.**	**U**
N-Nitroso-Di-n-Propylamine	0.97	U	0.87	U	1.1	U	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
N-Nitrosodiphenylamine	0.97	U	0.87	U	1.1	U	0.49	U	0.47	U	0.79	U
2,2-Oxybis(1-Chloropropane)	**0.97**	**U**	**0.87**	**U**	**1.1**	**U**	**0.49**	**U**	**0.47**	**U**	**0.79**	**U**
Pentachlorophenol	2.4	U	2.2	U	2.7	U	1.2	U	1.2	U	2	U
Phenanthrene	0.17	J	0.87	U	0.53	J	0.49	U	0.47	U	0.35	J
Phenol	0.97	U	0.87	U	1.1	U	0.49	U	0.47	U	1.2	
Pyrene	0.31	J	0.87	U	0.24	J	0.49	U	0.47	U	0.47	J
2,4,5-Trichlorophenol	2.4	U	2.2	U	2.7	U	1.2	U	1.2	U	2	U
2,4,6-Trichlorophenol	0.97	U	0.87	U	1.1	U	0.49	U	0.47	U	0.79	U

Notes

Analytical Method U.S. EPA Method 8270 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of MW-1 (8-12') identified as "MW-A (8-12')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
B - Analyte detected in blank
Red Text - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[illegible] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 4c
Monitoring Well Soil Sample Analytical Results
Inorganic Compounds
December 19 and 20, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1 (8'-12')		MW-1 (8'-12') (dup)		MW-2 (9'-11')		MW-3 (13.5'-15')		MW-4 (11'-12')		MW-5 (12'-13.5')	
Analyte	Concentration (ppm)											
Aluminum	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Antimony	[redacted]		[redacted]		[redacted]		10	U	10	U	10	U
Arsenic	11		[illegible]		12		[illegible]		[illegible]		[redacted]	
Barium	[illegible]				[illegible]		[illegible]		[illegible]		[illegible]	
Beryllium	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Cadmium	[illegible]				[illegible]		[illegible]		0.06	U		
Calcium	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]			
Chromium	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]			
Cobalt	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Copper	[redacted]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Iron	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		[redacted]	
Lead	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Magnesium	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Manganese	[redacted]		[redacted]		[redacted]				[illegible]		[illegible]	
Mercury	[illegible]		[illegible]		0.22	U	[redacted]		0.09	U	[redacted]	
Nickel			[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Potassium	[illegible]		[illegible]		[illegible]				[illegible]		[illegible]	
Selenium			[illegible]		[illegible]				[illegible]			
Silver	2	U	[illegible]		3	U	1	U	1	U	1	U
Sodium	[illegible]		[illegible]		[illegible]							
Thallium	0.38	U	0.4	U	0.54	U	0.22	U	0.23	U	0.2	U
Vanadium	[redacted]		[redacted]		[redacted]		[illegible]		[illegible]			
Zinc	[illegible]		[illegible]		[illegible]							

Notes
Analytical Method U.S. EPA Methods 200 series and 335.2 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of MW-1 (8-12') identified as "MW-A (8-12')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
[illegible] - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE *Residential* Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

Analytical Method U.S. EPA Method 8260 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]

TABLE - 4d
Monitoring Well Soil Sample Analytical Results
PCBs and Pesticides
December 19 and 20, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1 (8'-12')		MW-1 (8'-12') (dup)		MW-2 (9'-11')		MW-3 (13.5'-15')		MW-4 (11'-12')		MW-5 (12'-13.5')	
Analyte							Concentration (ppm)					
Aldrin	0.005	U	0.0045	U	0.0055	U	0.0025	U	0.0024	U	0.004	U
alpha-BHC	**0.005**	**U**	**0.0045**	**U**	**0.0055**	**U**	0.0025	U	0.0024	U	**0.004**	**U**
beta-BHC	**0.005**	**U**	**0.0045**	**U**	**0.0055**	**U**	0.0025	U	0.0024	U	**0.004**	**U**
delta-BHC	**0.005**	**U**	**0.0045**	**U**	**0.0055**	**U**	0.0025	U	0.0024	U	0.004	U
gamma-BHC (Lindane)	**0.005**	**U**	**0.0045**	**U**	**0.0055**	**U**	0.0025	U	0.0024	U	0.004	U
alpha-Chlordane	0.005	U	0.0045	U	0.0055	U	0.0025	U	0.0024	U	0.004	U
gamma-Chlordane	0.005	U	0.0045	U	0.0055	U	0.0025	U	0.0024	U	0.004	U
4,4'-DDD	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
4,4'-DDE	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
4,4'-DDT	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
Dieldrin	**0.0097**	**U**	**0.0087**	**U**	**0.011**	**U**	**0.0049**	**U**	**0.0047**	**U**	**0.0079**	**U**
Endosulfan I	0.005	U	0.0045	U	0.0055	U	0.0025	U	0.0024	U	0.004	U
Endosulfan II	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
Endosulfan sulfate	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
Endrin	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
Endrin aldehyde	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
Endrin ketone	0.0097	U	0.0087	U	0.011	U	0.0049	U	0.0047	U	0.0079	U
Heptachlor	0.005	U	0.0045	U	0.0055	U	0.0025	U	0.0024	U	0.004	U
Heptachlor epoxide	0.005	U	0.0045	U	0.0055	U	0.0025	U	0.0024	U	0.004	U
Methoxychlor	0.05	U	0.045	U	0.055	U	0.025	U	0.024	U	0.04	U
Toxaphene	0.5	U	0.45	U	0.55	U	0.25	U	0.24	U	0.4	U
Aroclor-1016	0.097	U	0.087	U	0.11	U	0.049	U	0.047	U	0.079	U
Aroclor-1221	0.2	U	0.18	U	0.22	U	0.099	U	0.096	U	0.16	U
Aroclor-1232	0.097	U	0.087	U	0.11	U	0.049	U	0.047	U	0.079	U
Aroclor-1242	0.097	U	0.087	U	0.11	U	0.049	U			0.079	U
Aroclor-1248	0.097	U	0.087	U	0.11	U	0.049	U	0.047	U	0.079	U
Aroclor-1254	[redacted]				0.11	U	0.049	U	0.047	U	0.079	U
Aroclor-1260	[redacted]		0.087	U	0.11	U	0.049	U	0.047	U	[redacted]	

Notes

Analytical Method U.S. EPA Methods 8081 and 8082 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of MW-1 (8-12') identified as "MW-A (8-12')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
P - Results differed by more than 25%, Lower Result Reported
[illegible] - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

Analytical Method U.S. EPA Method 8260 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]

TABLE - 5a
Sediment Sample Analytical Results
Semi-Volatile Organic Compounds
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth) Analyte	SDMT-1 (0-6")	SDMT-1 (6-12")	SDMT-2 (0-20")	SDMT-2 (20-30")	SDMT-3 (0-4")	SDMT-3 (4-10") Concentration (ppm)	SDMT-4 (0-20")	SDMT-4 (20-30")	SDMT-4 (20-30") (dup)	SDMT-5 (0-20")	SDMT-5 (20-30")
Acenaphthene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Acenaphthylene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Acetophenone	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Atrazine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Benzo(a)Anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
Benzo(a)Pyrene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	
Benzo(b)fluoranthene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	
Benzo(g,h,i)Perylene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Benzo(k)fluoranthene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	
Butylbenzylphthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1'-Biphenyl	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Bromophenyl-phenylether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Caprolactam	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbazole	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Chloroaniline	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Chloroethoxy)Methane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Chloroethyl)Ether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Chloroisopropyl)Ether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Chloro-3-Methylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Chloronaphthalene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Chlorophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Chlorophenyl-phenylether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chrysene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	
Dibenzo(a,h)Anthracene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Dibenzofuran	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
3,3'-Dichlorobenzidine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,4-Dichlorophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Diethylphthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,4-Dimethylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Dimethyl Phthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Di-n-Butylphthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4,6-Dinitro-2-Methylphenol	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
2,4-Dinitrophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
2,4-Dinitrotoluene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,6-Dinitrotoluene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Di-n-Octyl Phthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Ethylhexyl)Phthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Fluoranthene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	
Fluorene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hexachlorobenzene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Hexachlorobutadiene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Hexachlorocyclopentadiene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Hexachloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Indeno(1,2,3-cd)Pyrene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Isophorone	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Methylnaphthalene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2-Methylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Methylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Naphthalene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

TABLE - 5a
Sediment Sample Analytical Results
Semi-Volatile Organic Compounds
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SDMT-1 (0-6")	SDMT-1 (6-12")	SDMT-2 (0-20")	SDMT-2 (20-30")	SDMT-3 (0-4")	SDMT-3 (4-10")	SDMT-4 (0-20")	SDMT-4 (20-30")	SDMT-4 (20-30") (dup)	SDMT-5 (0-20")	SDMT-5 (20-30")
Analyte						Concentration (ppm)					
2-Nitroaniline	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
Analytical Method: U S. EPA M	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
4-Nitroaniline	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
Nitrobenzene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Nitrophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Nitrophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
N-Nitroso-Di-n-Propylamine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
N-Nitrosodiphenylamine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Pentachlorophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
Phenanthrene	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
Phenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Pyrene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	
2,4,5-Trichlorophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
2,4,6-Trichlorophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U

Notes:

Analytical Method: U S EPA Method 8270 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SDMT-6 (0-4') identified as "SDMT-A (0-4')" on laboratory data sheet
Duplicate of SDMT-4 (20-30') identified as "SDMT-B (20-30')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
Red Text - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[illegible] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 5a
Sediment Sample Analytical Results
Semi-Volatile Organic Compounds
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SDMT-6 (0-4")	SDMT-6 (0-4") (dup)	SDMT-6 (4-7")	SDMT-7 (0-20")	SDMT-7 (20-30")	SDMT-8 (0-20")	SDMT-8 (20-30")	SDMT-9 (0-20")	SDMT-9 (20-30")
Analyte					Concentration (ppm)				
Acenaphthene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Acenaphthylene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Acetophenone	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Anthracene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Atrazine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Benzo(a)Anthracene		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Benzo(a)Pyrene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Benzo(b)fluoranthene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Benzo(g,h,i)Perylene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Benzo(k)fluoranthene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Butylbenzylphthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
1,1'-Biphenyl	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Bromophenyl-phenylether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Caprolactam	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Carbazole	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Chloroaniline	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Chloroethoxy)Methane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Chloroethyl)Ether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Chloroisopropyl)Ether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Chloro-3-Methylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Chloronaphthalene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Chlorophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Chlorophenyl-phenylether	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Chrysene		0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Dibenz(a,h)Anthracene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Dibenzofuran	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
3,3'-Dichlorobenzidine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,4-Dichlorophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Diethylphthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,4-Dimethylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Dimethyl Phthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Di-n-Butylphthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4,6-Dinitro-2-Methylphenol	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
2,4-Dinitrophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
2,4-Dinitrotoluene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,6-Dinitrotoluene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Di-n-Octyl Phthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
bis(2-Ethylhexyl)Phthalate	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Fluoranthene		0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Fluorene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hexachlorobenzene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Hexachlorobutadiene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Hexachlorocyclopentadiene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Hexachloroethane	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Indeno(1,2,3-cd)Pyrene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Isophorone	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Methylnaphthalene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2-Methylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Methylphenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Naphthalene	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

TABLE - 5a
Sediment Sample Analytical Results
Semi-Volatile Organic Compounds
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SDMT-6 (0-4")	SDMT-6 (0-4") (dup)	SDMT-6 (4-7")	SDMT-7 (0-20")	SDMT-7 (20-30")	SDMT-8 (0-20")	SDMT-8 (20-30")	SDMT-9 (0-20")	SDMT-9 (20-30")
Analyte					Concentration (ppm)				
2-Nitroaniline	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
3-Nitroaniline	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
4-Nitroaniline	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
Nitrobenzene	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2-Nitrophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
4-Nitrophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
N-Nitroso-Di-n-Propylamine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
N-Nitrosodiphenylamine	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Pentachlorophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
Phenanthrene	[illegible]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Phenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Pyrene	[illegible]	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
2,4,5-Trichlorophenol	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
2,4,6-Trichlorophenol	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U

Notes:
Analytical Method: U.S. EPA Method 8270 [results reported in milligram/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SDMT-6 (0-4') identified as "SDMT-A (0-4')" on laboratory data sheet
Duplicate of SDMT-4 (20-30') identified as "SDMT-B (20-30')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
[illegible] - *Concentration at which analyte was detected*
Gray Highlight - *Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard*
[redacted] Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Residential Cleanup Standard

TABLE - 5b
Sediment Sample Analytical Results
Inorganic Compounds
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth) Analyte	SDMT-1 (0-6")	SDMT-1 (6-12")	SDMT-2 (0-20")	SDMT-2 (20-30")	SDMT-3 (0-4")	SDMT-3 (4-10") Concentration (ppm)	SDMT-4 (0-20")	SDMT-4 (20-30")	SDMT-4 (20-30") (dup)	SDMT-5 (0-20")	SDMT-5 (20-30")
Aluminum	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Antimony	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Arsenic	2 5 U	[illegible]	2. U	2. U	2. U	[illegible]	2 U	2 U	[illegible]	2. U	2. U
Barium	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Beryllium	1 U	1. U	1. U	1. U	1 U	1 U	1 U	1 U	1 U	1 U	1. U
Cadmium	1 U	1 U	1. U	1. U	1. U	1 U	1 U	1 U	1 U	1. U	1. U
Calcium	[illegible]		[illegible]	[illegible]		[illegible]		[illegible]	[illegible]		[illegible]
Chromium		[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]
Cobalt	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]
Copper			[illegible]		[illegible]	[illegible]	[redacted]	[illegible]	[illegible]	[illegible]	[redacted]
Iron	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Lead	[illegible]			[illegible]		[illegible]	[redacted]				[redacted]
Magnesium	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		[illegible]	[illegible]
Manganese			[illegible]	[illegible]			[illegible]	[illegible]	[illegible]		[illegible]
Mercury	0.1 U	0 1 U	0 1 U	0 1 U	0 1 U	0 1 U	0 1 U	0 1 U	0 1 U	0 1 U	[illegible]
Nickel		[illegible]	[redacted]			[illegible]	[redacted]	[illegible]			[redacted]
Potassium		[illegible]	[illegible]	[illegible]	[illegible]					[illegible]	[illegible]
Selenium	5 U	5 U	5 U	5. U	5 U	5 U	5 U	5 U	5 U	5 U	5. U
Silver	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Sodium	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Thallium	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2. U	2. U
Vanadium	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]	[illegible]
Zinc	[illegible]	[illegible]		[illegible]			[redacted]		[illegible]	[illegible]	[redacted]

Notes
Analytical Method U.S. EPA Methods 200 series and 335 2 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SDMT-6 (0-4') identified as "SDMT-A (0-4')" on laboratory data sheet
Duplicate of SDMT-4 (20-30') identified as "SDMT-B (20-30')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
[illegible] - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 5b
Sediment Sample Analytical Results
Inorganic Compounds
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SDMT-6 (0-4")		SDMT-6 (0-4") (dup)		SDMT-6 (4-7")		SDMT-7 (0-20")		SDMT-7 (20-30")		SDMT-8 (0-20")		SDMT-8 (20-30")		SDMT-9 (0-20")		SDMT-9 (20-30")	
Analyte									Concentration (ppm)									
Aluminum	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]				[illegible]				[illegible]	
Antimony	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Arsenic	2	U	2.	U	2	U	2	U	2.	U	2	U	4	U	2	U	4.	U
Barium	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Beryllium	1	U	1	U	1	U	1	U	1	U	1	U	2.	U	1	U	2	U
Cadmium	1	U	1.	U	1	U	1.	U	1.	U	1	U	[illegible]		1.	U	[illegible]	
Calcium	[illegible]		[illegible]						[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Chromium			[illegible]				[illegible]		[illegible]		[illegible]				[illegible]			
Cobalt			2.5	U	[illegible]				[illegible]		[illegible]		5	U			5	U
Copper	[illegible]						[illegible]				[illegible]		5.	U	[illegible]		5.	U
Iron	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Lead	[illegible]								[illegible]		[illegible]		5	U	[illegible]		5	U
Magnesium					[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Manganese	[illegible]		[illegible]								[illegible]		[illegible]		[illegible]			
Mercury	0.1	U	0.1	U	0 1	U	0.1	U	0.1	U	0.1	U	0 1	U	0 1	U	0.1	U
Nickel	[illegible]		[illegible]				[illegible]		[illegible]		[illegible]				[illegible]			
Potassium	[illegible]		[illegible]		[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Selenium	5.	U	5.	U	5	U	5.	U	5.	U	5.	U	5	U	5.	U	5.	U
Silver	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		4.	U	[illegible]		4	U
Sodium	[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]	
Thallium	2.	U	2	U	2.	U	2.	U	2	U	2	U	4	U	2	U	2	U
Vanadium					[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]			
Zinc	[illegible]				[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]			

Notes.
Analytical Method U.S. EPA Methods 200 series and 335 2 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SDMT-6 (0-4') identified as "SDMT-A (0-4')" on laboratory data sheet
Duplicate of SDMT-4 (20-30') identified as "SDMT-B (20-30')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
[illegible] - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[illegible] Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Residential Cleanup Standard

TABLE - 5c
Sediment Sample Analytical Results
PCBs and Pesticides
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SDMT-1 (0-6")	SDMT-1 (6-12")	SDMT-2 (0-20")	SDMT-2 (20-30")	SDMT-3 (0-4")	SDMT-3 (4-10")	SDMT-4 (0-20")	SDMT-4 (20-30")	SDMT-4 (20-30") (dup)	SDMT-5 (0-20")	SDMT-5 (20-30")
Analyte						Concentration (ppm)					
Aldrin	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
alpha-BHC	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
beta-BHC	0.004 U	0.004 U	0.004 U	0.004 U	0.005 U	0.005 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
delta-BHC	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
gamma-BHC (Lindane)	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
alpha-Chlordane	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
gamma-Chlordane	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
4,4'-DDD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4,4'-DDE	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4,4'-DDT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dieldrin	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Endosulfan I	0.004 U	0.004 U	0.004 U	0.004 U	0 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Endosulfan II	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.02 U
Endosulfan sulfate	0.01 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.004 U
Endrin	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Endrin aldehyde	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Endrin ketone	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Heptachlor	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Heptachlor epoxide	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Methoxychlor	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Toxaphene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor-1016	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
Aroclor-1221	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Aroclor-1232	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
Aroclor-1242	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
Aroclor-1248	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U
Aroclor-1254	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U
Aroclor-1260	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
Total PCBs	0 U	0 U	0 U	0 U	0 U	0. U	0 U	0 U	0 U	0 U	0 U

Notes:
Analytical Method U.S. EPA Methods 8081 and 8082 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SDMT-6 (0-4') identified as "SDMT-A (0-4')" on laboratory data sheet
Duplicate of SDMT-4 (20-30') identified as "SDMT-B (20-30')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
 - Concentration at which analyte was detected
Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard
[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 5c
Sediment Sample Analytical Results
PCBs and Pesticides
December 18 and 19, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	SDMT-6 (0-4")	SDMT-6 (0-4") (dup)	SDMT-6 (4-7")	SDMT-7 (0-20")	SDMT-7 (20-30")	SDMT-8 (0-20")	SDMT-8 (20-30")	SDMT-9 (0-20")	SDMT-9 (20-30")
Analyte					Concentration (ppm)				
Aldrin	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
alpha-BHC	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
beta-BHC	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
delta-BHC	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
gamma-BHC (Lindane)	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
alpha-Chlordane	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
gamma-Chlordane	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
4,4'-DDD	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4,4'-DDE	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
4,4'-DDT	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dieldrin	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Endosulfan I	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Endosulfan II	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Endosulfan sulfate	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Endrin	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Endrin aldehyde	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Endrin ketone	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Heptachlor	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Heptachlor epoxide	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Methoxychlor	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Toxaphene	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Aroclor-1016	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U
Aroclor-1221	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U	0.023 U
Aroclor-1232	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U	0.027 U
Aroclor-1242	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U
Aroclor-1248	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U
Aroclor-1254	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U
Aroclor-1260	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U	0.007 U
Total PCBs	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0 U

Notes

Analytical Method. U.S. EPA Methods 8081 and 8082 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]
Duplicate of SDMT-6 (0-4') identified as "SDMT-A (0-4')" on laboratory data sheet
Duplicate of SDMT-4 (20-30') identified as "SDMT-B (20-30')" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
- Concentration at which analyte was detected
Gray Highlight - *Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard*
[redacted] Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard
Yellow Highlight - Concentration or SQL equals or exceeds MDE Residential Cleanup Standard

TABLE - 6a
Groundwater Sample Analytical Results
Volatile Organic Compounds
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1		MW-1 (dup)		MW-2		MW-3		MW-4		MW-5		FB-1		TB-1	
Analyte							Concentration (ppm)									
Acetone	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.05	U	0.05	U
Benzene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Bromodichloromethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Bromoform	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Bromomethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
2-Butanone	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Carbon Disulfide	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.05	U	0.05	U
Carbon Tetrachloride	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Chlorobenzene	0.001	U	0.001	U	0.003		0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Chloroethane	0.001	U	0.001	U	0.006		0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Chloroform	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Chloromethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Cyclohexane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Dibromochloromethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,2-Dibromo-3-chloropropane	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.05	U	0.05	U
1,2-Dibromoethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,2-Dichlorobenzene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,3-Dichlorobenzene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,4-Dichlorobenzene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Dichlorodifluoromethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,1-Dichloroethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,2-Dichloroethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,1-Dichloroethene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
cis-1,2-Dichloroethene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
trans-1,2-Dichloroethene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,2-Dichloropropane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
cis-1,3-Dichloropropene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
trans-1,3-Dichloropropene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Ethylbenzene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
2-Hexanone	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.05	U	0.05	U
Isopropylbenzene	0.001	U	0.001	U	0.003		0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Methyl Acetate	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Methylcyclohexane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U

TABLE - 6a
Groundwater Sample Analytical Results
Volatile Organic Compounds
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1		MW-1 (dup)		MW-2		MW-3		MW-4		MW-5		FB-1		TB-1	
Analyte							Concentration (ppm)									
Methylene Chloride	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.002	JB
4-Methyl-2-Pentanone	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.05	U	0.05	U
Methyl-t-Butyl Ether	0.001		0.002		0.01	U	0.01	U	0.01	U	0.01	U	0.05	U	0.05	U
Styrene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,1,2,2-Tetrachloroethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Tetrachloroethene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Toluene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,2,4-Trichlorobenzene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,1,1-Trichloroethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,1,2-Trichloroethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Trichloroethene	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
1,1, 2-Trichloro-1, 2, 2-trifluoroethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Trichlorofluoromethane	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Vinyl Chloride	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U	0.005	U	0.005	U
Xylenes (Total)	0.015	U	0.015	U	0.015	U	0.015	U	0.015	U	0.015	U	0.075	U	0.075	U

Notes:
Analytical Method: U.S. EPA Method 8260 [results reported in milligram/liter (mg/L) or parts per million (ppm)]
Duplicate of MW-1 identified as "MW-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
B - Analyte detected in blank
Red Text - Concentration at which analyte was detected
Yellow Highlight - Concentration or SQL equals or exceeds MDE Groundwater Standard (Type I and II Aquifers)

TABLE - 6b
Groundwater Sample Analytical Results
Semi-Volatile Organic Compounds
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1		MW-1 (dup)		MW-2		MW-3		MW-4		MW-5		FB-1		TB-1	
Analyte							Concentration (ppm)									
Acenaphthene	0.01	U	0.001	J	0.001	J	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Acenaphthylene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Acetophenone	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Anthracene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Atrazine	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Benzo(a)Anthracene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Benzo(a)Pyrene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Benzo(b)fluoranthene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Benzo(g,h,i)Perylene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Benzo(k)fluoranthene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Butylbenzylphthalate	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
1,1'-Biphenyl	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
4-Bromophenyl-phenylether	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Caprolactam	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Carbazole	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
4-Chloroaniline	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
bis(2-Chloroethoxy)Methane	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
bis(2-Chloroethyl)Ether	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
bis(2-Chloroisopropyl)Ether	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
4-Chloro-3-Methylphenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2-Chloronaphthalene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2-Chlorophenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
4-Chlorophenyl-phenylether	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Chrysene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Dibenzo(a,h)Anthracene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Dibenzofuran	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
3,3'-Dichlorobenzidine	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
2,4-Dichlorophenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Diethylphthalate	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2,4-Dimethylphenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Dimethyl Phthalate	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Di-n-Butylphthalate	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
4,6-Dinitro-2-Methylphenol	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U
2,4-Dinitrophenol	**0.025**	**U**	**0.025**	**U**	**0.025**	**U**	**0.025**	**U**	**0.025**	**U**	**0.025**	**U**	**0.025**	**U**	**0.025**	**U**
2,4-Dinitrotoluene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2,6-Dinitrotoluene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Di-n-Octyl Phthalate	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
bis(2-Ethylhexyl)Phthalate	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Fluoranthene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Fluorene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Hexachlorobenzene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Hexachlorobutadiene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Hexachlorocyclopentadiene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Hexachloroethane	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**

TABLE - 6b
Groundwater Sample Analytical Results
Semi-Volatile Organic Compounds
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1		MW-1 (dup)		MW-2		MW-3		MW-4		MW-5		FB-1		TB-1	
Analyte	Concentration (ppm)															
Indeno(1,2,3-cd)Pyrene	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Isophorone	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2-Methylnaphthalene	0.01	U	0.01	U	0.003	J	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2-Methylphenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
4-Methylphenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Naphthalene	**0.01**	**U**	**0.01**	**U**	0.004	J	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
2-Nitroaniline	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Analytical Method U.S. EPA	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U
4-Nitroaniline	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
Nitrobenzene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2-Nitrophenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
4-Nitrophenol	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U
N-Nitroso-Di-n-Propylamine	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**
N-Nitrosodiphenylamine	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Pentachlorophenol	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U
Phenanthrene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Phenol	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Pyrene	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
2,4,5-Trichlorophenol	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U
2,4,6-Trichlorophenol	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**	**0.01**	**U**

Notes:
Analytical Method: U.S. EPA Method 8260 [results reported in milligram/liter (mg/L) or parts per million (ppm)]
Duplicate of MW-1 identified as "MW-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
J - Estimated Concentration, below SQL
Red Text - **Concentration at which analyte was detected**
Yellow Highlight - Concentration or SQL equals or exceeds MDE Groundwater Standard (Type I and II Aquifers)

TABLE - 6c
Groundwater Sample Analytical Results
Inorganic Compounds (Total)
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1		MW-1 (dup)		MW-2		MW-3		MW-4		MW-5		FB-1		TB-1	
Analyte							Concentration (ppm)									
Aluminum	0.16		0.39		0.21		0.18		0.33		0.048		0.005	U	0.005	U
Antimony	**0.006**	U	**0.006**	U	**0.006**	U	**0.006**	U	**0.006**	U	**0.006**	U	**0.006**	U	**0.006**	U
Arsenic	0.035		0.035		0.025	U	0.025	U	0.064		0.025	U	0.005	U	0.005	U
Barium	0.53		0.56		0.54		0.63		0.24		0.32		0.005	U	0.011	
Beryllium	**0.004**	U	**0.004**	U	**0.004**	U	**0.004**	U	**0.004**	U	**0.004**	U	**0.004**	U	**0.004**	U
Cadmium	**0.005**	U	**0.005**	U	**0.005**	U	**0.005**	U	**0.005**	U	**0.005**	U	0.001	U	0.001	U
Calcium	246		242		128		163		89		131		5.	U	5.	U
Chromium	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Cobalt	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Copper	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Iron	0.9		1.1		15.8		11.3		59.9		27		0.1	U	0.1	U
Lead	0.01	U	0.015		0.01	U	0.01	U	0.01	U	0.012		0.002	U	0.002	U
Magnesium	100		95		112		100		53		82		5.	U	5.	U
Manganese	0.4		0.38		0.22		0.4		0.99		0.91		0.005	U	0.005	U
Mercury	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Nickel	0.064		0.061		0.032		0.025	U	0.025	U	0.034		0.005	U	0.005	U
Potassium	38		36		37		12		5.	U	15		5.	U	5.	U
Selenium	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Silver	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.002	U	0.013	
Sodium	790		764		520		105		560		85		5.	U	5.	U
Thallium	**0.002**	U	**0.002**	U	**0.002**	U	**0.002**	U	**0.002**	U	**0.002**	U	**0.002**	U	**0.002**	U
Vanadium	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Zinc	0.031		0.038		0.05		0.025		0.025	U	0.025	U	0.008		0.009	

Notes:
Analytical Method: U.S. EPA Methods 200 series and 335.2 [results reported in milligrams/liter (mg/L) or parts per million (ppm)]
Duplicate of MW-1 identified as "MW-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
Bold Text - Concentration at which analyte was detected
Yellow Highlight - Concentration or SQL equals or exceeds MDE Groundwater Standard (Type I and II Aquifers)

TABLE - 6d
Groundwater Sample Analytical Results
Inorganic Compounds (Dissolved)
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1		MW-1 (dup)		MW-2		MW-3		MW-4		MW-5		FB-1		TB-1	
Analyte							Concentration (ppm)									
Aluminum	0.025	U	0.025	U	0.025	U	0.025	U	0.041		0.025	U	0.017		0.007	
Antimony	**0.006**	**U**	**0.006**	**U**	**0.006**	**U**	**0.006**	**U**	**0.006**	**U**	**0.006**	**U**	**0.006**	**U**	**0.006**	**U**
Arsenic	0.035		0.033		0.025	U	0.025	U	0.039		0.025	U	0.005	U	0.005	U
Barium	0.59		0.57		0.17		0.48		0.14		0.2		0.005	U	0.005	U
Beryllium	**0.004**	**U**	**0.004**	**U**	**0.004**	**U**	**0.004**	**U**	**0.004**	**U**	**0.004**	**U**	**0.004**	**U**	**0.004**	**U**
Cadmium	**0.005**	**U**	**0.005**	**U**	**0.005**	**U**	**0.005**	**U**	**0.005**	**U**	**0.005**	**U**	0.001	U	0.001	U
Calcium	244		246		136		101		42		126		5.	U	5.	U
Chromium	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Cobalt	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Copper	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Iron	0.6		0.1	U	0.1	U	10.5		1.2		0.1	U	0.1	U	0.1	U
Lead	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.002	U	0.002	U
Magnesium	1000		97		119		100		59		82		5.	U	5.	U
Manganese	0.2		0.27		0.23		0.39		1		0.87		0.005	U	0.005	U
Mercury	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
Nickel	0.061		0.069		0.035		0.025		0.025	U	0.03		0.005	U	0.005	U
Potassium	48		40		48		40		5.	U	15		5.	U	5.	U
Selenium	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Silver	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.002	U	0.002	U
Sodium	790		789		500		107		620		85		5.	U	5.	U
Thallium	**0.002**	**U**	**0.002**	**U**	**0.002**	**U**	**0.002**	**U**	**0.002**	**U**	**0.002**	**U**	**0.002**	**U**	**0.002**	**U**
Vanadium	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.005	U	0.005	U
Zinc	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.025	U	0.008		0.01	

Notes:

Analytical Method. U.S. EPA Methods 200 series and 335.2 [results reported in milligrams/liter (mg/L) or parts per million (ppm)]

Duplicate of MW-1 identified as "MW-A" on laboratory data sheet

U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)

Red Text - Concentration at which analyte was detected

Yellow Highlight - Concentration or SQL equals or exceeds MDE Groundwater Standard (Type I and II Aquifers)

TABLE - 6e
Groundwater Sample Analytical Results
PCBs and Pesticides
December 27, 2001

Sauer Dump Site
Baltimore, MD

Sample Identification (Depth)	MW-1	MW-1 (dup)	MW-2	MW-3	MW-4	MW-5	FB-1	TB-1
Analyte				Concentration (ppm)				
Aldrin	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
alpha-BHC	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**
beta-BHC	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**
delta-BHC	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
gamma-BHC (Lindane)	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
alpha-Chlordane	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
gamma-Chlordane	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
4,4'-DDD	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
4,4'-DDE	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
4,4'-DDT	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Dieldrin	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**	**0.00008 U**
Endosulfan I	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Endosulfan II	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Endosulfan sulfate	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Endrin	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Endrin aldehyde	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Endrin ketone	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Heptachlor	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Heptachlor epoxide	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Methoxychlor	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U	0.00008 U
Toxaphene	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Aroclor-1016	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**
Aroclor-1221	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**
Aroclor-1232	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**
Aroclor-1242	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**
Aroclor-1248	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**
Aroclor-1254	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**
Aroclor-1260	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**	**0.0005 U**

Notes

Analytical Method U.S. EPA Methods 8081 and 8082 [results reported in milligrams/liter (mg/L) or parts per million (ppm)]
Duplicate of MW-1 identified as "MW-A" on laboratory data sheet
U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)
Red Text - **Concentration at which analyte was detected**
Yellow Highlight - Concentration or SQL equals or exceeds MDE Groundwater Standard (Type I and II Aquifers)

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm) Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
A-01 0-2	2.5	na	na	na	na	na	na	na	na
A-01 2-3	3.8	na	na	na	na	na	na	na	na
A-02 0-2	2.5	na	na	na	na	na	na	na	na
A-02 2-3	4.0	na	na	na	na	na	na	na	na
A-03 0-2	3.8	na	na	na	na	na	na	na	na
A-03 2-3	nd	3.6	0.35 U	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
B-01 0-2	4.2	na	na	na	na	na	na	na	na
B-01 2-3	9.5	na	na	na	na	na	na	na	na
B-02 0-2	8.2	na	na	na	na	na	na	na	na
B-02 2-3	9.5	na	na	na	na	na	na	na	na
B-03 0-2	9.0	na	na	na	na	na	na	na	na
B-03 2-3	6.5	na	na	na	na	na	na	na	na
C-01 0-2	5.5	na	na	na	na	na	na	na	na
C-01 2-3	9.3	na	na	na	na	na	na	na	na
C-02 0-2	29.5	na	na	na	na	na	na	na	na
C-02 2-3	6.5	na	na	na	na	na	na	na	na
C-03 0-2	25.5	na	na	na	na	na	na	na	na
C-03 2-3	nd	na	na	na	na	na	na	na	na
D-01 0-2	6.5	10.1	[redacted]	3.5 U	[redacted]	[redacted]	[redacted]	7.6 D, B	[redacted]
D-01 2-4	nd	na	na	na	na	na	na	na	na
D-01 4-6	nd	na	na	na	na	na	na	na	na
D-01 6-8	3.5	na	na	na	na	na	na	na	na
D-02 0-2	17.5	na	na	na	na	na	na	na	na
D-02 2-4	19.8	na	na	na	na	na	na	na	na
D-02 4-8.5	15.5	na	na	na	na	na	na	na	na
D-03 0-2	18.8	na	na	na	na	na	na	na	na
D-03 2-4	22.5	na	na	na	na	na	na	na	na
D-03 4-8	17.8	na	na	na	na	na	na	na	na
D-04 0-2	14.8	330	[redacted]	35. U	18. U	18. U	18. U	330. D	18. U
D-04 2-3	18.3	na	na	na	na	na	na	na	na
D-05 0-2	7.8	na	na	na	na	na	na	na	na
D-05 2-4	16.3	na	na	na	na	na	na	na	na
D-06 0-2	17.5	na	na	na	na	na	na	na	na
D-06 2-4	23.8	na	na	na	na	na	na	na	na

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Aroclor-1016	Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254		Aroclor-1260	
			Fixed-Base Laboratory PCB Concentration (ppm)												
D-06 4-10	35.3	na	na	na		na		na		na		na		na	
D-07 0-2	25.8	na	na	na		na		na		na		na		na	
D-07 2-4	23.8	na	na	na		na		na		na		na		na	
D-07 4-9	227.5	320	[redacted]	56.	U	28.	U	28.	U	28.	U	320.	D, B	28.	U
D-08 0-2	17.0	na	na	na		na		na		na		na		na	
D-08 2-4	35.5	18.9	[redacted]	3.5	U	[redacted]		[redacted]		[redacted]		13.	D	5.9	D
D-08 4-8	22.3	na	na	na		na		na		na		na		na	
D-08II 0-2	6.0	na	na	na		na		na		na		na		na	
D-08II 2-4	6.0	na	na	na		na		na		na		na		na	
D-08II 4-6	64.0	41.1	[redacted]	7.0	U	3.5	U	3.5	U	3.5	U	32.	D, B	9.1	D
D-09 0-2	23.8	na	na	na		na		na		na		na		na	
D-09 2-4	12.8	na	na	na		na		na		na		na		na	
D-10 0-2	19.3	na	na	na		na		na		na		na		na	
D-10 2-4	23.8	na	na	na		na		na		na		na		na	
D-11 0-2	12.8	na	na	na		na		na		na		na		na	
D-11 2-4	15.0	na	na	na		na		na		na		na		na	
D-11 4-6	20.3	na	na	na		na		na		na		na		na	
D-12 0-2	9.0	na	na	na		na		na		na		na		na	
D-12 2-4	9.0	na	na	na		na		na		na		na		na	
D-12 4-6	9.3	na	na	na		na		na		na		na		na	
D-13 0-2	3.5	na	na	na		na		na		na		na		na	
D-13 2-4	39.3	na	na	na		na		na		na		na		na	
D-13 6-8	5.0	na	na	na		na		na		na		na		na	
D-14 0-2	34.5	na	na	na		na		na		na		na		na	
D-14 2-4	6.3	na	na	na		na		na		na		na		na	
D-14 4-5	9.5	na	na	na		na		na		na		na		na	
D-15 0-2	7.0	na	na	na		na		na		na		na		na	
D-15 2-4	15.0	na	na	na		na		na		na		na		na	
D-15 4-5	6.0	na	na	na		na		na		na		na		na	
E-01 0-2	6.8	na	na	na		na		na		na		na		na	
E-01 2-4	7.8	na	na	na		na		na		na		na		na	
E-01 4-6	5.0	na	na	na		na		na		na		na		na	
E-02 0-2	19.5	na	na	na		na		na		na		na		na	
E-02 2-4	20.0	na	na	na		na		na		na		na		na	

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm)						
			Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
E-02 4-6.5	19.5	na	na	na	na	na	na	na	na
E-03 0-2	6.5	na	na	na	na	na	na	na	na
E-03 2-4	6.8	na	na	na	na	na	na	na	na
E-03 4-6	4.3	na	na	na	na	na	na	na	na
E-04 0-2	5.3	na	na	na	na	na	na	na	na
E-04 2-4	9.0	na	na	na	na	na	na	na	na
E-04 4-6	3.0	na	na	na	na	na	na	na	na
E-05 2-4	6.5	na	na	na	na	na	na	na	na
E-05 4-6.5	4.0	na	na	na	na	na	na	na	na
E-06 0-2	21.5	na	na	na	na	na	na	na	na
E-06 2-4	22.5	na	na	na	na	na	na	na	na
E-06 4-7	32.0	na	na	na	na	na	na	na	na
E-07 0-2	63.8	na	na	na	na	na	na	na	na
E-07 2-4	37.5	na	na	na	na	na	na	na	na
E-07 4-6	97.3	na	na	na	na	na	na	na	na
E-08 0-2	104.8	na	na	na	na	na	na	na	na
E-08 2-5	25.3	na	na	na	na	na	na	na	na
E-08II 0-2	174.5	420	[redacted]	70. U	35. U	35. U	35. U	420. D	35. U
E-08II 2-4	199.8	310	[redacted]	56. U	28. U	28. U	28. U	310. D	28. U
E-08II 4-5.5	101.5	na	na	na	na	na	na	na	na
E-09 0-2	25.0	na	na	na	na	na	na	na	na
E-10 0-2	3.3	na	na	na	na	na	na	na	na
E-11 0-2	9.8	na	na	na	na	na	na	na	na
E-11 2-4	20.0	na	na	na	na	na	na	na	na
E-11 4-6	26.5	na	na	na	na	na	na	na	na
E-12 0-2	6.0	na	na	na	na	na	na	na	na
E-12 2-4	16.8	na	na	na	na	na	na	na	na
E-12 4-5.5	12.5	na	na	na	na	na	na	na	na
E-13 0-2	25.5	na	na	na	na	na	na	na	na
E-13 2-4	2.8	na	na	na	na	na	na	na	na
E-13 4-5	3.5	na	na	na	na	na	na	na	na
E-14 0-2	5.3	na	na	na	na	na	na	na	na
E-14 2-4	5.3	na	na	na	na	na	na	na	na
E-15 0-2	8.5	na	na	na	na	na	na	na	na

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm) Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
E-15 2-4	14.3	na	na	na	na	na	na	na	na
F-01 0-2	5.0	7.5	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
F-01 2-4	13.3	na	na	na	na	na	na	na	na
F-01 4-6	9.0	na	na	na	na	na	na	na	na
F-02 0-2	18.5	na	na	na	na	na	na	na	na
F-02 2-4	26.3	na	na	na	na	na	na	na	na
F-02 4-7	50.8	na	na	na	na	na	na	na	na
F-03 0-2	3.3	na	na	na	na	na	na	na	na
F-04 0-2	9.3	na	na	na	na	na	na	na	na
F-04 2-4	9.0	na	na	na	na	na	na	na	na
F-04 4-6	3.3	na	na	na	na	na	na	na	na
F-05 0-2	9.3	na	na	na	na	na	na	na	na
F-05 2-4	3.8	na	na	na	na	na	na	na	na
F-05 4-6.5	5.3	na	na	na	na	na	na	na	na
F-06 0-2	99.0	na	na	na	na	na	na	na	na
F-06 2-4	62.3	na	na	na	na	na	na	na	na
F-06 4-7	29.0	na	na	na	na	na	na	na	na
F-07 0-2	439.8	410	[redacted]	70. U	35. U	35. U	35. U	410. D	35. U
F-07 2-4	125.3	na	na	na	na	na	na	na	na
F-07 4-6	93.0	51	[redacted]	7.0 U	3.5 U	3.5 U	3.5 U	39. D	12. D
F-08 0-2	28.5	na	na	na	na	na	na	na	na
F-08 2-4	18.0	na	na	na	na	na	na	na	na
F-09 0-2	3.3	na	na	na	na	na	na	na	na
F-09 2-5	6.0	na	na	na	na	na	na	na	na
F-10 0-2	nd	na	na	na	na	na	na	na	na
F-10 2-4	12.3	na	na	na	na	na	na	na	na
F-11 0-2	6.8	na	na	na	na	na	na	na	na
F-11 2-4	8.8	na	na	na	na	na	na	na	na
F-12 0-2	15.0	na	na	na	na	na	na	na	na
F-12 2-4	10.3	na	na	na	na	na	na	na	na
F-13 0-2	9.3	na	na	na	na	na	na	na	na
F-13 2-4	4.0	na	na	na	na	na	na	na	na
F-14 0-2	21.3	na	na	na	na	na	na	na	na
F-14 2-4	8.5	na	na	na	na	na	na	na	na

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm) Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
F-15 0-2	5.8	na	na	na	na	na	na	na	na
F-15 2-4	7.8	na	na	na	na	na	na	na	na
G-01 0-2	18.8	na	na	na	na	na	na	na	na
G-01 2-4	76.5	na	na	na	na	na	na	na	na
G-02 0-2	21.5	na	na	na	na	na	na	na	na
G-02 2-4	22.8	na	na	na	na	na	na	na	na
G-02 4-6	15.3	na	na	na	na	na	na	na	na
G-03 0-2	10.3	na	na	na	na	na	na	na	na
G-03 2-4A	5.0	na	na	na	na	na	na	na	na
G-03 2-4B	5.3	na	na	na	na	na	na	na	na
G-03 4-7	3.0	na	na	na	na	na	na	na	na
G-04 0-2	7.5	na	na	na	na	na	na	na	na
G-04 2-4	10.8	na	na	na	na	na	na	na	na
G-04 4-8	5.0	na	na	na	na	na	na	na	na
G-05 0-2	33.0	na	na	na	na	na	na	na	na
G-05 2-4	17.0	na	na	na	na	na	na	na	na
G-05 4-5.5	19.8	na	na	na	na	na	na	na	na
G-06 0-2	82.8	97	[redacted]	14. U	7. U	7. U	7. U	97. D	7. U
G-06 2-4	107.5	na	na	na	na	na	na	na	na
G-06 4-5 TR	957.5	33000	1800. U	3500. U	1800. U	1800. U	1800. U	33000. D, B	1800. U
G-06 4-7	1125.0	3900	180. U	350. U	180. U	180. U	180. U	3900. D	180. U
G-06 TR LIQ	1141.8	na	na	na	na	na	na	na	na
G-07 0-2	69.5	na	na	na	na	na	na	na	na
G-07 2-4	345.3	370	[redacted]	35. U	18. U	18. U	18. U	370. D	18. U
G-07 4-6	218.8	100	[redacted]	14. U	7. U	7. U	7. U	100. D	7. U
G-08 0-2	5.8	na	na	na	na	na	na	na	na
G-08 2-4	354.5	190	[redacted]	28. U	14. U	14. U	14. U	190. D, B	14. U
G-08 4-5	122.0	na	na	na	na	na	na	na	na
G-09 0-2	75.0	na	na	na	na	na	na	na	na
G-09 2-4	19.5	na	na	na	na	na	na	na	na
G-10 0-2	28.0	na	na	na	na	na	na	na	na
G-10 2-4	17.3	na	na	na	na	na	na	na	na
G-11 0-2	17.5	5.9	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	3.2 D	[redacted]
G-11 0-2 (dup)	-	8.6	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	3.5 D, B	5.1

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm) Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
G-11 2-4	24.0	na	na	na	na	na	na	na	na
G-12 0-2	13.8	na	na	na	na	na	na	na	na
G-12 2-4	17.8	na	na	na	na	na	na	na	na
G-13 0-2	19.8	na	na	na	na	na	na	na	na
G-13 2-4	24.8	na	na	na	na	na	na	na	na
G-14 0-2	4.0	na	na	na	na	na	na	na	na
G-14 2-4	25.3	na	na	na	na	na	na	na	na
G-15 0-2	8.0	na	na	na	na	na	na	na	na
G-15 2-4	3.5	na	na	na	na	na	na	na	na
H-01 0-2	35.0	na	na	na	na	na	na	na	na
H-01 2-4	20.0	na	na	na	na	na	na	na	na
H-01 4-6.5	17.5	na	na	na	na	na	na	na	na
H-02 0-2	27.0	na	na	na	na	na	na	na	na
H-02 2-4	50.3	na	na	na	na	na	na	na	na
H-02 4-6	16.8	na	na	na	na	na	na	na	na
H-03 0-2	10.5	na	na	na	na	na	na	na	na
H-03 2-4	11.0	na	na	na	na	na	na	na	na
H-03 4-6.5	nd	na	na	na	na	na	na	na	na
H-04 0-2	8.3	na	na	na	na	na	na	na	na
H-04 2-4	6.0	na	na	na	na	na	na	na	na
H-04 4-7	3.5	na	na	na	na	na	na	na	na
H-05 0-2	17.5	na	na	na	na	na	na	na	na
H-05 2-4	25.8	na	na	na	na	na	na	na	na
H-05 4-9	19.8	na	na	na	na	na	na	na	na
H-06 0-2	16.3	na	na	na	na	na	na	na	na
H-06 2-4	19.3	na	na	na	na	na	na	na	na
H-06 4-9.5	16.8	na	na	na	na	na	na	na	na
H-07 0-2	14.8	na	na	na	na	na	na	na	na
H-07 2-4	34.5	na	na	na	na	na	na	na	na
H-07 4-6	35.3	na	na	na	na	na	na	na	na
H-08 0-2	324.3	3800	180. U	350. U	180. U	180. U	180. U	3800. D, B	180. U
H-08 2-4	35.3	na	na	na	na	na	na	na	na
H-09 0-2	17.3	na	na	na	na	na	na	na	na
H-09 2-4	24.5	na	na	na	na	na	na	na	na

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm) Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
H-09 4-6unm	12.3	na	na	na	na	na	na	na	na
H-10 0-2	228.8	390	[redacted]	70. U	35. U	35. U	35. U	390. D	35. U
H-10 2-4	20.0	na	na	na	na	na	na	na	na
H-11 0-2	9.0	na	na	na	na	na	na	na	na
H-11 2-4	12.0	na	na	na	na	na	na	na	na
H-11 4-6	31.5	na	na	na	na	na	na	na	na
H-12 0-2	13.0	na	na	na	na	na	na	na	na
H-12 2-4	22.3	na	na	na	na	na	na	na	na
H-13 0-2	36.5	na	na	na	na	na	na	na	na
H-13 2-4	2.5	na	na	na	na	na	na	na	na
H-13 4-6	6.0	na	na	na	na	na	na	na	na
H-14 0-2	12.0	na	na	na	na	na	na	na	na
H-14 2-4	21.3	na	na	na	na	na	na	na	na
H-15 0-2	21.8	na	na	na	na	na	na	na	na
H-15 2-4	nd	na	na	na	na	na	na	na	na
H-15 4-8	3.3	na	na	na	na	na	na	na	na
I-01 0-2	36.3	na	na	na	na	na	na	na	na
I-01 2-4	93.8	na	na	na	na	na	na	na	na
I-01 4-6	26.5	na	na	na	na	na	na	na	na
I-02 0-2	15.5	na	na	na	na	na	na	na	na
I-02 2-4	16.8	na	na	na	na	na	na	na	na
I-03 0-2	21.0	na	na	na	na	na	na	na	na
I-03 2-4	7.8	na	na	na	na	na	na	na	na
I-03 4-6	nd	na	na	na	na	na	na	na	na
I-04 0-2	5.8	na	na	na	na	na	na	na	na
I-04 2-4	10.0	na	na	na	na	na	na	na	na
I-04 4-6	nd	na	na	na	na	na	na	na	na
I-05 0-2	22.0	na	na	na	na	na	na	na	na
I-05 2-4	49.5	na	na	na	na	na	na	na	na
I-06 0-2	18.3	na	na	na	na	na	na	na	na
I-06 2-4	21.8	na	na	na	na	na	na	na	na
I-06 4-7.5	18.3	na	na	na	na	na	na	na	na
I-07 0-2	30.5	na	na	na	na	na	na	na	na
I-07 2-4	48.8	na	na	na	na	na	na	na	na

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm)													
			Aroclor-1016		Aroclor-1221		Aroclor-1232		Aroclor-1242		Aroclor-1248		Aroclor-1254		Aroclor-1260	
I-07 4-6	5.0	na	na		na		na		na		na		na		na	
I-07 6-8	237.5	2670	2000.	D	280.	U	140.	U	140.	U	140.	U	670.	D, B	140.	U
I-08 0-2	160.5	580	[redacted]		70.	U	35.	U	35.	U	35.	U	580.	D	35.	U
I-08 2-4	30.8	na	na		na		na		na		na		na		na	
I-09 0-2	121.5	na	na		na		na		na		na		na		na	
I-09 2-4	25.0	na	na		na		na		na		na		na		na	
I-10 0-2	74.0	na	na		na		na		na		na		na		na	
I-10 2-4	15.5	na	na		na		na		na		na		na		na	
I-11 0-2	134.3	na	na		na		na		na		na		na		na	
I-11 2-4	200.3	400	[redacted]		35.	U	18.	U	18.	U	18.	U	400.	D	18.	U
I-11 4-6	38.8	na	na		na		na		na		na		na		na	
I-12 0-2	477.3	4600	175.	U	350.	U	175.	U	175.	U	175.	U	4600.	D	175.	U
I-12 0-2 (dup)	-	4600	350.	U	700.	U	350.	U	350.	U	350.	U	4600.	D, B	350.	U
I-12 2-4	280.0	1500	[redacted]		140.	U	70.	U	70.	U	70.	U	1500.	D	70.	U
I-12 4-6	19.3	na	na		na		na		na		na		na		na	
I-13 0-2	255.5	1300	88.	U	180.	U	88.	U	88.	U	88.	U	1300.	D, B	88.	U
I-13 2-4	359.3	240	[redacted]		35.	U	18.	U	18.	U	18.	U	240.	D	18.	U
I-13 4-6	15.0	na	na		na		na		na		na		na		na	
I-14 0-2	28.5	na	na		na		na		na		na		na		na	
I-14 2-4	9.0	na	na		na		na		na		na		na		na	
I-15 0-2	57.8	na	na		na		na		na		na		na		na	
I-15 2-4	76.8	na	na		na		na		na		na		na		na	
J-01 0-2	14.5	na	na		na		na		na		na		na		na	
J-01 2-3	12.5	na	na		na		na		na		na		na		na	
J-03 0-2	nd	na	na		na		na		na		na		na		na	
J-04 0-2	nd	na	na		na		na		na		na		na		na	
J-05 0-2A	5.8	na	na		na		na		na		na		na		na	
J-05 0-2B	nd	na	na		na		na		na		na		na		na	
J-05 2-4A	nd	na	na		na		na		na		na		na		na	
J-05 2-4B	6.3	na	na		na		na		na		na		na		na	
J-06 0-2	17.5	na	na		na		na		na		na		na		na	
J-07 0-2	nd	na	na		na		na		na		na		na		na	
J-08 0-2	25.0	na	na		na		na		na		na		na		na	
J-08 2-3	25.5	na	na		na		na		na		na		na		na	

TABLE - 7
Test Pit Soil Sample Immunoassay and Laboratory Analytical Results
PCBs and Total PCBs
June 5 through June 11, 2002

Sauer Dump Site
Baltimore, MD

Sample Identification and Depth (feet)	Immunoassay Total PCB Concentration (ppm)	Fixed-Base Lab Total PCB Concentration (ppm)	Fixed-Base Laboratory PCB Concentration (ppm)						
			Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260
J-09 0-2	77.8	na	na	na	na	na	na	na	na
J-10 0-2	7.3	na	na	na	na	na	na	na	na
J-10 2-4	20.8	na	na	na	na	na	na	na	na
J-11 0-2	314.5	1400	140. U	280. U	140. U	140. U	140. U	1400. D, B	140. U
J-11 2-4	248.5	160	[redacted]	28. U	14. U	14. U	14. U	160. D, B	14. U
J-12 0-2	22.8	na	na	na	na	na	na	na	na
J-12 2-4	118.0	na	na	na	na	na	na	na	na
J-13 0-2	64.8	105	[redacted]	14. U	7. U	7. U	7.1 U	105. D	7. U
J-13 0-2 (dup)	-	97	[redacted]	14. U	7. U	7. U	7. U	97. D, B	7. U
J-13 2-4	48.3	na	na	na	na	na	na	na	na
J-13 4-6	54.5	na	na	na	na	na	na	na	na
J-14 0-2	75.5	na	na	na	na	na	na	na	na
J-14 2-4	100.0	na	na	na	na	na	na	na	na
J-14 4-6	103.3	na	na	na	na	na	na	na	na
J-15 0-2	79.3	na	na	na	na	na	na	na	na
J-15 2-4	36.5	na	na	na	na	na	na	na	na
J-15 4-6	14.5	na	na	na	na	na	na	na	na

Notes:

Analytical Method: U.S. EPA Method 8082 [results reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)]

Duplicate of J-13 0-2 identified as "S-1" on laboratory data sheet

Duplicate of I-12 0-2 identified as "S-2" on laboratory data sheet

Duplicate of G-11 0-2 identified as "S-3" on laboratory data sheet

na - *Sample Not analyzed*

nd - Analyte Not Detected

U - Analyte Not Detected Above Specified Sample Quantitation Limit (SQL)

D - Sample Diluted

B - Analyte detected in blank

Red Text - Concentration at which analyte was detected

Gray Highlight - Concentration or SQL equals or exceeds MDE Protection of Groundwater Standard

[redacted] Concentration or SQL equals or exceeds MDE Residential Cleanup Standard

Yellow Highlight - Concentration or SQL equals or exceeds MDE Non-Residential Cleanup Standard

TABLE - 8
Geotechnical Testing Summary

Sauer Dump Site
Baltimore, MD

Boring I.D.	Depth (ft)	Sample I.D.	Container Type(s)	Test(s) Performed (Laboratory I.D.)
MW-1	3-5	NA	Jars (2)	Water Content, Sieve, A Limits (2002-012-01-08)
MW-1	3-6	ST-1	Shelby Tube	Permeability (und), Consolidation (2002-012-01-01)
MW-1	3-5	NA	Jar	Total Organic Carbon
MW-2	0-2	NA	Bag	Water Content, Sieve, A Limits (2002-012-01-09)
MW-2	0-2	ST-1	Shelby Tube	Permeability (und), Consolidation (2002-012-01-02)
MW-2	0-2	NA	Jar	Total Organic Carbon
MW-2	8-9	NA	Jar	Water Content, Sieve, A Limits (2002-012-01-10)
MW-2	8-10	ST-2	Shelby Tube	C.U. (und), Consolidation (2002-012-01-03)
MW-2	8-10	NA	Jar	Total Organic Carbon
MW-3	15-17	NA	Jar & Bag	Water Content, Sieve, A Limits (2002-012-01-11)
MW-3	15-17	ST-2	Shelby Tube	Consolidation (2002-012-01-04)
MW-3	15-17	NA	Jar	Total Organic Carbon
MW-4	3-5	NA	Jar	Total Organic Carbon
MW-4	9-11	NA	Bag	Water Content, Sieve, A Limits (2002-012-01-12)
MW-4	9-11	ST-1	Shelby Tube	Permeability (und), C.U (und)., Consolidation (2002-012-01-05)
MW-4	9-11	NA	Jar	Total Organic Carbon
MW-4	12-13	NA	Jar & Bag	Water Content, Sieve, A Limits (2002-012-01-13)
MW-4	12-14	ST-2	Shelby Tube	Permeability (und), Consolidation (2002-012-01-06)
MW-4	12-14	NA	Jar	Total Organic Carbon
MW-5	0-2	ST-1	Shelby Tube	Sieve, A Limits, Permeability (und) (2002-012-01-07)
MW-5	0-2	NA	Jar	Total Organic Carbon

Definitions/Notes:
Sieve - Sieve Analysis
A limits - Multi-Point Atterberg Limits
Permeability (und) - 3" Diameter Flex Wall Permeability (Undisturbed)
Consolidation - One Dimensional Consolidation 2 Rebound Curves (2.5")
C.U. (und) - Consolidated Undrained Triaxial with Pore Pressure Measurements (3-Point Series Undisturbed)

Table 9
Surficial Soil
Contminants of Potential Concern (COPCs)

Sauer Dump Site
Baltimore, MD

			MDE Residential Cleanup Standard			MDE Non-Residential Cleanup Standard		
Medium	Analyte Group	Corresponding Figure	Analyte(s) which Exceeded the MDE Residential Cleanup Standard	Range of Detected Concentrations (ppm)	MDE Residential Cleanup Standard (ppm)	Analyte(s) which Exceeded the MDE Non-Residential Cleanup Standard	Range of Detected Concentrations (ppm)	MDE Non-Residential Cleanup Standard (ppm)
Surficial Soil	SVOCs	8	Benzo(a)Anthracene	0.12 - 3.6	0.87	-	-	-
			Benzo(b)Fluoranthene	0.12 - 7.0	0.87	-	-	-
			Benzo(a)Pyrene	0.15 - 3.2	0.33	Benzo(a)Pyrene	0.15 - 3.2	0.78
			Dibenzo(a,h)Anthracene	0.057 - 0.41	0.33	-	-	-
			Indeno(1,2,3-cd)Pyrene	0.089 - 1.9	0.87	-	-	-
	Metals	9	Aluminum	1,460 - 63,780	7,800	-	-	-
			Antimony	3.36 - 56.3	12	-	-	-
			Arsenic	2 - 56	2	Arsenic	2 - 56	3.8
			Barium	28.3 - 728	550	-	-	-
			Cadmium	0.63 - 50.4	3.9	-	-	-
			Copper	4.5 - 3,303	310	-	-	-
			Iron	2,677 - 191,564	2,300	Iron	2,677 - 191,564	61,000
			Lead	7.6 - 5,944	400	Lead	7.6 - 5,944	400
			Manganese	75.8 - 2,910	160	-	-	-
			Mercury	0.09 - 8.1	0.1	Mercury	0.09 - 8.1	0.12
			Nickel	4.2 - 304	160	-	-	-
			Thallium	0.91 - 12	2	-	-	-
			Vanadium	1.7 - 262	55	-	-	-
			Zinc	11.7 - 5,300	2,300	-	-	-
	Pesticides	10	Heptachlor Epoxide	0.00022 - 0.244	0.07	-	-	-
	PCBs	11	Aroclor-1248	6.3	0.032	Aroclor-1248	6.3	2.9
			Aroclor-1254	0.12 - 4,600	0.032	Aroclor-1254	0.12 - 4,600	2.9
			Aroclor-1260	0.14 - 6.4	0.032	Aroclor-1260	0.14 - 6.4	2.9

Notes:
Concentrations reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)

Table 10
Subsurface Soil
Contminants of Potential Concern (COPCs)

Sauer Dump Site
Baltimore, MD

Medium	Analyte Group	Corresponding Figure	MDE Residential Cleanup Standard			MDE Non-Residential Cleanup Standard		
			Analyte(s) which Exceeded the MDE Residential Cleanup Standard	Range of Detected Concentrations (ppm)	MDE Residential Cleanup Standard (ppm)	Analyte(s) which Exceeded the MDE Non-Residential Cleanup Standard	Range of Detected Concentrations (ppm)	MDE Non-Residential Cleanup Standard (ppm)
Subsurface Soil	SVOCs	12	Benzo(a)Anthracene	0.044 - 7.323	0.87	-	-	-
			Benzo(b)Fluoranthene	0.065 - 7.246	0.87	-	-	-
			Benzo(a)Pyrene	0.047 - 3.3	0.33	Benzo(a)Pyrene	0.047 - 3.3	0.78
			Dibenzo(a.h)Anthracene	0.16 - 1.5	0.33	Dibenzo(a.h)Anthracene	0.16 - 1.5	0.78
			Indeno(1.2.3-cd)Pyrene	0.11 - 4	0.87	-	-	-
	Metals	13	Aluminum	2,300 - 49,000	7,800	-	-	-
			Antimony	7.11 - 90	12	Antimony	7.11 - 90	82.
			Arsenic	1.4 - 300	2	Arsenic	1.4 - 300	3.8
			Barium	26 - 800	550	-	-	-
			Cadmium	0.084 - 22.8	3.9	-	-	-
			Copper	5.3 - 3,300	310	-	-	-
			Iron	9, 100 - 140,000	2,300	Iron	9, 100 - 140,000	61,000
			Lead	10 - 4,100	400	Lead	10 - 4,100	400
			Manganese	38 - 8,900	160	Manganese	38 - 8,900	4,100
			Mercury	0.16 - 22	0.1	Mercury	0.16 - 22	0.12
			Nickel	7,229 - 8.1	160	Nickel	7,229 - 8.1	4,100
			Selenium	0.6 - 57	39	-	-	-
			Thallium	0.94 - 2.9	2	-	-	-
			Vanrdium	980 - 2.8	55	-	-	-
			Zinc	22 - 110,000	2,300	Zinc	22 - 110,000	61,000
	Pesticides	14	Dieldrin	0.085	0.04	-	-	-
	PCBs	15	Aroclor-1242	0.19 - 8.8	0.32	Aroclor-1242	0.19 - 8.8	2.9
			Aroclor-1248	0.8 - 9.1	0.032	Aroclor-1248	0.8 - 9.1	2.9
			Aroclor-1254	0.11 - 33,000	0.032	Aroclor-1254	0.11 - 33,000	2.9
			Aroclor-1260	0.31 - 43	0.032	Aroclor-1260	0.31 - 43	2.9

Notes:
Concentrations reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)

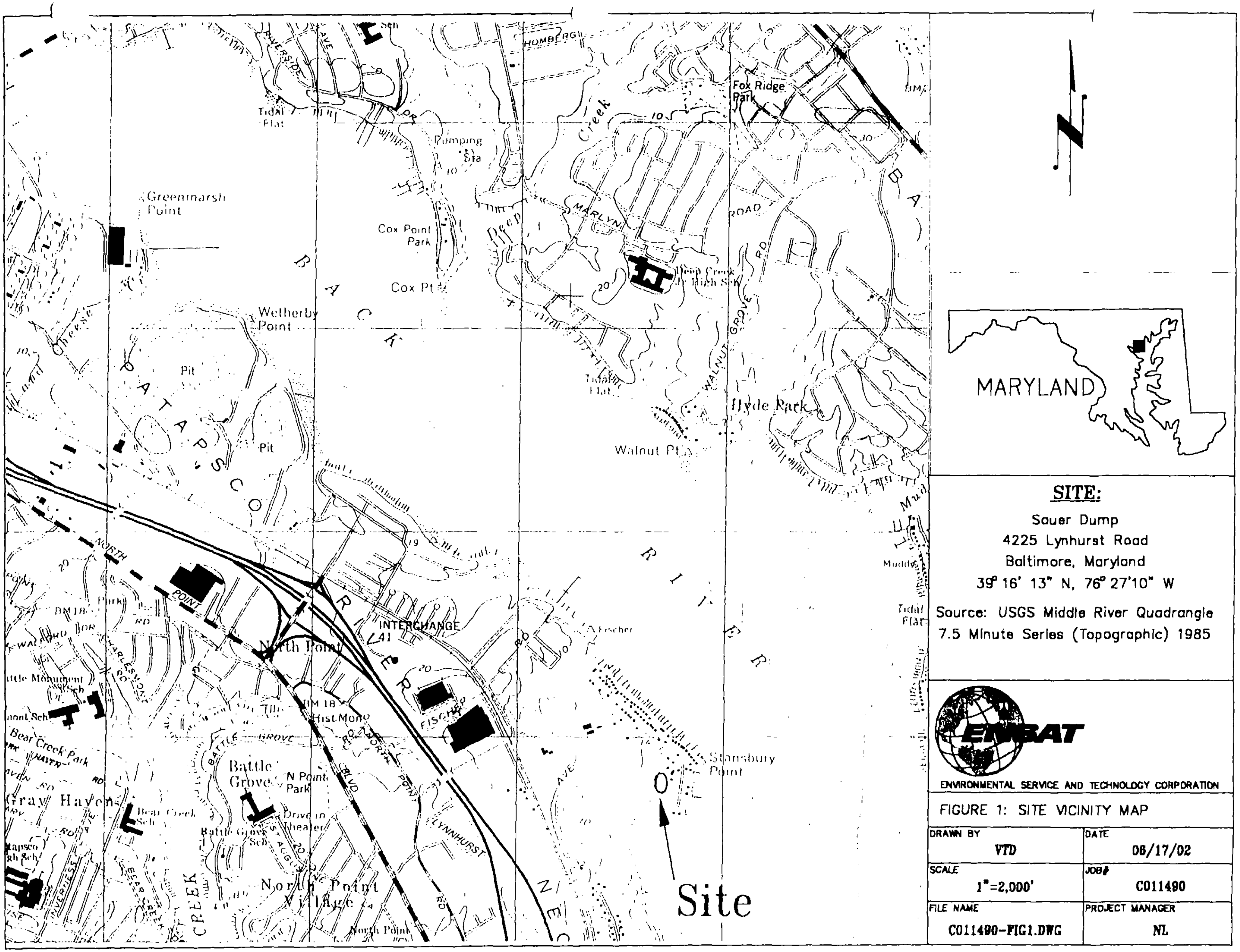
Table 11
Sediment
Contaminants of Potential Concern (COPCs)

Sauer Dump Site
Baltimore, MD

			NOAA Sediment Effects Range Low Benchmark (ERL)			NOAA Sediment Effects Range Median Benchmarks (ERM)		
Medium	Analyte Group	Corresponding Figure	Analyte(s) which Exceeded the NOAA ERL	Range of Detected Concentrations (ppm)	NOAA ERL	Analyte(s) which Exceeded the NOAA ERM	Range of Detected Concentrations (ppm)	NOAA ERM
Sediment	SVOCs	16	Acenaphthene	0.19 - 2	0.016	Acenaphthene	0.19 - 2	0.5
			Acenaphthylene	0.054 - 0.11	0.044	-	-	-
			Anthracene	0.057 - 1.3	0.0853	Anthracene	0.057 - 1.3	1.1
			Benzo(a)Anthracene	0.016 - 8.2	0.261	Benzo(a)Anthracene	0.016 - 8.2	1.6
			Benzo(a)Pyrene	0.18 - 12	0.43	Benzo(a)Pyrene	0.18 - 12	1.6
			Chrysene	0.13 - 7.6	0.384	Chrysene	0.13 - 7.6	2.8
			Dibenzo(a,h)Anthracene	0.081 - 2.6	0.0634	Dibenzo(a,h)Anthracene	0.081 - 2.6	0.26
			Fluoranthene	0.083 - 8.8	0.6	Fluoranthene	0.083 - 8.8	5.1
			Fluorene	0.15 - 0.3	0.019	-	-	-
			2-Methylnaphthalene	0.065 - 2.5	0.07	2-Methylnaphthalene	0.065 - 2.5	0.67
			Naphthalene	0.056 - 4.1	0.16	Naphthalene	0.056 - 4.1	2.1
			Phenanthrene	0.147 - 3.4	0.24	Phenanthrene	0.147 - 3.4	1.5
			Pyrene	0.076 - 9.6	0.665	Pyrene	0.076 - 9.6	2.6
	Metals	17	Antimony	2.6 - 27.9	2	Antimony	2.6 - 27.9	25
			Arsenic	1 - 22	8.2	-	-	-
			Cadmium	0.81 - 41	1.2	Cadmium	0.81 - 41	9.6
			Chromium	2.2 - 193	81	-	-	-
			Copper	3.3 - 696	34	Copper	3.3 - 696	270
			Lead	4.6 - 1,060	47	Lead	4.6 - 1,060	220
			Mercury	0.198 - 2.41	0.15	Mercury	0.198 - 2.41	0.71
			Nickel	1.8 - 114	21	Nickel	1.8 - 114	52
			Silver	0.211 - 5.5	1	Silver	0.211 - 5.5	3.7
			Zinc	15 - 2,360	150	Zinc	15 - 2,360	410
	Pesticides	18	4,4'-DDE	0.00091 - 0.006	0.002	-	-	-
			4,4'-DDD	0.00066 - 0.01	0.0022	-	-	-
			4,4'-DDT	2.8	0.001	4,4'-DDT	2.8	0.007
			Dieldrin	0.000077 - 0.008	0.00002	-	-	-
			Endrin	0.00035 - 0.008	0.00002	-	-	-
	PCBs	19	Total PCBs (primarily Aroclor-1254)	0.07 - 268	0.023	Total PCBs (primarily Aroclor-1254)	0.07 - 268	0.18

Notes:
Concentrations reported in milligrams/kilogram (mg/Kg) or parts per million (ppm)

FIGURES



SITE:

Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland
39° 16' 13" N, 76° 27'10" W

Source: USGS Middle River Quadrangle 7.5 Minute Series (Topographic) 1985

ENSAT
ENVIRONMENTAL SERVICE AND TECHNOLOGY CORPORATION

FIGURE 1: SITE VICINITY MAP

DRAWN BY	DATE
VTD	06/17/02
SCALE	**JOB#**
1"=2,000'	C011490
FILE NAME	**PROJECT MANAGER**
C011490-FIG1.DWG	NL

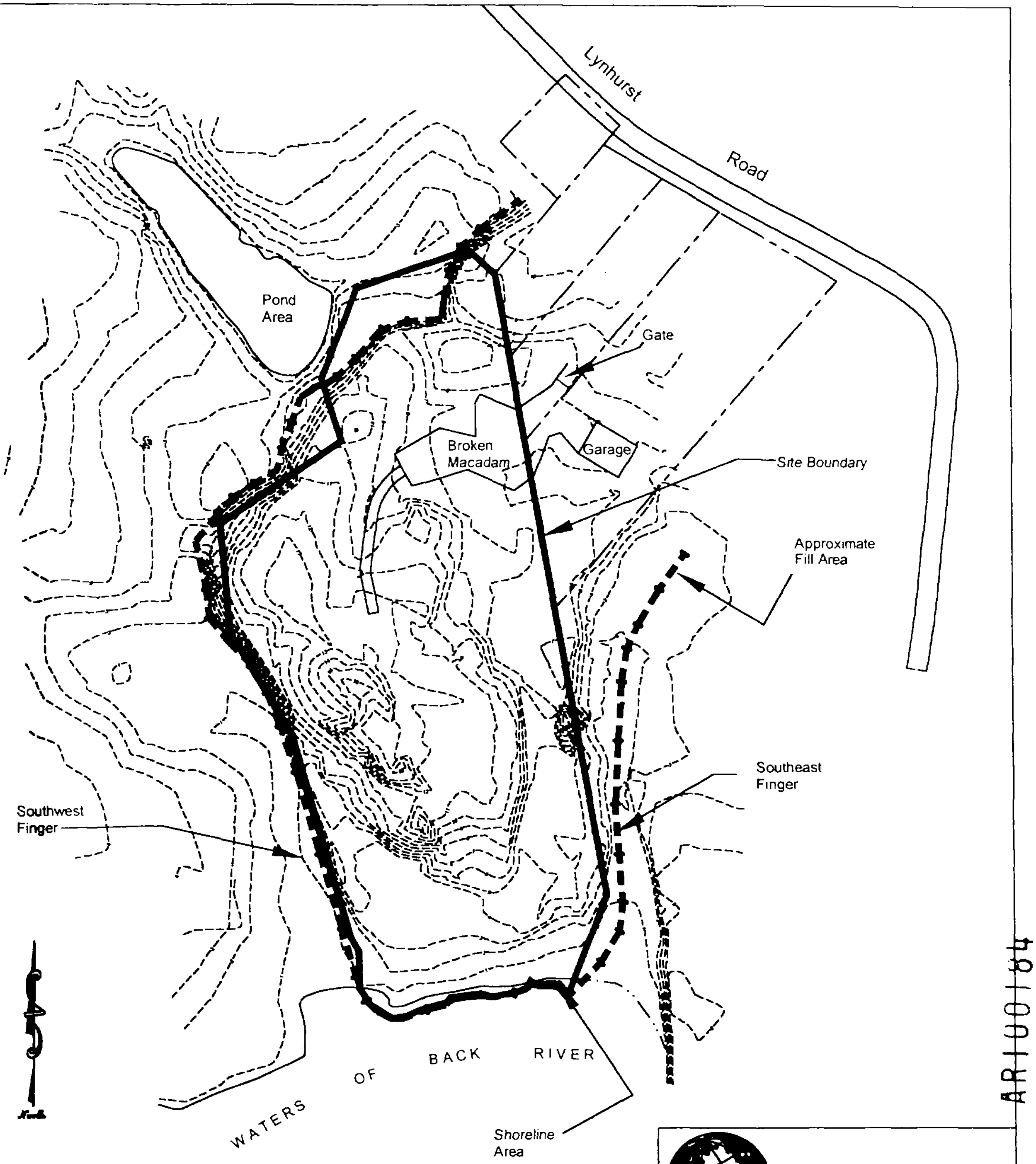


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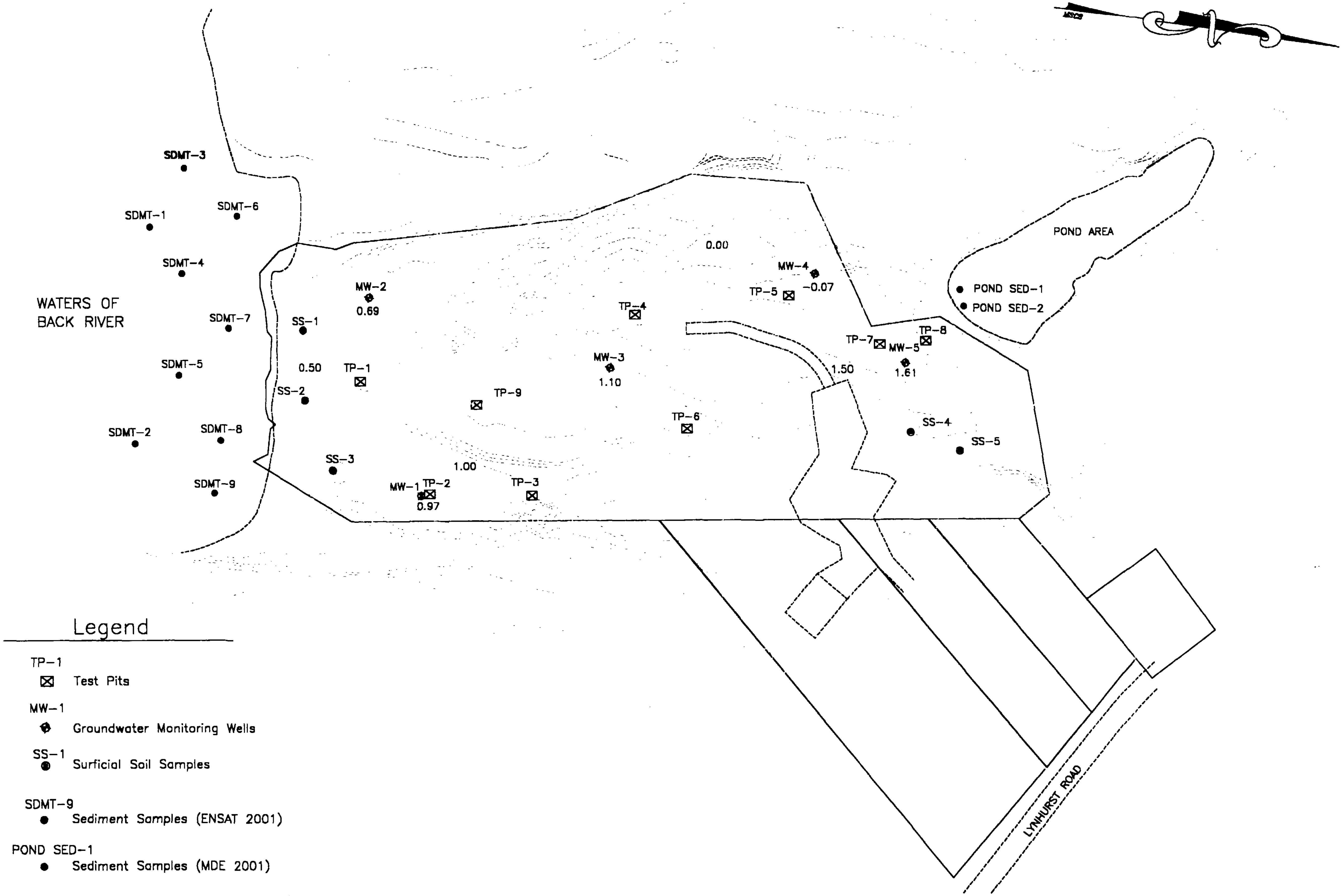
FIGURE 2: Site Layout Map

DRAWN BY VTD	DATE 07/23/02
SCALE 1"=110'	JOB# C011490
FILE NAME C011490.dwg	PROJECT MANAGER NL

Topographic
Contour Interval = 1'

SITE:

Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland



Legend

TP-1
☒ Test Pits

MW-1
⊕ Groundwater Monitoring Wells

SS-1
● Surficial Soil Samples

SDMT-9
● Sediment Samples (ENSAT 2001)

POND SED-1
● Sediment Samples (MDE 2001)

Topographic Contour Interval = 1'

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FIGURE 3

DECEMBER 2001 SAMPLING LOCATION MAP

REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE:
07/23/02

DESIGNED BY:
Lawrence K. Chambers

DRAFTED BY:
Lawrence K. Chambers

SCALE:
1"=70'

JOB #:
C01-1490

FILE NAME:
C01-1490.DWG

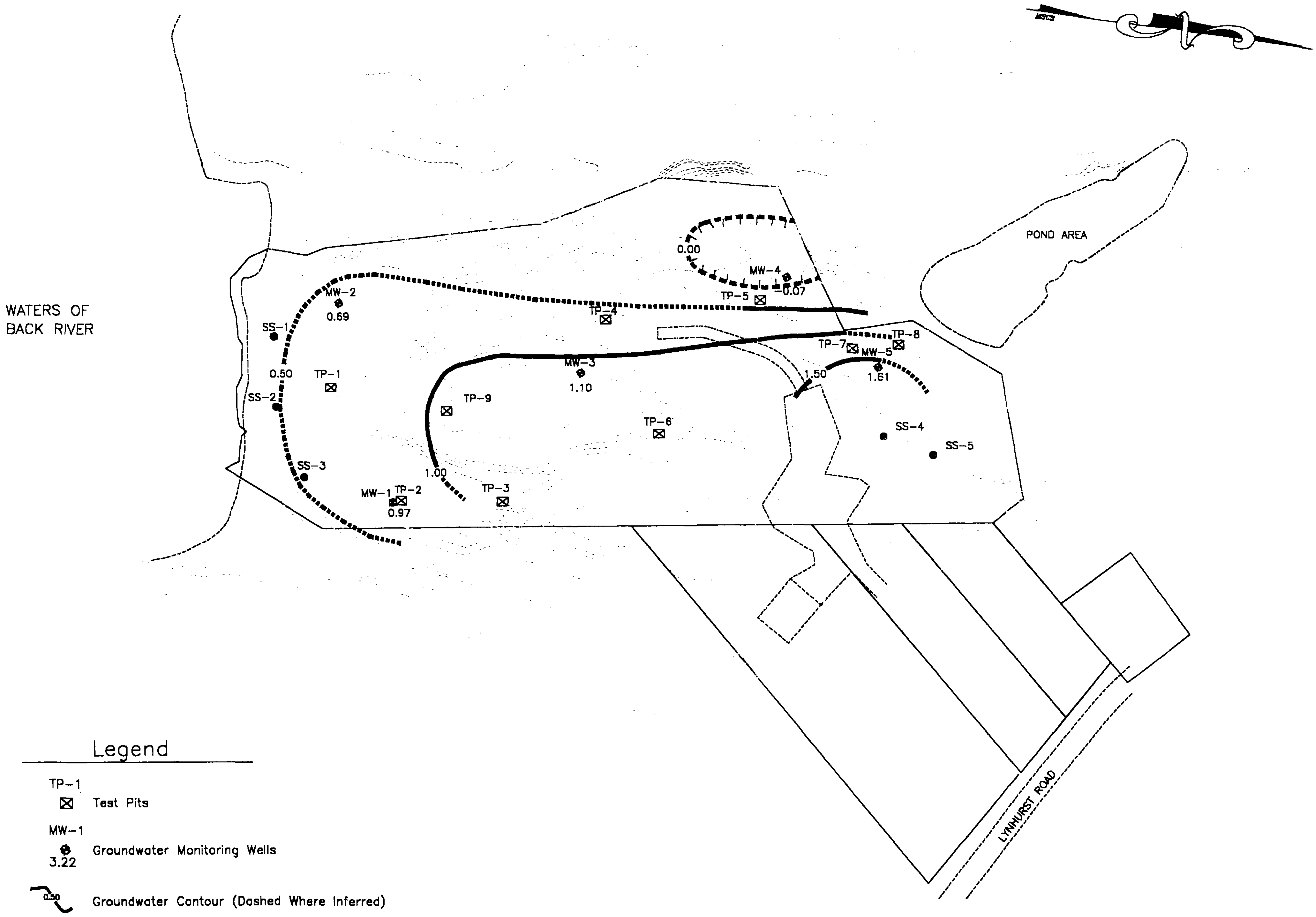

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FIGURE 4

GROUNDWATER CONTOUR MAP
Gauging Date: 1-17-02

DATE	REVISIONS

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG

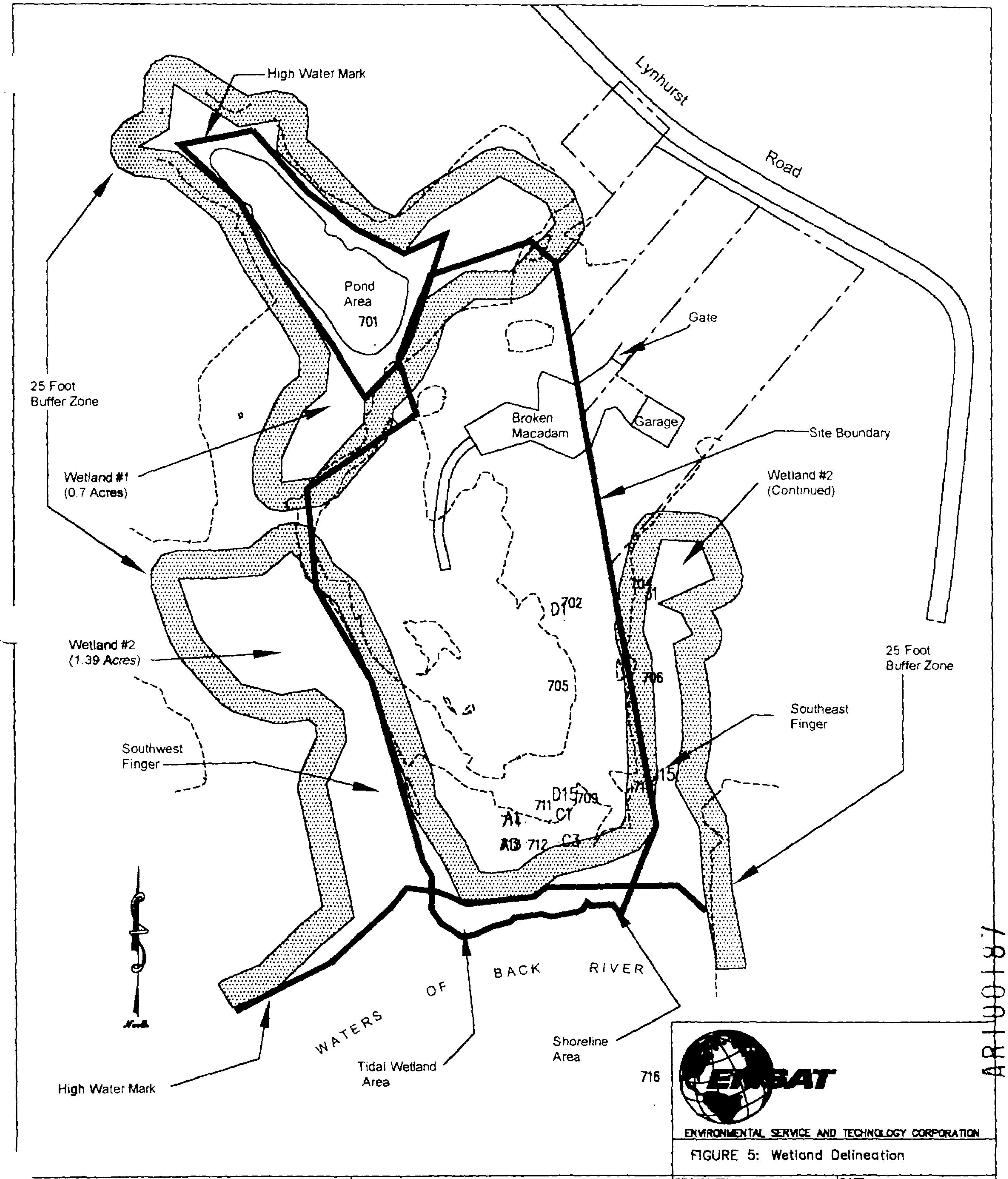

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FIGURE 5: Wetland Delineation

DRAWN BY VTD	DATE 07/23/02
SCALE 1"=110'	JOB # C011490
FILE NAME C011490.DWG	PROJECT MANAGER NL

LEGEND:

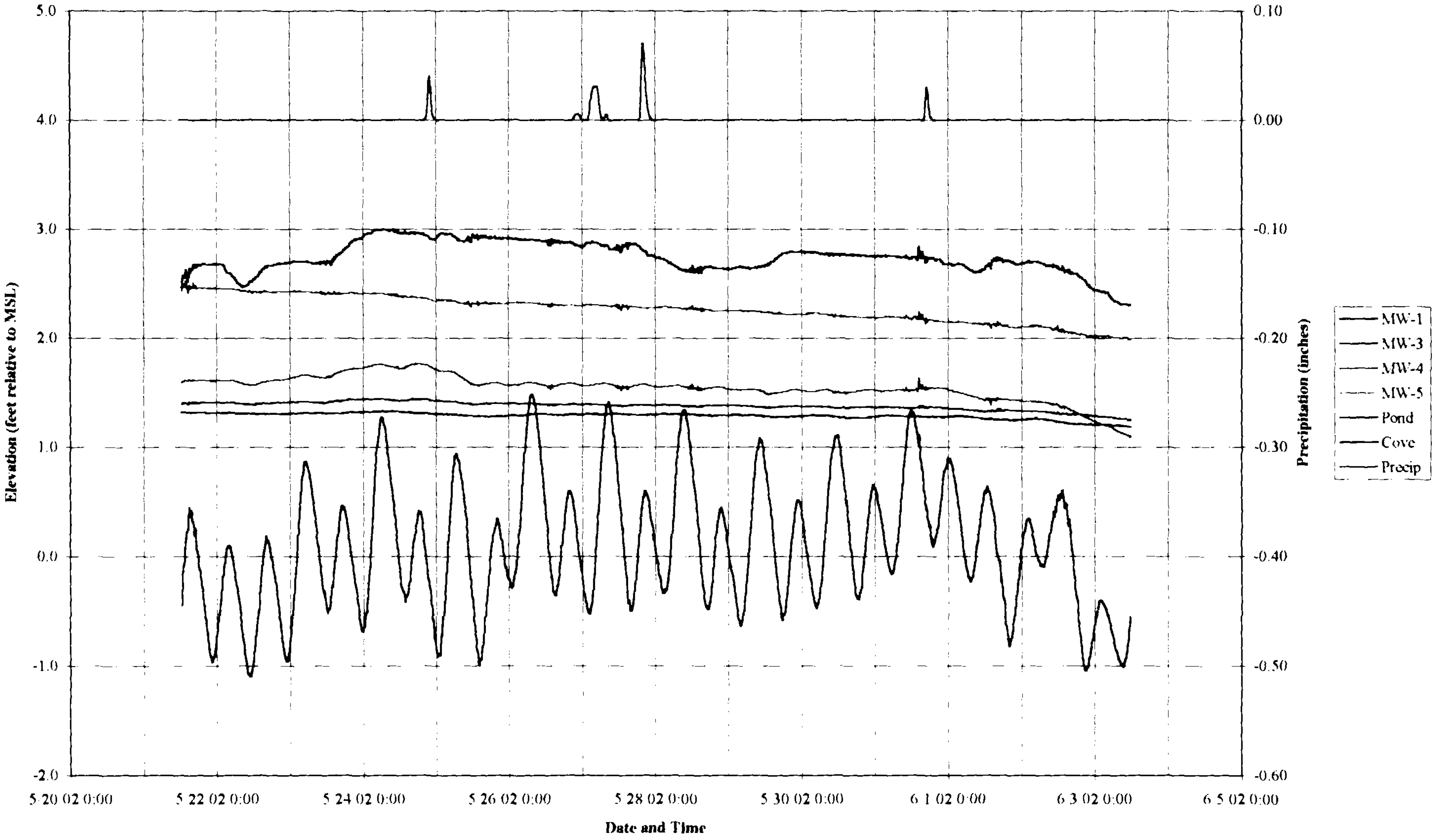
☐	Wetland
▨	Nontidal Wetland Buffer

SITE:

Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland

Figure 6
Water Level Fluctuations

Sauer Dump Site
Baltimore, MD



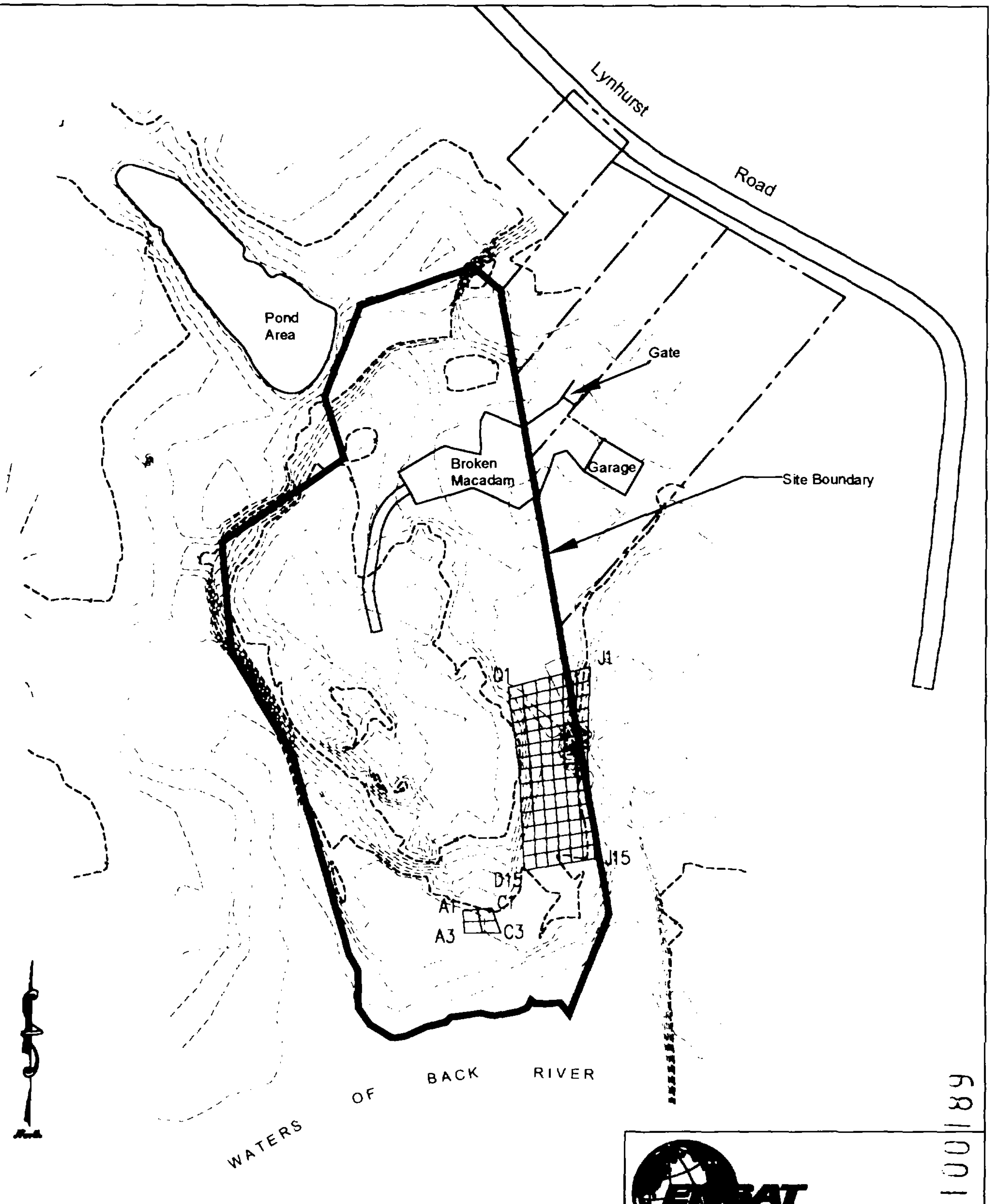


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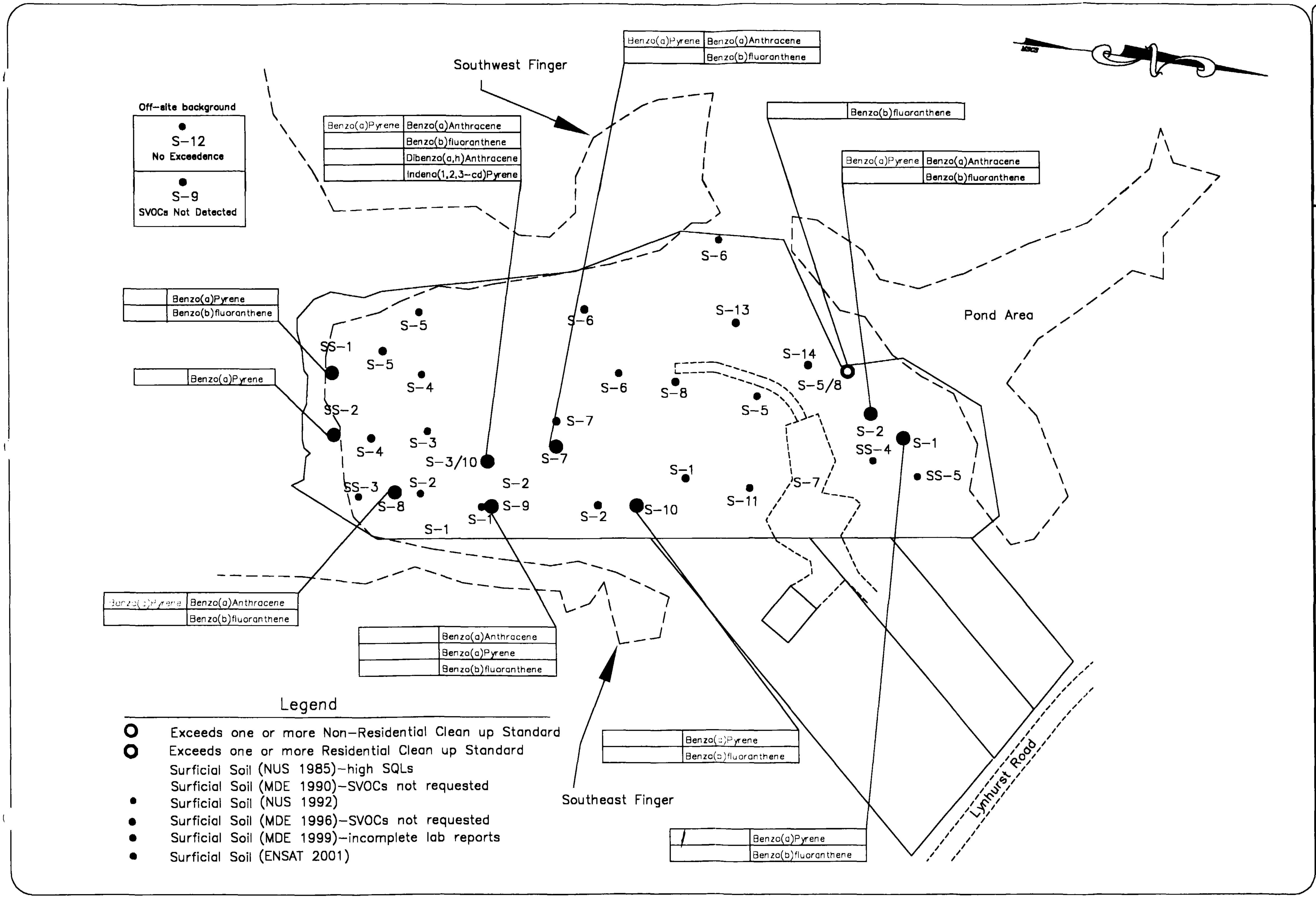
FIGURE 7: PCB Hot Spot Characterization Sampling Grid Location

SITE:

Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland

DRAWN BY VTD	DATE 07/23/02
SCALE 1"=110'	JOB# C011490
FILE NAME C011490.DWG	PROJECT MANAGER NL



Legend

- ○ Exceeds one or more Non-Residential Clean up Standard
- ○ Exceeds one or more Residential Clean up Standard
- Surficial Soil (NUS 1985)-high SQLs
- Surficial Soil (MDE 1990)-SVOCs not requested
- ● Surficial Soil (NUS 1992)
- ● Surficial Soil (MDE 1996)-SVOCs not requested
- ● Surficial Soil (MDE 1999)-incomplete lab reports
- ● Surficial Soil (ENSAT 2001)

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FIGURE 8

SURFICIAL SOIL
DISTRIBUTION OF SVOCs

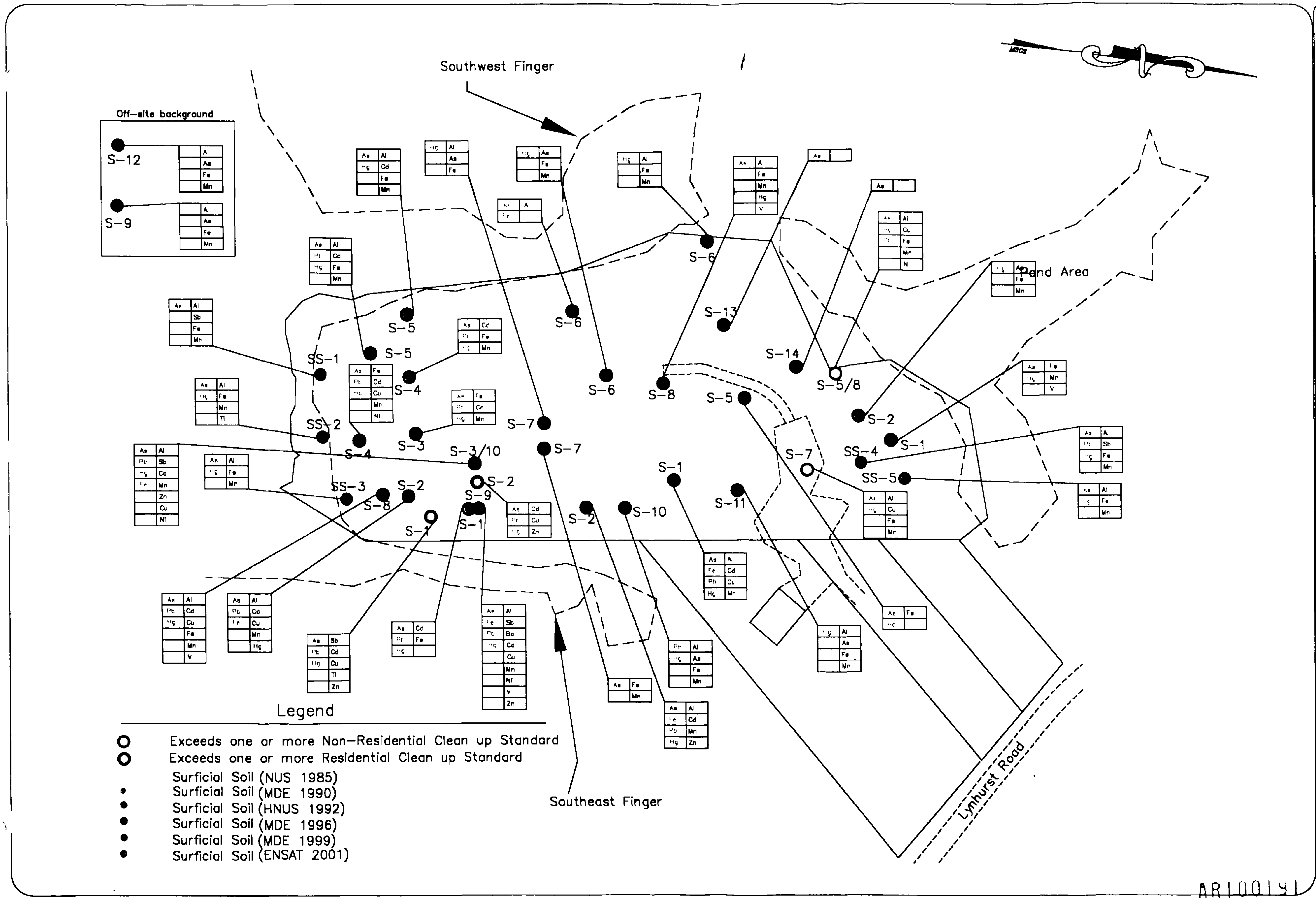
REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG



Legend

- Exceeds one or more Non-Residential Clean up Standard
- Exceeds one or more Residential Clean up Standard
- Surficial Soil (NUS 1985)
- Surficial Soil (MDE 1990)
- Surficial Soil (HNUS 1992)
- Surficial Soil (MDE 1996)
- Surficial Soil (MDE 1999)
- Surficial Soil (ENSAT 2001)

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FIGURE 9

SURFACE SOIL
DISTRIBUTION OF METALS

REVISIONS
DATE

SAUER DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1460
FILE NAME: C01-1460.DWG

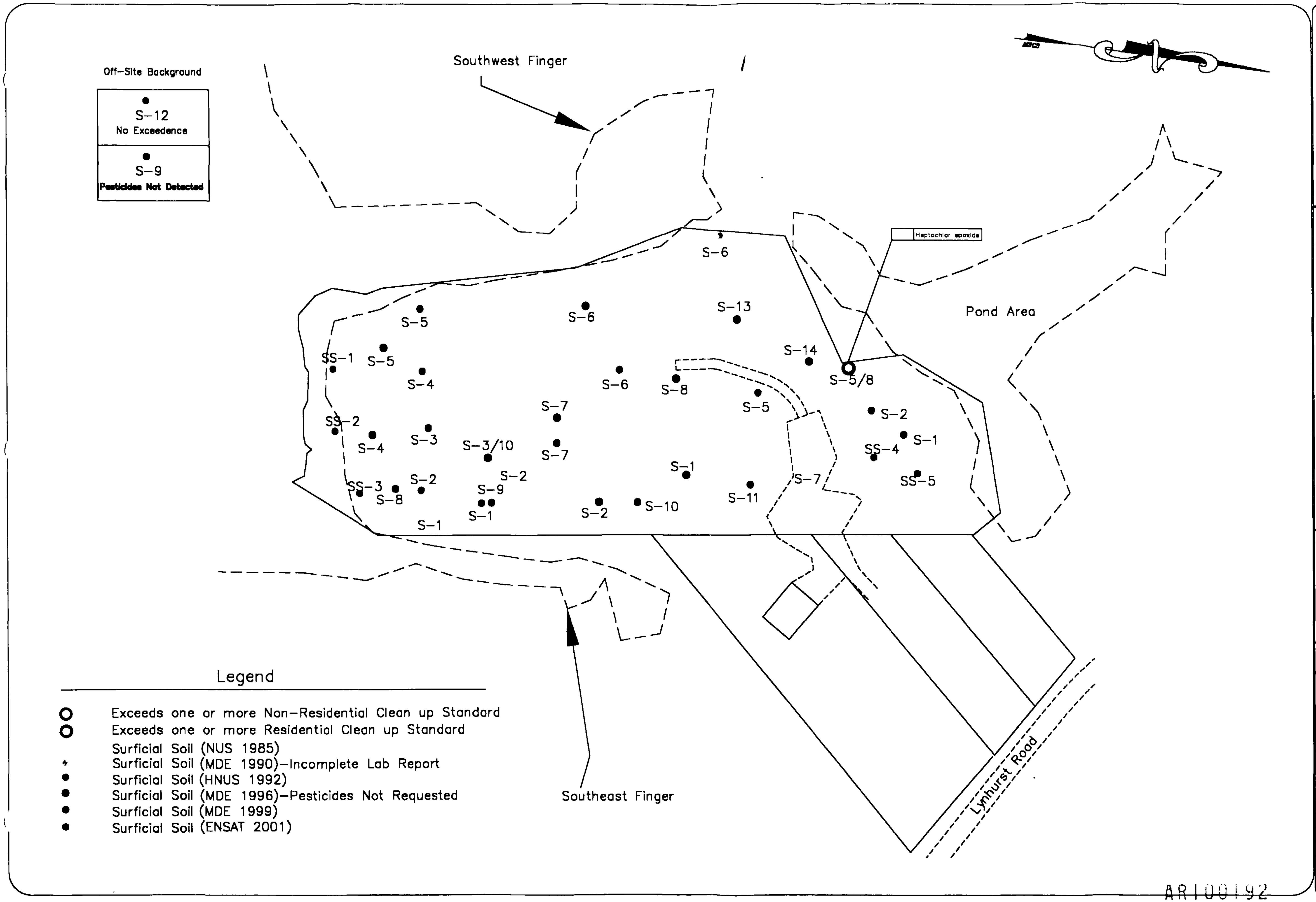

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FIGURE 10

SURFICIAL SOIL
DISTRIBUTION OF PESTICIDES

REVISIONS
DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE:
07/23/02
DESIGNED BY:
Lawrence K. Chambers
DRAFTED BY:
Lawrence K. Chambers
SCALE:
1"=70'
JOB #:
C01-1490
FILE NAME:
C01-1490.DWG

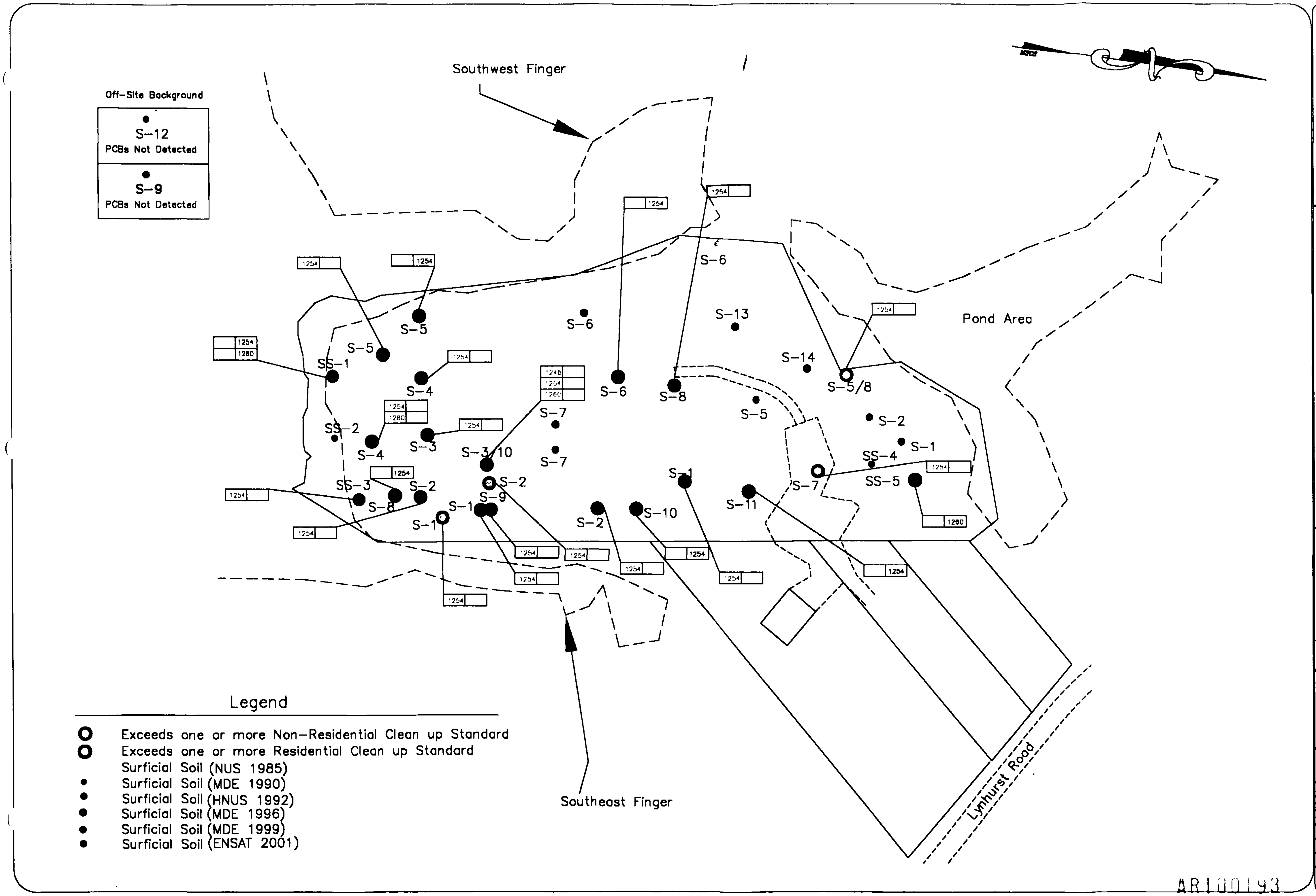

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FIGURE 11

SURFICIAL SOIL DISTRIBUTION OF PCBs

REVISIONS

DATE

SAUER DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG

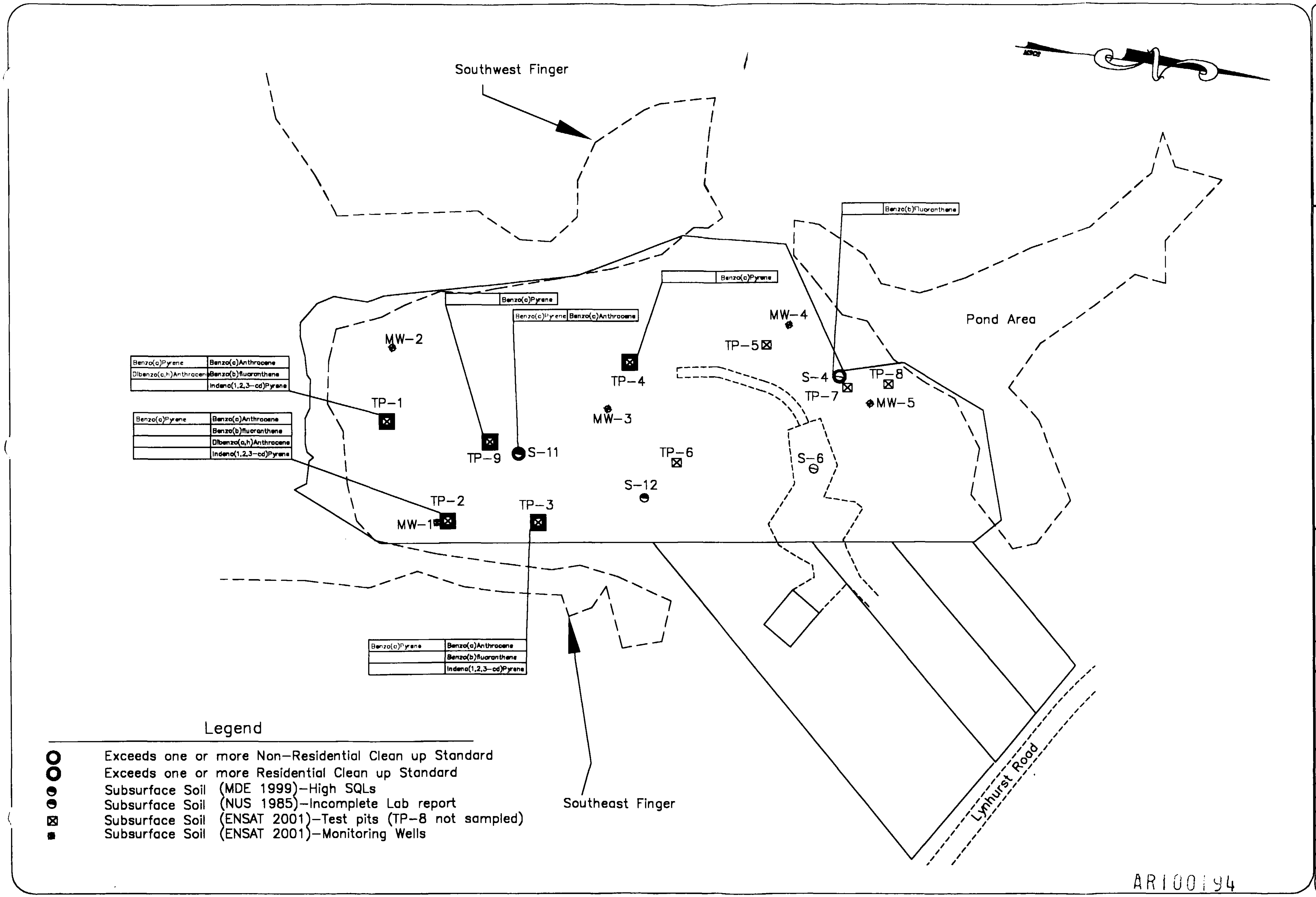

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FIGURE 12

SUBSURFACE SOIL
DISTRIBUTION OF SVOCs

REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG

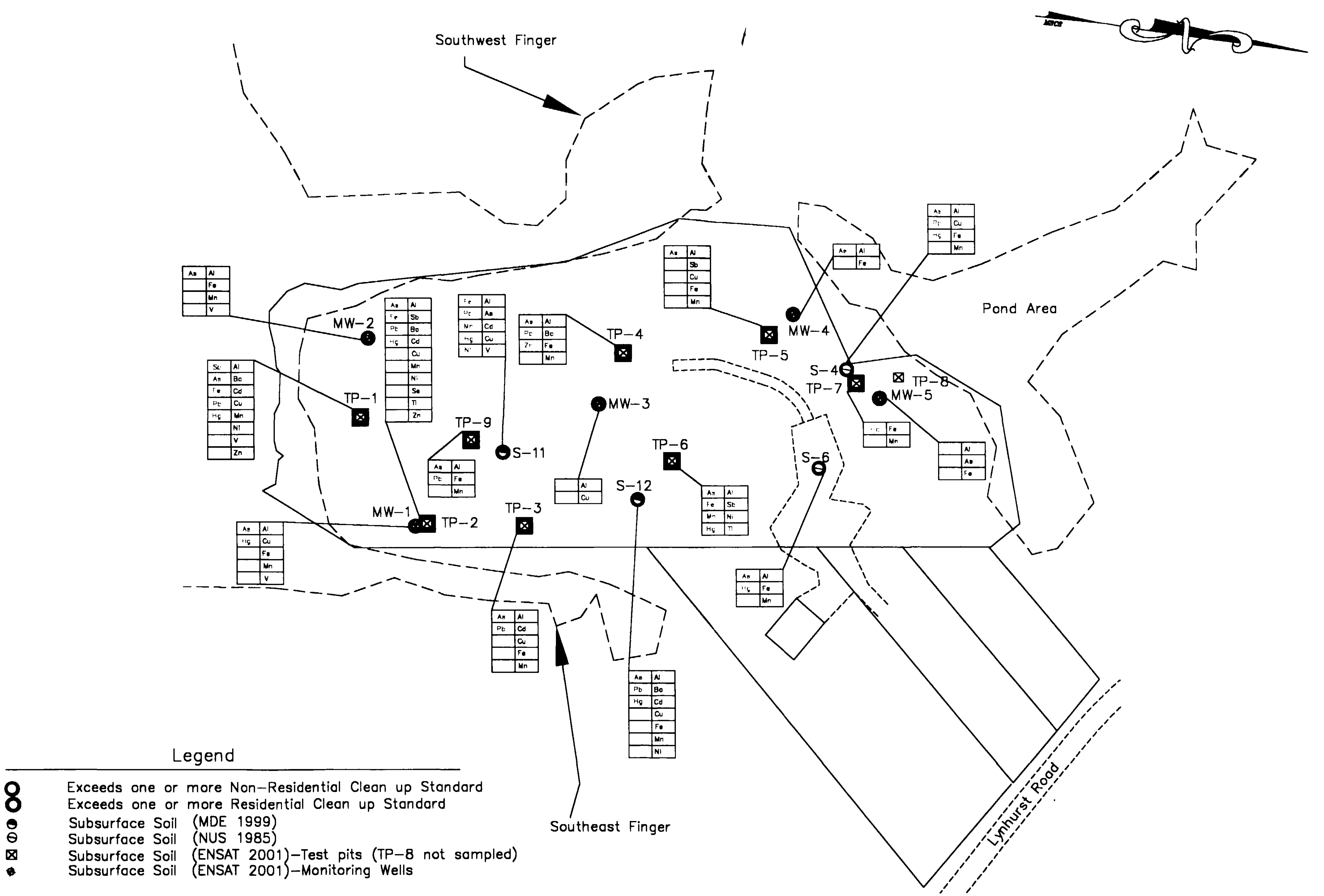

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FIGURE 13

SUBSURFACE SOIL
DISTRIBUTION OF METALS

REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE:
07/23/02

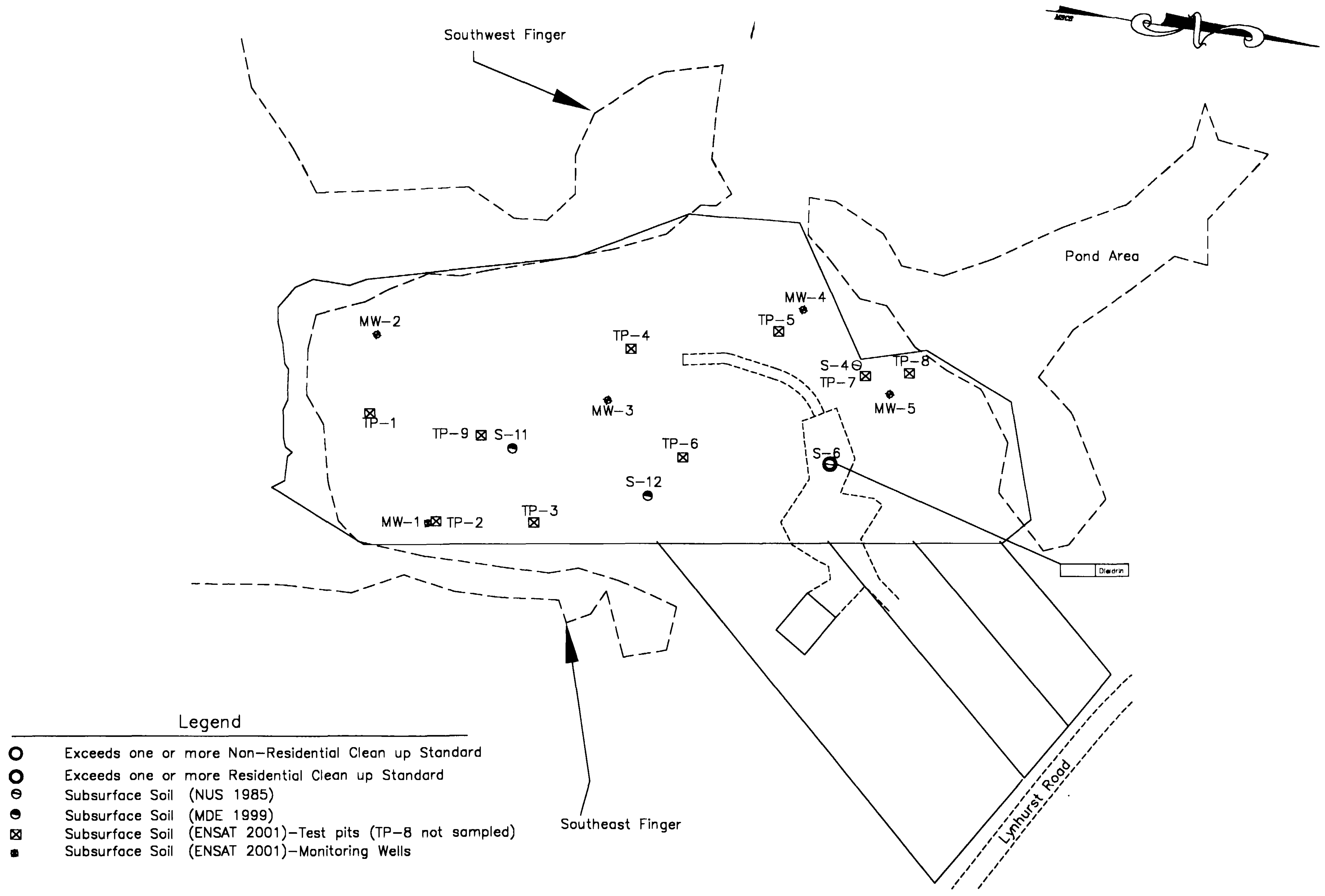
DESIGNED BY:
Lawrence K. Chambers

DRAFTED BY:
Lawrence K. Chambers

SCALE:
1"=70'

JOB #:
C01-1490

FILE NAME:
C01-1490.DWG



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AND TECHNOLOGY CORPORATION
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PHONE (301) 617-0811 • FAX (301) 617-2818

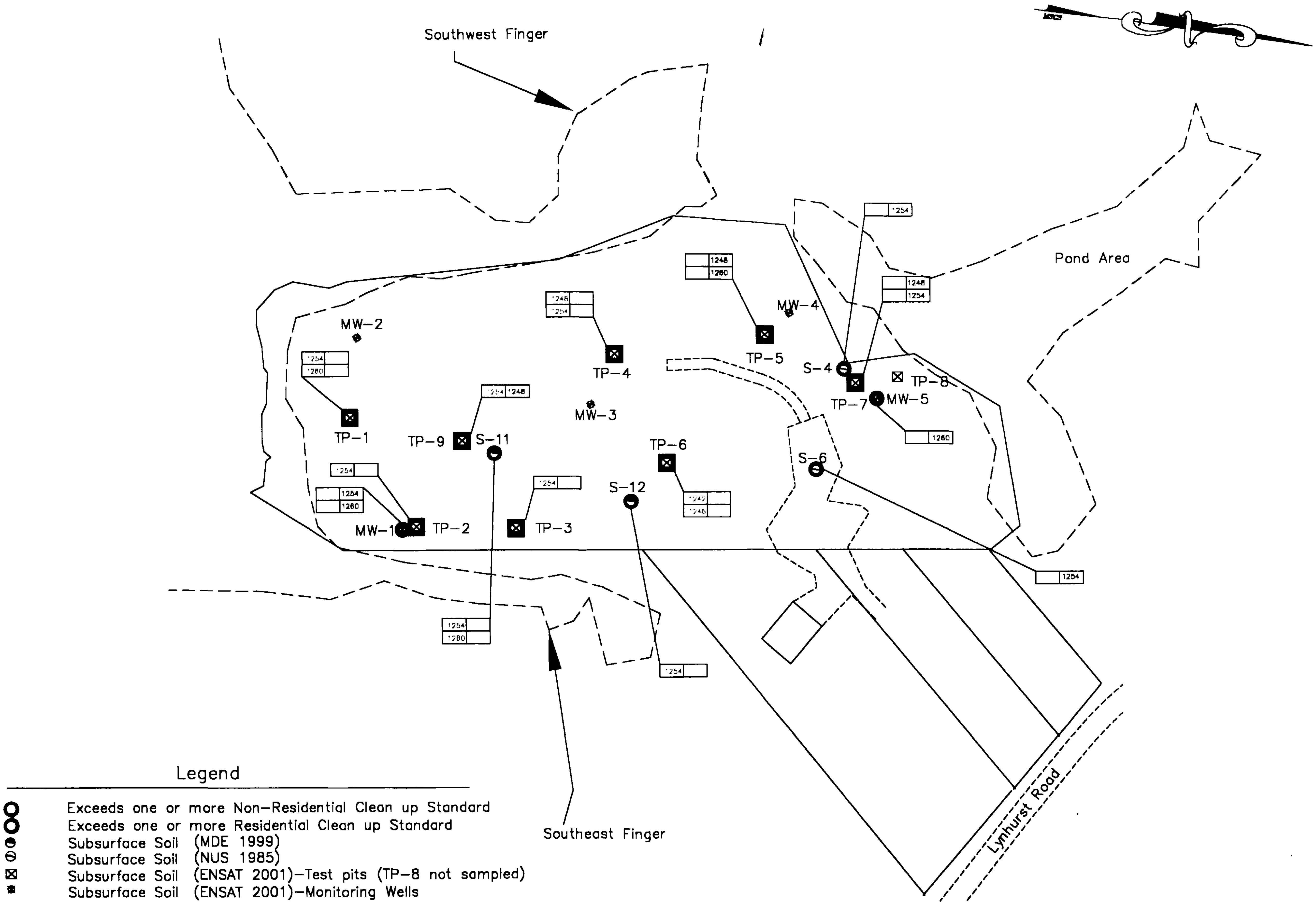
FIGURE 14
SUBSURFACE SOIL
DISTRIBUTION OF PESTICIDES

REVISIONS
DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE:
07/23/02
DESIGNED BY:
Lawrence K. Chambers
DRAFTED BY:
Lawrence K. Chambers
SCALE:
1"=70'
JOB #:
C01-1490
FILE NAME:
C01-1490.DWG



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PHONE: (301) 617-0811 • FAX: (301) 617-2818

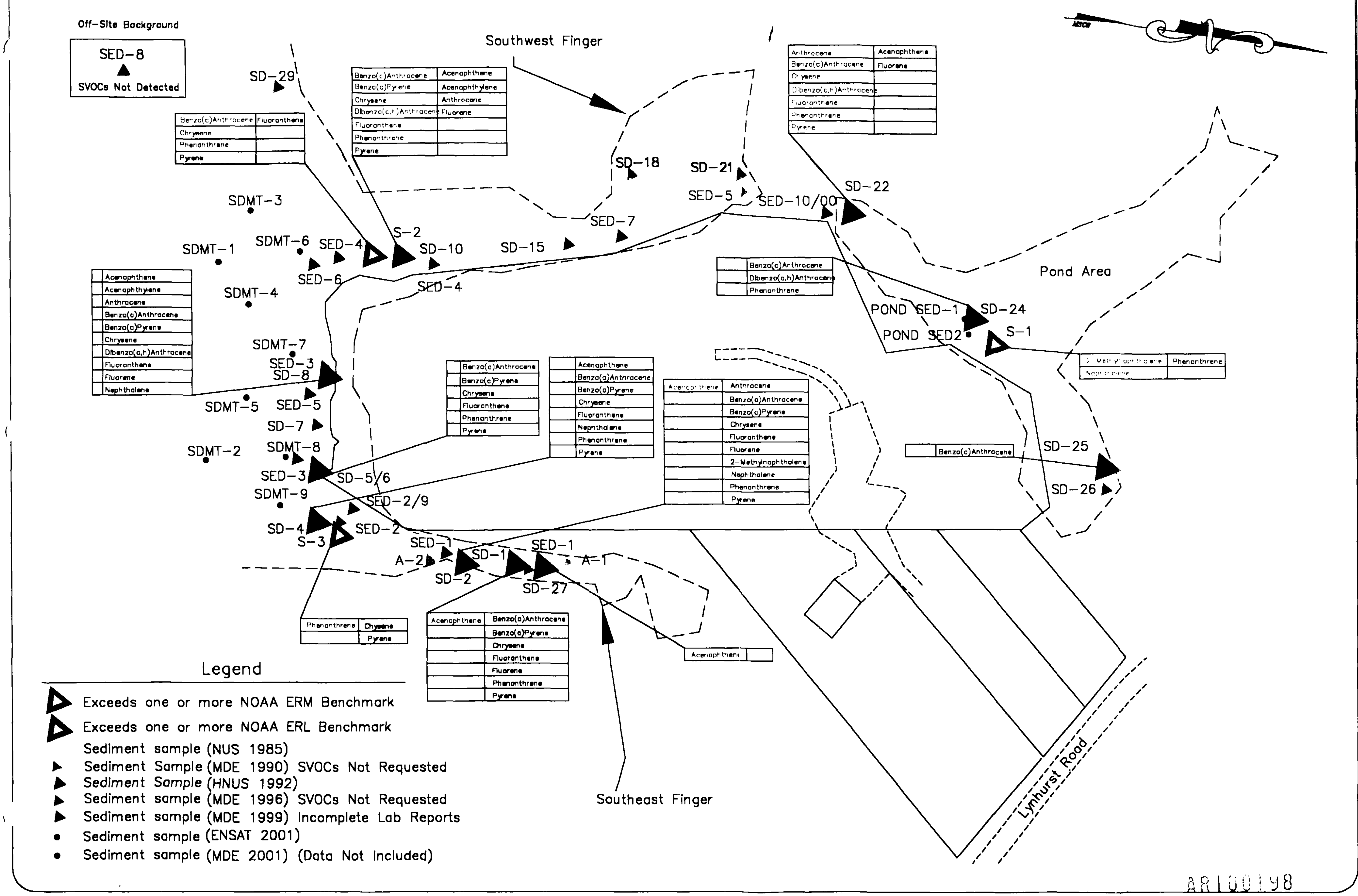
FIGURE 15
SUBSURFACE SOIL
DISTRIBUTION OF PCBs

REVISIONS
DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG



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PHONE: (301) 617-0811 • FAX: (301) 617-2819

FIGURE 16

SEDIMENT DISTRIBUTION OF SVOCs

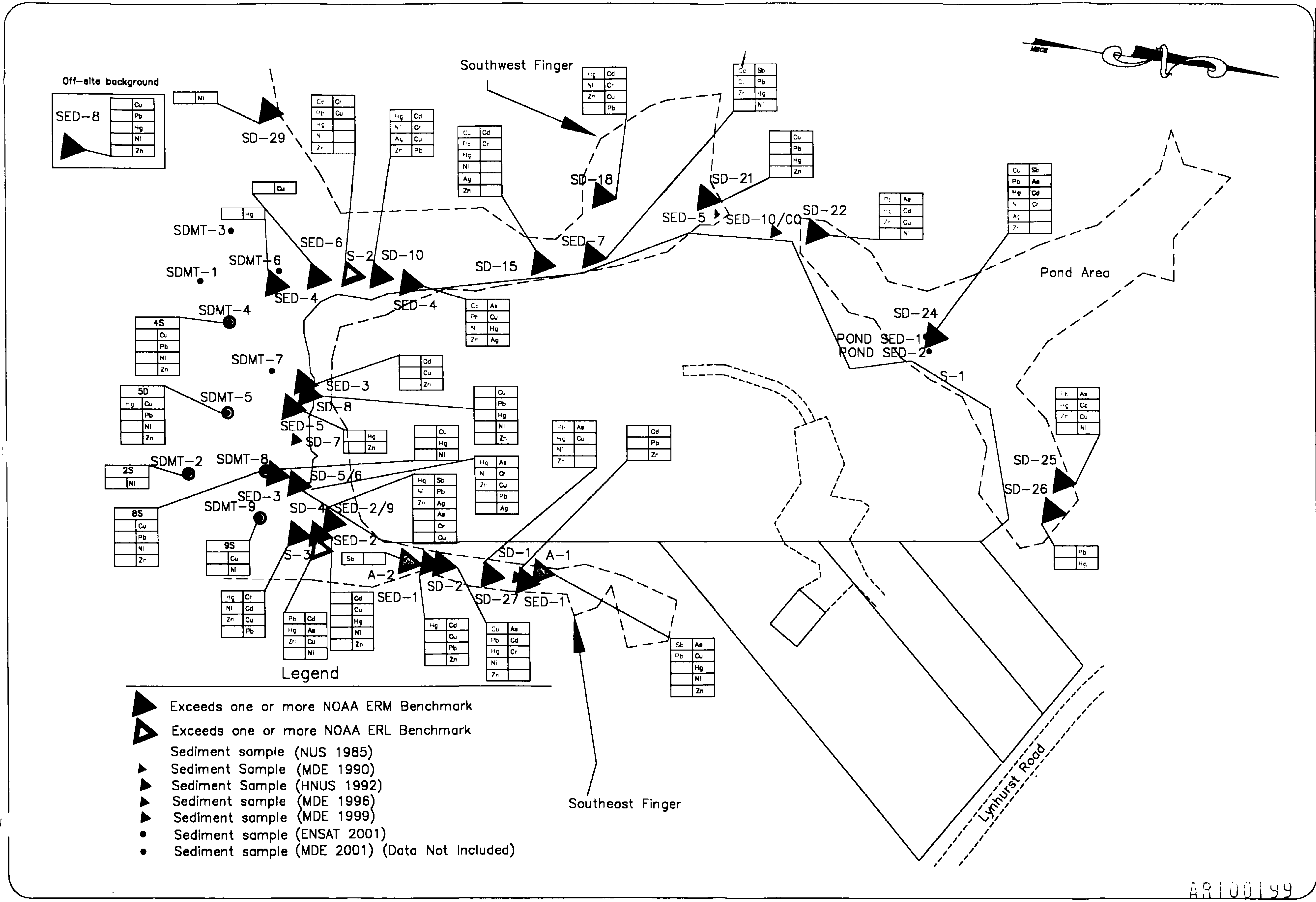
REVISIONS

DATE

SAUER DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG



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AND TECHNOLOGY CORPORATION
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PHONE: (301) 617-0811 • FAX (301) 617-2810

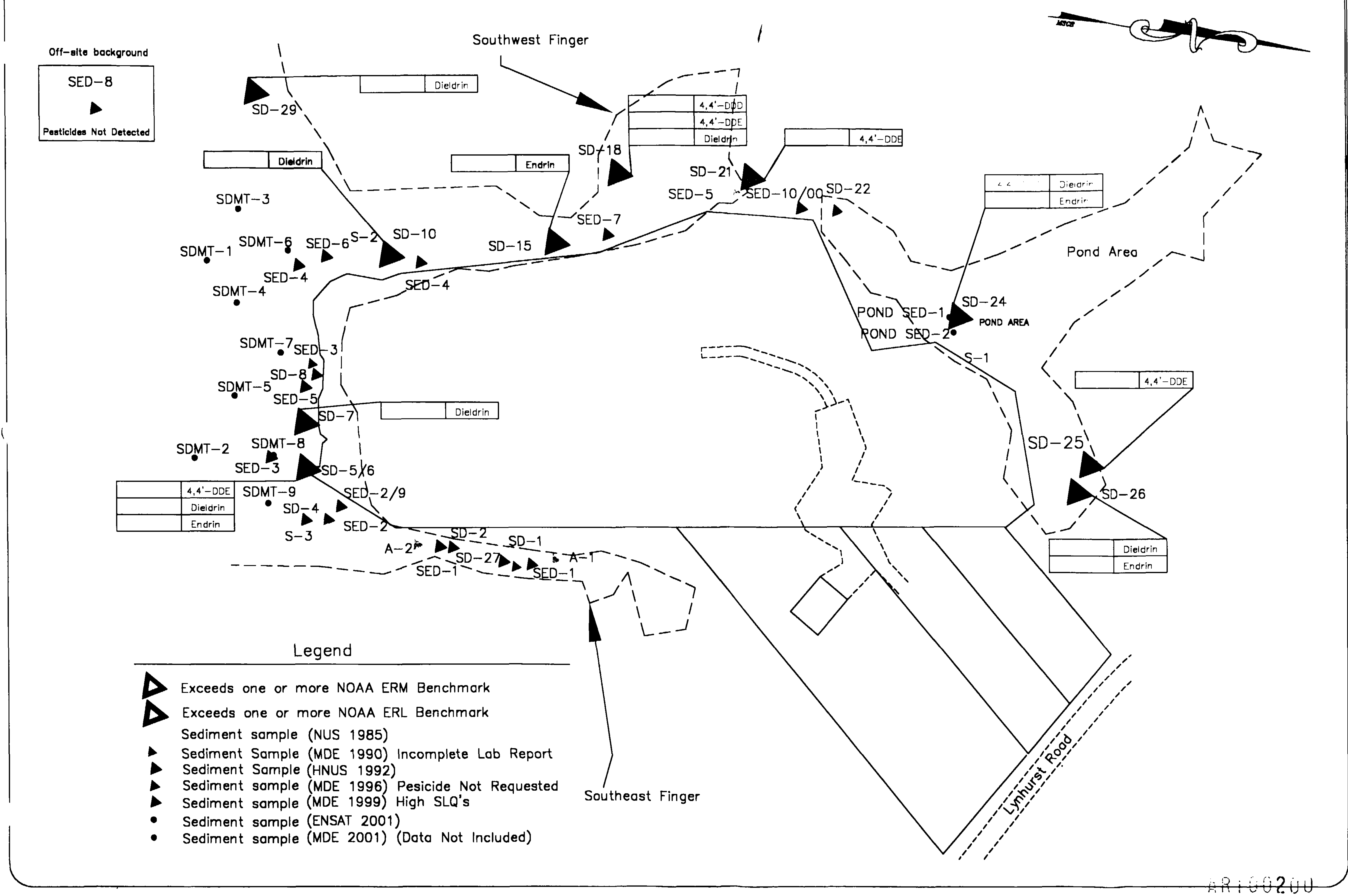
FIGURE 17
SEDIMENT
DISTRIBUTION OF METALS

REVISIONS
DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG



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AND TECHNOLOGY CORPORATION
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PHONE: (301) 617-0811 • FAX: (301) 617-2819

FIGURE 18

SEDIMENT
DISTRIBUTION OF PESTICIDES

REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02

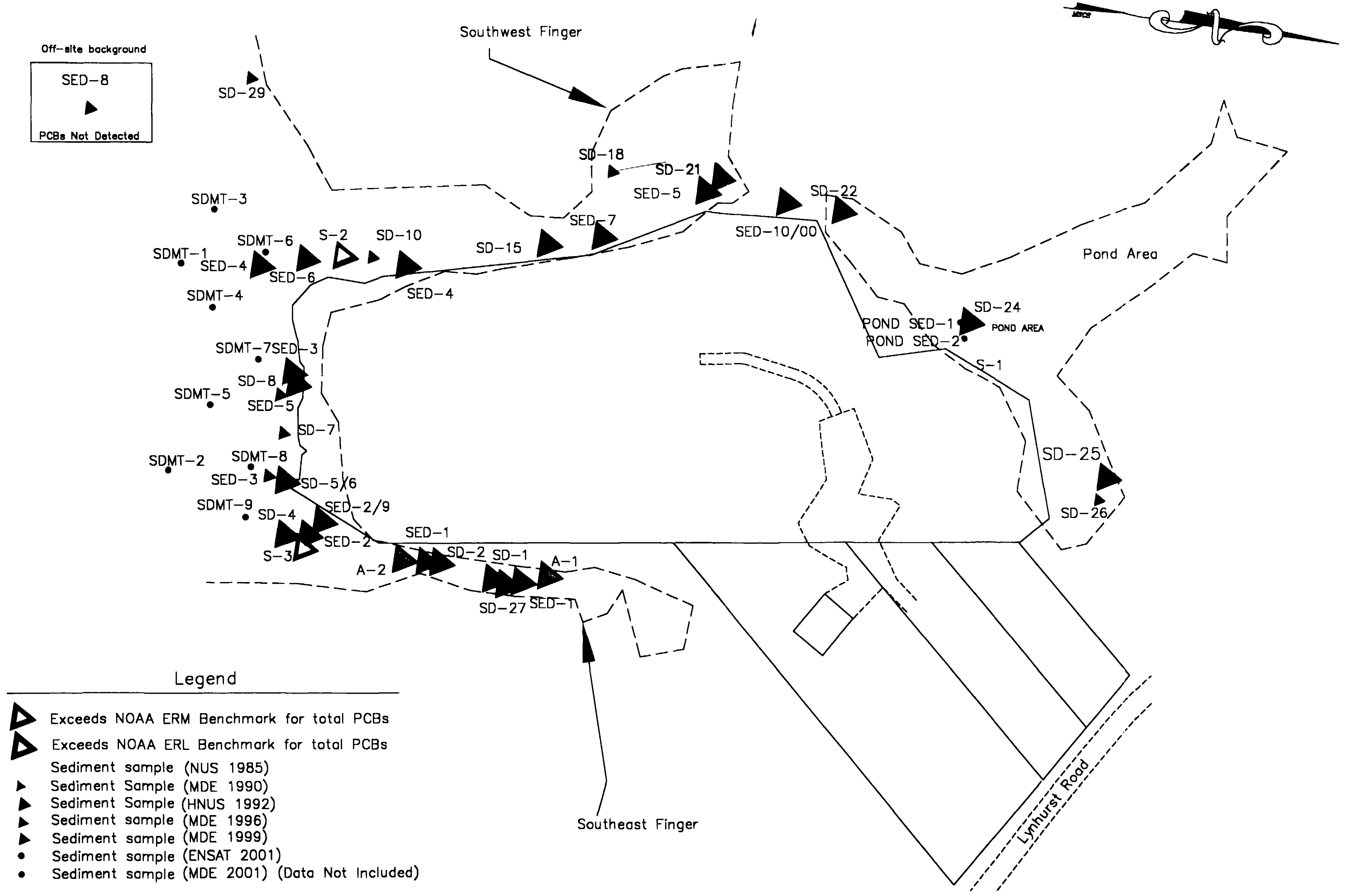
DESIGNED BY: Lawrence K. Chambers

DRAFTED BY: Lawrence K. Chambers

SCALE: 1"=70'

JOB #: C01-1490

FILE NAME: C01-1490.DWG



ENVIRONMENTAL SERVICE
AND TECHNOLOGY CORPORATION
8640 Washington Blvd, Suite D, Jessup, Maryland 20794
PHONE: (301) 617-0811 • FAX: (301) 617-2818

FIGURE 19

SEDIMENT
DISTRIBUTION OF PCBs

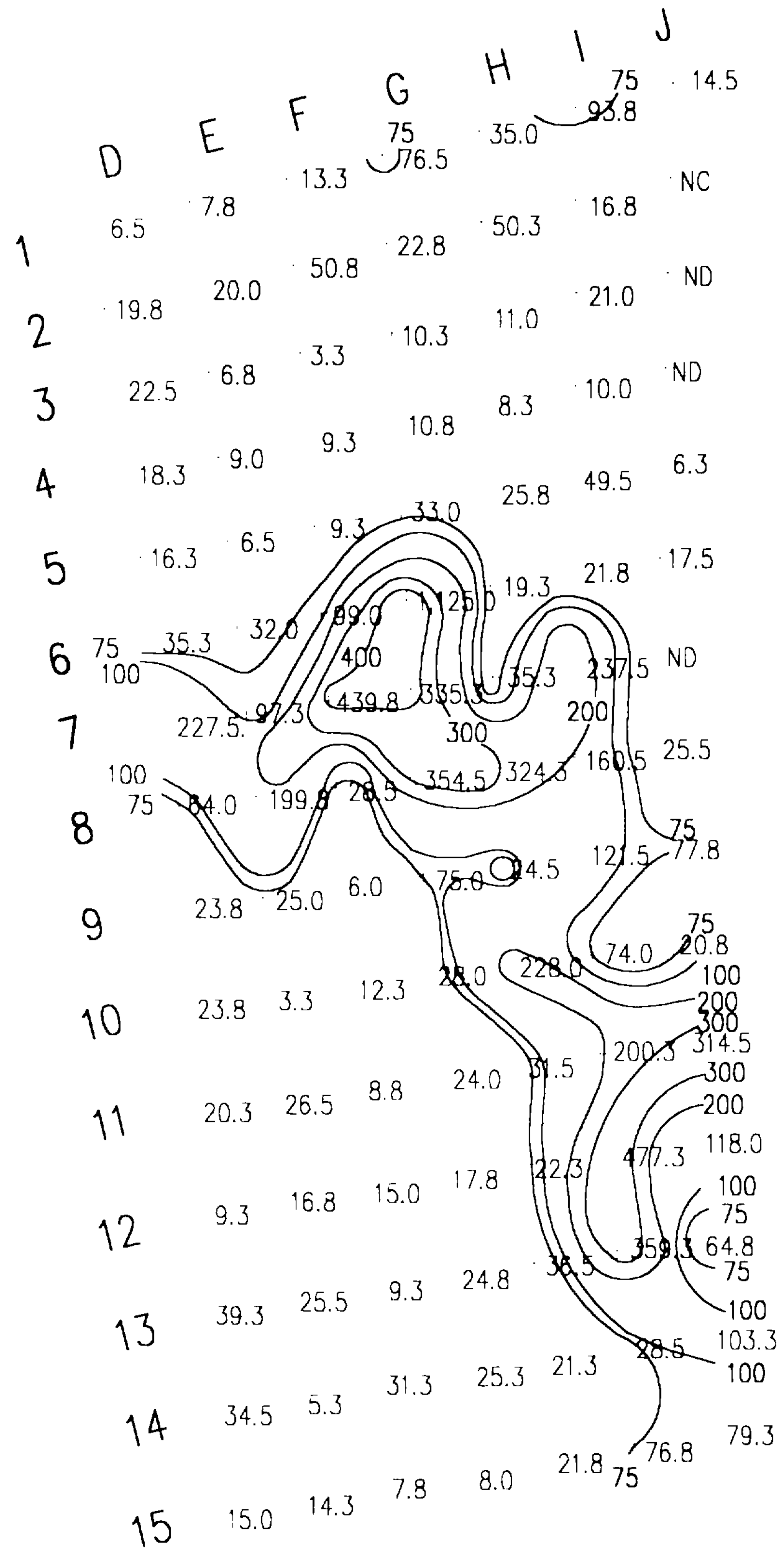
REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=70'
JOB #: C01-1490
FILE NAME: C01-1490.DWG



LEGEND:

NC	Not Collected
ND	Not Detected
+23.8	Sample Location Total PCB Concentration by Immunoassay (mg/kg)
——— 100	Limits of Total PCB Concentration

SITE:

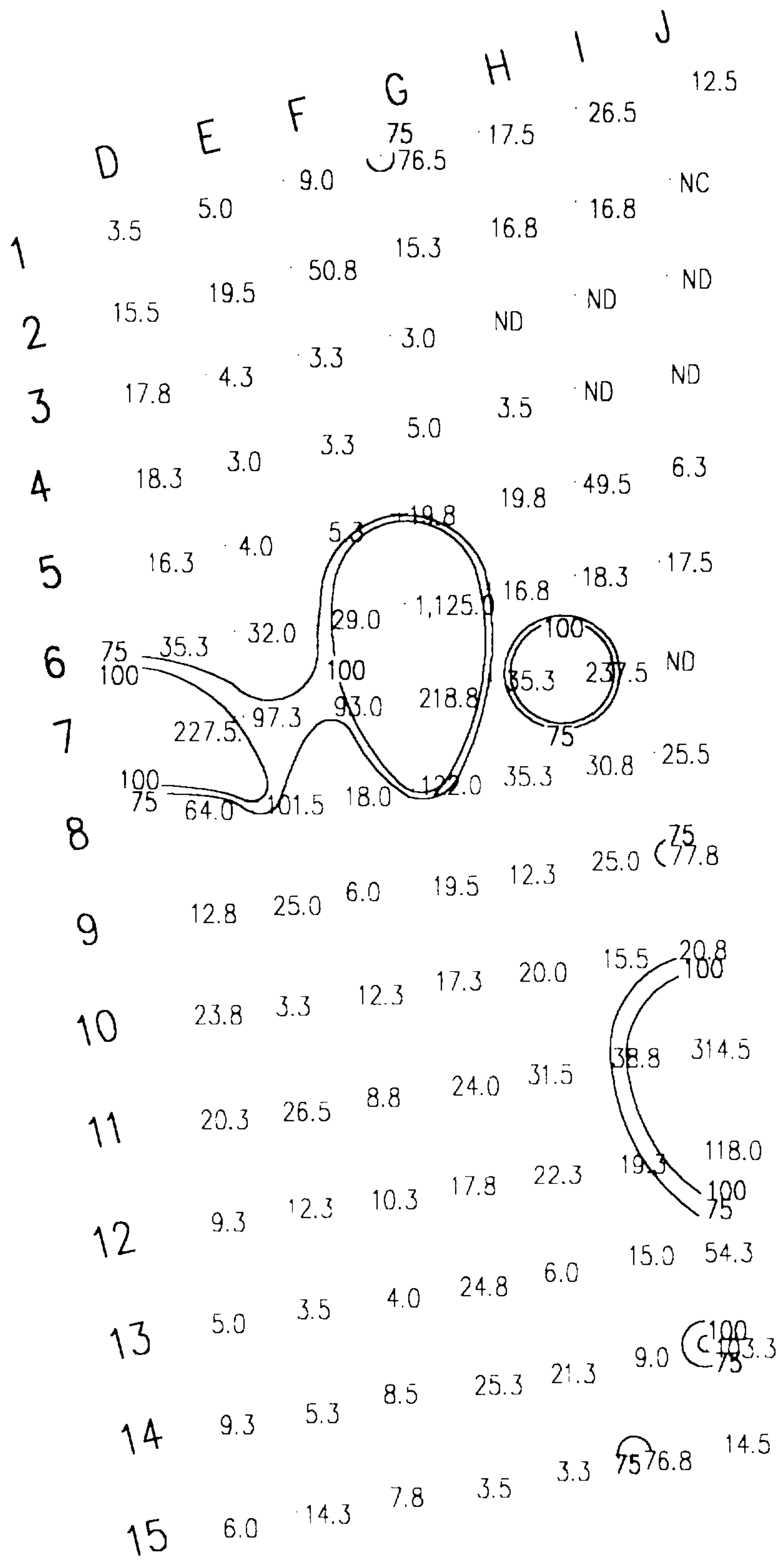
Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland

ENVIRONMENTAL SERVICE AND TECHNOLOGY CORPORATION

FIGURE 20: Total PCB Concentration Highest Result from Test Pit

DRAWN BY VTD	DATE 07/23/02
SCALE 1" = 20'	JOB# C011490
FILE NAME C011490 DWG	PROJECT MANAGER NL

Note: Immunoassay concentration at D4 did not correlate with laboratory concentration.



LEGEND:

NC	Not Collected
ND	Not Detected
23.8	Total PCB Concentration by Immunoassay (mg/kg)
——100	Limits of Total PCB Concentration

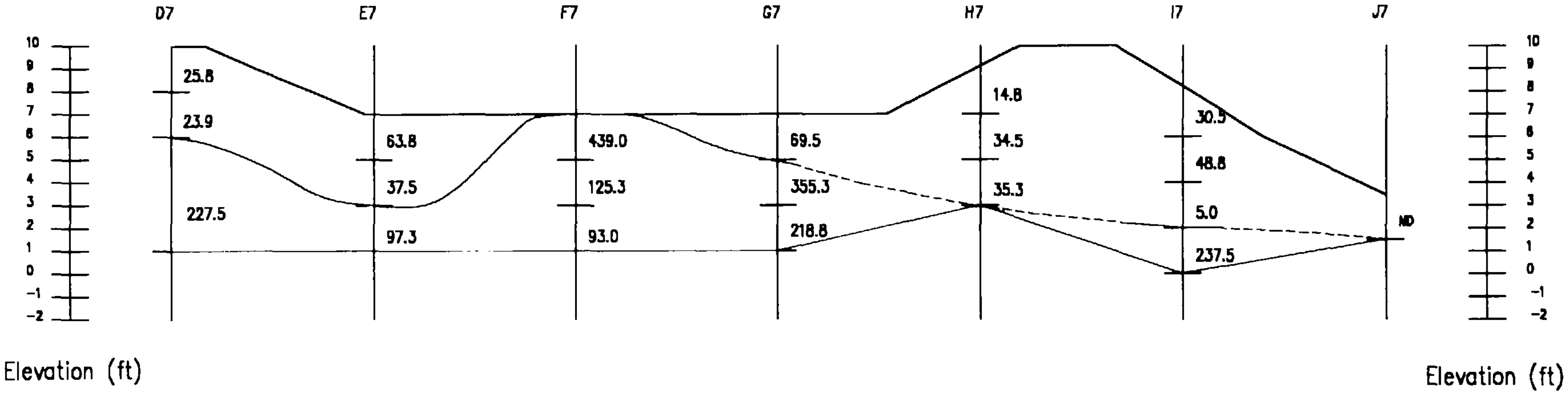
SITE:

Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland

ENVIRONMENTAL SERVICE AND TECHNOLOGY CORPORATION

FIGURE 21: Total PCB Concentration Bottom of Test Pits

DRAWN BY VTD	DATE 07/23/02
SCALE 1" = 20'	JOB# C011490
FILE NAME C011490 DWG	PROJECT MANAGER NL



SITE:

Sauer Dump
4225 Lynhurst Road
Baltimore, Maryland

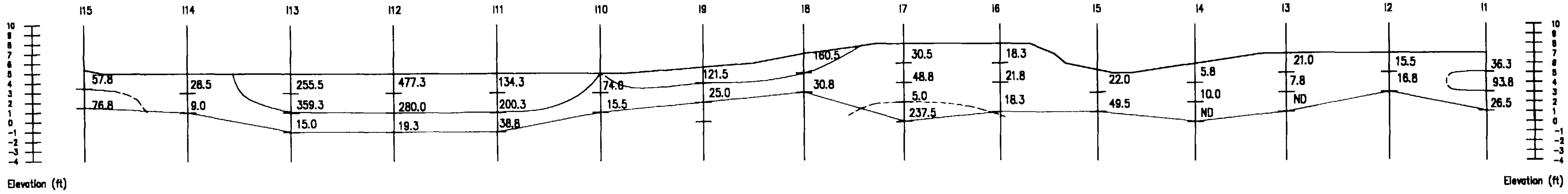
LEGEND:

ND	Not Detected
63.8	Total PCB Concentration by Immunoassay (mg/kg)
———	Ground Surface
———	Limits of 75 mg/kg Total PCBs Concentration
———	Observed Groundwater Level

ENVIRONMENTAL SERVICE AND TECHNOLOGY CORPORATION

FIGURE 22: Total PCB Contamination Cross-Section D7-J7

DRAWN BY VTD	DATE 07/23/02
SCALE 1" = 7.5'	JOB# C011490
FILE NAME C011490.DWG	PROJECT MANAGER NL



LEGEND:

ND	Not Detected
63.8	Total PCB Concentration by Immunoassay (mg/kg)
—	Ground Surface
—	Limits of 75 mg/kg Total PCBs Concentration
—	Observed Groundwater Level

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FIGURE 23

Total PCB Concentration
Cross-Section I1-I15

REVISIONS

DATE

SAUER
DUMP

4225 Lynhurst Rd
Baltimore
Maryland

DATE: 07/23/02
DESIGNED BY: Lawrence K. Chambers
DRAFTED BY: Lawrence K. Chambers
SCALE: 1"=11'
JOB #: C01-1490
FILE NAME: C01-1490.DWG

FOCUSED FEASIBILITY STUDY REPORT

SAUER DUMP SITE
MD-181
BALTIMORE, MARYLAND
DELTA PROJECT NO. E002-600

This report was prepared for:

Environmental Service & Technology Corporation
8840 Washington Boulevard, Suite D
Jessup, Maryland 20794

and

Maryland Department of the Environment
Waste Management Administration
Environmental Restoration and Redevelopment Program
2500 Broening Highway
Baltimore, Maryland 21224

This report was prepared by:

Delta Environmental Consultants, Inc.

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8008 Corporate Center Drive, Suite 100
Charlotte, North Carolina 28226
(704) 543-3928

July 2002

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SAUER DUMP SITE
BALTIMORE, MARYLAND
MD-181
DELTA PROJECT NO. E002-600

1.0 INTRODUCTION

Delta Environmental Consultants, Inc. (Delta) has prepared this Focused Feasibility Study (FFS) for the Sauer Dump Site (Site) for Environmental Services & Technology Corporation (ENSAT) and the Environmental Restoration and Redevelopment Program of the Waste Management Administration of the Maryland Department of the Environment (MDE/ERRP). The Site is located adjacent to 4225 Lynhurst Road, in North Point, Baltimore County, Maryland on the western bank of the Back River. The site is an inactive, privately owned former landfill/dump and covers approximately two and one half acres. The site consists of marshy land that was stabilized by fill material (NUS 1994). As a result of historical practices at the site, soil and sediment have been impacted above applicable cleanup levels. This FFS report has been developed to accompany the Remedial Investigation (RI) Report prepared for the Site by ENSAT. Detailed descriptions regarding the history of the Site and the results of the RI are included in the RI report.

The primary purposes of this FFS report are to provide a clear delineation of contaminant distribution, identify the areas and matrices requiring treatment, establish remedial action objectives (RAOs), identify feasible technologies, and conduct a detailed analysis of remedial alternatives for the site.

This FFS report consists of eight sections. Brief summaries of Sections 2.0 through 7.0 are provided below:

- Section 2.0 summarizes the results of the remedial investigation (RI) and the mass and volume of impacted media are estimated;
- Section 3.0 discusses state and federal applicable or relevant and appropriate requirements (ARARs) and establishes remedial action objectives (RAOs) to address the risk posed by the site impacts;
- Section 4.0 presents technology development;
- Section 5.0 provides a detailed analysis of selected alternatives;
- Section 6.0 presents the selected remedy; and
- Section 7.0 includes a list of references used to develop this FFS report.

2.0 DATA ASSEMBLY AND EVALUATION

Delta compiled the data and information from various reports for the site provided by ENSAT and MDE/ERRP. In this section, soil and sediment analytical data collected during the Remedial Investigation (RI) will be evaluated.

2.1 Impacted Soil Distribution and Volume Estimation

Impacts to surficial and subsurface soils were identified in the filled areas located within the property boundaries of the site. The distribution of impacts to soil at the site based on all investigations performed to date is summarized in Figures 8 through 15 of the RI report. Tables 9 and 10 in the RI report provides a listing of constituents detected in surficial and subsurface soils. Constituents whose concentrations exceed MDE Residential Clean-up Standards are indicated. [Note (for this draft): the evaluation of metals against background concentrations has not yet been completed. Discussion regarding metals will be included in a subsequent draft of the FSS report.]

In surficial soil, semi-volatile organic compounds (SVOCs) including benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded their respective MDE Residential Clean-up Standards. In addition PCBs (Aroclor-1248, Aroclor-1254, and Aroclor-1260) and the pesticide heptachlor epoxide exceeded their respective MDE Residential Clean-up Standards.

Similar to surficial soils, SVOCs including benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h,)anthracene, and indeno(1,2,3-cd)pyrene in subsurface soils exceeded their respective MDE Residential Clean-up Standards. In addition, PCBs (Aroclor 1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260) and the pesticide dieldrin exceeded their respective MDE Residential Clean-up Standards.

Based on the distribution of impacted soil depicted in Figures 8 through 15 of the RI report (i.e., 2.48 acres), and an average depth of fill of approximately eight feet, the volume of impacted soil at the site is approximately 32,000 cubic yards. Assuming 1.4 tons per cubic yard and a 10 percent contingency, the volume of impacted soil is approximately 49,000 tons.

2.2 Impacted Sediment Distribution and Volume Estimation

Impacts to sediment were identified in four areas: (1) the Back River Shoreline Area; (2) the Southeast Finger Area; (3) the Southwest Finger Area; and (4) the Pond Area. The distribution of impacts to sediment at the site based on all investigations performed to date is summarized in Figures 16 through 19 of the RI report. Table 11 in the RI report provides a listing of constituents detected in sediments. Constituents whose concentrations exceed National Oceanographic and Atmospheric Administration (NOAA) Effects Range Low (ERL) benchmark are indicated. [Note (for this draft): sediment concentrations will be reevaluated against the consensus based standards for sediment. This information will be included in a subsequent draft of the FSS report. Additionally, impacts to sediment in the Pond Area are not addressed in this draft of the FSS report.]

In sediment, SVOCs including acenaphthene, acenaphthylene, anthracene, benzo(a)pyrene, benzo(a)anthracene, chrysene, dibenzo(a,h,)anthracene, flouranthene, flourene, naphthalene, pyrene, phenanthrene, and 2-methylnaphthalene exceeded their respective NOAA ERL benchmark. The NOAA ERL benchmark for total PCBs was also exceeded. Pesticides including dieldrin, endrin, 4,4'-DDE, and 4,4'-DDD exceeded their respective NOAA ERL benchmarks.

Based on an estimated area of impacted sediment in the Shoreline Area, the Southwest Finger Area, and the Southeast Finger Area of 35,000 square feet, and an estimated depth of two feet (i.e., estimated depth of sediment that has accumulated since the initiation of site activities), the volume of impacted sediment at the site is approximately 2,600 cubic yards. Assuming 1.12 tons per cubic yard and a 10 percent contingency, the volume of contaminated sediment is approximately 3,200 tons.

3.0 REMEDIAL ACTION OBJECTIVES

This section presents the goals and objectives for remedial action at the site. Remedial action objectives (RAOs) are developed based on (1) applicable or relevant and appropriate requirements (ARARs) and to-be-considered (TBC) criteria; (2) the future land use of the property; and (3) consideration of previous investigations. In this section, ARARs and TBC criteria are identified; the future land use of the property is considered; the site data are reviewed; and RAOs for the site are identified. Following development of RAOs, action levels will be identified.

3.1 Identification of ARARs and To-Be-Considered Criteria

The proposed RAOs must meet any Federal standards, requirements, criteria, or limitations that are determined to be ARARs. State and local ARARs must also be met if they are more stringent than Federal requirements. A synopsis of the ARARs that apply or may apply to the site are presented in Table 1. During the detailed analysis of alternatives, the ARARs and the TBC criteria will be evaluated to assure compliance.

ARARs are chemical-, location-, or action-specific. Chemical-specific ARARs are standards that promulgate concentration limitations for a chemical found in the environment. Location-specific ARARs may set restrictions on activities within specific locations such as flood plains or wetlands. Action-specific ARARs are technology or action based limitations regulating remedial activities such as permit requirements.

TBC criteria, although not promulgated by statute or regulation, are guidance that can be considered in the identification of RAOs. The TBC criteria that apply or may apply to the site are also presented in Table 1.

3.2 Future Land Use

According to a correspondence dated June 13, 2002 from John Lewis at the Baltimore County Department of Permits and Development Management, the property is zoned predominantly RC 20 Resource Conservation (Critical Area). This zoning designation permits "common open space or other parks or land intended principally for passive recreation." The letter indicates that "excavation, waste removal, grading and capping are not restricted by zoning regulations." A copy of the letter is included in Appendix A.

3.3 Considerations of Previous Site Investigations

Based on the results of the previous investigations, compounds of concern (COCs) were detected in surficial and subsurface soils and sediment at the site. The media of concern are surficial and subsurface soils and sediment.

3.3.1 Soil Remedial Action Objectives

The COCs detected in surficial and subsurface soils at concentrations exceeding their respective MDE Residential Clean-up Standards include benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, PCBs (Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260), heptachlor epoxide, and dieldrin.

The MDE clean-up standards were developed to represent concentration levels of hazardous substances at which no further remedial action would be required at a property based upon the harm posed by these substances to human health within the constraints of current knowledge. Hazardous substances that are classified as non-cancer causing generally have a clean-up standard concentration established at a hazard quotient of 0.1. This level is one magnitude more protective than the MDE remedial action standard of a hazard quotient of 1.0. Hazardous substances classified as cancer causing generally have a clean-up standard concentration established at a target cancer risk of 10^{-6}. This level is one order of magnitude more protective than the remedial action standard of 10^{-5} established by MDE. These safety factors allow for accounting of potential additive risk factors from a multiple of hazardous substances at a property (MDE 2001).

The MDE Residential Soil Clean-up Standards are derived from: (i) Risk-Based Concentrations (RBC) that are based on a target hazard quotient of 0.1 and a target cancer risk of 10^{-6} for each chemical (as calculated from ingestion and inhalation of volatiles/fugitive dust exposure pathways); (ii) the practical quantitative limit (PQL) of laboratory instrumentation if the RBC value for a chemical is lower than the PQL; and (iii) reference levels for metals in soil (MDE 2001).

Based on the results of the RI, the following RAO for surficial and subsurface soils has been established:

- Prevent exposure to surficial and subsurface soils containing benzo(b)fluoranthene, benzo(a)pyrene, benzo(a)anthracene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, PCBs (Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260), heptachlor epoxide, and dieldrin at concentrations exceeding MDE Residential Soil Clean-up Standards.

3.3.2 Sediment Remedial Action Objectives

The COCs detected in sediment at concentrations exceeding their respective NOAA ERL benchmarks include acenaphthene, acenaphthylene, anthracene, benzo(a)pyrene, benzo(a)anthracene, chrysene, dibenzo(a,h,)anthracene, fluoranthene, fluorene, naphthalene, pyrene, phenanthrene, 2-methylnaphthalene, PCBs, dieldrin, endrin, 4,4'-DDE, and 4,4'-DDD.

The NOAA ERL benchmarks are derived from the analysis of data provided from various investigations which investigated the adverse biological effects of ranges of chemical concentrations in marine and estuarine sediments. The data were arranged in order of ascending concentrations. Endpoints in which adverse effects were reported were identified. The lower 10th percentile values were named the "Effects Range-Low" (ERL) and are indicative of concentrations below which adverse effects rarely occur.

Based on the results of the RI, the following RAO for sediment in the Shoreline Area, the Southwest Finger Area, and the Southeast Finger Area has been established:

- Prevent exposure to sediment containing acenaphthene, acenaphthylene, anthracene, benzo(a)pyrene, benzo(a)anthracene, chrysene, dibenzo(a,h,)anthracene, fluoranthene, fluorene, naphthalene, pyrene, phenanthrene, 2-methylnaphthalene, PCBs, dieldrin, endrin, 4,4'-DDE, and 4,4'-DDD at concentrations exceeding their respective NOAA ERL benchmarks.

3.4 Action Levels

This section identifies action levels for impacted soil and sediment at the site.

3.4.1 Soil

The action levels for soils are the MDE Residential Soil Clean-up Standards. A summary of the actions levels is presented in Table 2.

3.4.2 Sediments

Based on discussions with MDE, the action levels for sediment will be the NOAA ERL benchmark. A summary of sediment action levels is presented in Table 3.

4.0 DEVELOPMENT OF ALTERNATIVES

Remedial alternative screening results were discussed by Delta, ENSAT, and MDE/ERRP and presented in Work Plan #4 submitted to MDE/ERRP on May 8, 2002. Prior to the development of alternatives, a preliminary assessment was made to determine whether the excavation and off-site disposal of the contents of the site was feasible. Based on the volume calculation presented in Section 2.1, the volume of material to be removed from the interior of the site would be approximately 49,000 tons. Assuming excavation and disposal costs ranging from $270 to $460 per ton (FRTR), the total cost of excavation and disposal would range from $13,230,000 to $22,540,000.

Based on the prohibitive cost of removing the impacted soil, it was agreed that the site would be contained using the U.S. Environmental Protection Agency's (EPA's) Presumptive Remedy. The presumptive remedy used for the subject site is containment. Concurrence on final screening was reached and remedial alternatives for the site were formulated for detailed analysis. Each identified alternative adequately addresses COCs and RAOs for impacted media with the exception of the no action alternatives that were retained for baseline comparison.

4.1 Soil

Per MDE's request, the following remedial alternatives for soil were selected for detailed analysis:

- S-1: No Action;
- S-2: Hot Spot Removal/Single-Barrier Cover/Land Use Controls; and
- S-3: Hot Spot Removal/Soil Cover/Land Use Controls.

Descriptions and key components of these alternatives are provided in Section 5.0.

4.2 Sediment

The following remedial alternatives for sediment were selected for detailed analysis:

- SED-1: No Action;
- SED-2: Sediment Removal/On-site Containment; and
- SED-3: Sediment Removal/Off-site Disposal.

Descriptions and key components of these alternatives are provided in Section 5.0.

5.0 DETAILED ANALYSIS OF ALTERNATIVES

This section represents a detailed analysis of remediation alternatives for the site. The analysis provides the means by which facts are assembled and evaluated to develop the rationale for a remedy selection. Soil remedial alternatives are examined first, through individual analysis, and then through a comparative analysis. Sediment remedial alternatives are analyzed in subsequent sections using the same approach.

The individual analysis of each alternative includes a description of the alternative and a comparison of the alternative against the seven criteria shown in COMAR 26.14.02.06 F (2)(a) through (g). These criteria include:

1. Protection of human health and the environment;
2. Compliance with cleanup standards and State or federal laws, regulations, and other requirements;
3. Long-term effectiveness and permanence;
4. Reduction of toxicity, mobility, or volume through treatment;
5. Short-term effectiveness;
6. Implementability; and
7. Cost.

To be considered for selection, the selected remedial alternative must meet the criteria listed above as criteria 1 and 2 (i.e., F(2) (a) and (b) of COMAR 26.14.02.06).

As requested by MDE/ERRP, unit costs presented for each alternative were obtained from published literature so that relative costs could be evaluated. Due to the limited size of the site (2.48 acres), certain alternatives will not benefit from an "economy-of-scale" factor . The cost estimates, included herein, may therefore, only be accurate to within 50 percent of the cost estimated from design specifications. Assumptions and sources used in the development of cost estimates are provided below.

All of the remedial alternatives proposed, with the exception of no action, utilize a combination of technologies. Table 4 presents a general evaluation of the individual technologies included in this study with respect to criteria 3 through 7 listed above.

The following subsections present the individual analysis results for soil and sediment remedial alternatives. The ability of the remedial alternatives to meet the seven performance criteria is described for each alternative. Soil remedial alternatives are described in Section 5.1. Sediment remedial alternatives are described in Section 5.2.

5.1 Individual Analysis of Soil Alternatives

5.1.1 S-1: No Action

This alternative is used as a baseline for comparison against alternatives that incorporate remedial actions. Under this alternative, impacts to soil would not be addressed and COCs would remain in place. Remedial actions or institutional controls would not be implemented under this alternative.

This alternative would satisfy the criteria for implementability and cost; however, other criteria, including the two required criteria, would not be met. No costs were estimated for this alternative, as remedial measures would not be performed.

5.1.2 S-2: Hot Spot Removal/Single-Barrier Cover/Land Use Controls

Alternative S-2 is a containment alternative with the addition of institutional controls in the form of deed restrictions. The major components of this alternative include:

- Grid sampling;
- Waste characterization;
- Excavation of hotspot areas;
- Transportation and disposal of impacted soils at a RCRA-approved facility;
- Confirmatory sampling;
- Site preparation;
- Single-barrier cover system placement;
- Surface water drainage;
- Institutional controls in the form of deed restrictions; and

- Five year reviews.

A brief description of each component follows.

Grid sampling would be performed to identify soil that contains PCBs at concentrations exceeding 100 milligrams per kilogram total PCBs. Field immunoassay kits would be used in conjunction with laboratory confirmation to determine total PCB concentrations.

The waste would be characterized in order to obtain approval for disposal at a RCRA permitted hazardous waste disposal facility.

A backhoe would be used to excavate and place the impacted soil into approved containers for transport to an off-site RCRA-permitted hazardous waste disposal facility.

Prior to backfilling, confirmatory sampling would be performed to assure that action levels for impacted soil are achieved.

Site preparation would include any site clearing and grading necessary to ensure the proper placement of the cap. All necessary permits would be obtained and clean fill to be used during construction of the cap would be stockpiled on site as part of this component.

The single-barrier cover system would be placed to minimize human exposure. From the top down, the single-barrier cover system would consist of a soil cover layer, a geomembrane (GM) barrier layer, and a 12-inch layer of sand above the waste material. The soil cover layer would be seeded and fertilized. Typical single-barrier cover construction is illustrated in Figure 1.

Natural surface water drainage that exists at the site would be maintained to the extent practicable. The final topographic surface and permeability of the cover would allow drainage patterns that resemble current conditions and will have minimal impact on adjacent wetlands.

As part of this alternative, deed restrictions would prohibit, or restrict with conditions, ground disturbing or other activities that could otherwise provide a contamination pathway to the public. The deed restriction would be placed on the entire parcel that contains the site. Annotation on the deed would indicate that direct contact with the soil beneath the cover system in this area may pose a health risk.

Reviews would be performed every five years to assure that the integrity of the cap is maintained and that the selected alternative remains protective of human health.

Assuming that the integrity of the cap is maintained, the exposure to the underlying soil and the magnitude of residual risk will be minimized. The implementation of deed restrictions and five-year site reviews will serve as adequate and reliable controls to ensure this alternative remains protective to human health and the environment. Therefore, this alternative would satisfy the criteria for overall protection of human health, and long-term effectiveness and permanence. If proper maintenance of the cap were performed, this alternative would comply with ARARs and would meet RAOs for soil.

Reduction of toxicity, mobility, and volume is achieved with implementation of this alternative as impacted soil that contains PCBs at concentrations exceeding 100 milligrams per kilogram total PCBs are excavated and transported off-site for disposal. Hot spot removal and disposal of PCB impacted soil also satisfies USEPA requirements for PCB cleanup (40 CFR Part 761.61).

With best management practices and health and safety procedures followed during hotspot removal and cap construction, the protection of the community and workers would be achieved. The amount of time to achieve RAOS is estimated at three to six months. Thus, short-term effectiveness would also be achieved using this alternative.

The materials and equipment necessary to implement and maintain this alternative are readily available. A joint wetland permit application has been submitted to the Tidal/Non-Tidal Sections of MDE in order to complete construction. Thus, this alternative meets the criteria for implementability.

Removal, transportation, and disposal of impacted soil range from $270 to $460 per ton (FRTR 2002). The approximate construction costs for the singe-barrier cover system is $125,000 per acre (USAFCEE 1999), or $310,000. Costs for grid sampling, waste characterization, and confirmatory sampling are not included in these estimates.

5.1.3 S-3: Hot Spot Removal/Soil Cover/Land Use Controls

Alternative S-3 is a containment alternative with the addition of institutional controls in the form of deed restrictions. The major components of this alternative include:

- Grid sampling;
- Waste characterization;
- Excavation of hotspot areas;
- Transportation and disposal of impacted soils at a RCRA-approved facility;
- Confirmatory sampling;
- Site preparation;
- Soil cover placement;
- Surface water drainage;
- Institutional controls in the form of deed restrictions; and
- Five year reviews.

A brief description of each component follows.

Grid sampling would be performed to identify soil that contains PCBs at concentrations exceeding 100 milligrams per kilogram total PCBs. Field immunoassay kits would be used in conjunction with laboratory confirmation to determine PCB concentrations.

The waste would be characterized in order to obtain approval for disposal at a RCRA permitted hazardous waste disposal facility.

A backhoe would be used to excavate and place the impacted soil into approved containers for transport to an off-site RCRA-permitted hazardous waste disposal facility. Prior to backfilling, confirmatory sampling would be performed to assure that action levels for impacted soil are achieved.

Site preparation would include any site clearing and grading necessary to ensure the proper placement of the cap. All necessary permits would be obtained and clean fill to be used during construction of the cover would be stockpiled on site as part of this component.

The engineered soil cover would be placed to minimize human exposure. Because leaching of contaminants is not a primary concern at this site, guidance provided in EPA's Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites (EPA 1991) is followed. A two-foot thick native soil cover would be used. The two-foot thick cover would consist of an 18-inch thick barrier soil layer and a six-inch topsoil layer for vegetative cover. The barrier layer would be placed and compacted in six-inch lifts to ensure proper compaction and cover stability. The six-inch layer of topsoil would be placed above the 18-inch barrier layer to provide the two-foot overall cover thickness. The final soil cover would be seeded and fertilized. Typical soil cover construction is illustrated in Figure 2.

Natural surface water drainage that exists at the site would be maintained to the extent practicable. The final topographic surface and permeability of the cover would allow drainage patterns that resemble current conditions.

As part of this alternative, deed restrictions would prohibit, or restrict with conditions, ground disturbing or other activities that could otherwise provide a contamination pathway to the public. The deed restriction would be placed on the entire parcel that contains the site. Annotation on the deed would indicate that direct contact with the soil beneath the cover system in this area may pose a health risk.

Reviews would be performed every five years to assure that the integrity of the cap is maintained and that the selected alternative remains protective of human health.

Assuming that the integrity of the cap is maintained, the exposure to the underlying soil and the magnitude of residual risk will be minimized. The implementation of deed restrictions and five-year site reviews will serve as adequate and reliable controls to ensure this alternative remains protective to human health and the environment. Therefore, this alternative would satisfy the criteria for overall protection of human health, and long-term effectiveness and permanence. If proper maintenance of the cap were performed, this alternative would comply with ARARs and would meet RAOs for soil.

Reduction of toxicity, mobility, and volume is achieved with implementation of this alternative as impacted soil that contains PCBs at concentrations exceeding 100 milligrams per kilogram total PCBs are excavated and transported off-site for disposal. Hot spot removal and disposal of PCB impacted soil also satisfies USEPA requirements for PCB cleanup (40 CFR Part 761.61).

With best management practices and health and safety procedures followed during hotspot removal and cap construction, the protection of the community and workers would be achieved. The amount of time to achieve RAOS is estimated at three to six months. Thus, short-term effectiveness would also be achieved using this alternative.

The materials and equipment necessary to implement and maintain this alternative are readily available. A joint wetland permit application has been submitted to the Tidal/Non-Tidal Sections of MDE in order to complete construction. Thus, this alternative meets the criteria for implementability.

Removal, transportation, and disposal of impacted soil range from $270 to $460 per ton (FRTR 2002). The approximate construction costs for the soil cover system are $75,000 per acre (USAFCEE 2001) or $186,000. Costs for grid sampling and confirmatory sampling are not included in this estimate.

5.2 Individual Analysis of Sediment Alternatives

5.2.1 SED-1: No Action

This alternative is used as a baseline for comparison against alternatives that incorporate remedial actions. Under this alternative, impacts to sediment would not be addressed and COCs would remain in place. Remedial actions or institutional controls would not be implemented under this alternative.

This alternative would satisfy the criteria for implementability and cost; however, other criteria, including the two required criteria, would not be met. No costs were estimated for this alternative, as remedial measures would not be performed.

5.2.2 SED-2: Sediment Removal/On-Site Containment

Under this alternative, impacted sediment is excavated from Shoreline Area, the Southwest Finger Area, and the Southeast Finger Area and land-applied on the dump site. Major components of this alternative include:

- Site preparation;
- Removal of impacted sediment;
- Dewatering of sediment;
- Land application of the excavated sediment;
- Backfilling/capping of excavated wetland areas; and
- Revegetation.

A brief description of each component follows.

Site preparation would include securing all necessary permits, phragmite removal, and establishing a dewatering area, and a decontamination area and laydown area for equipment.

The sediment would be excavated using a long reach tracked excavator. The excavation would be completed during lower tide and silt fencing and/or carbon booms would be used to minimize re-suspension of impacted sediment into the Back River. Marsh mats may also be used to stabilize the shoreline for the excavator and to extend the reach of the excavator.

Dewatering of the excavated material would be accomplished by thinspreading over the site, minimizing infiltration and maximizing evaporation of any residual water.

Once the benchmark (two feet below existing grade) has been achieved, backfilling activities could be performed. The excavated areas would be backfilled with clean sand and graded. Wetland vegetation would be re-established following backfilling activities. A control program would be used to ensure phragmites do not return to the area. Goose control fencing would be used to protect the replanted wetland vegetation.

This alternative would be used in conjunction with capping alternatives S-2 or S-3. Assuming that the integrity of the cap is maintained, the exposure to sediment and the magnitude of residual risk will be minimized. The implementation of deed restrictions and five-year site reviews will serve as adequate and reliable controls to ensure this alternative remains protective to human health and the environment. Therefore, this alternative would satisfy the criteria for overall protection of human health and long-term effectiveness and permanence. If proper maintenance of the cap were performed, this alternative would comply with ARARs and would meet RAOs for sediment.

Reduction of toxicity, mobility, and volume is achieved, with implementation of this alternative as impacted sediment is excavated and contained on-site. Hotspot removal of PCB impacted sediment satisfies USEPA requirements for PCB cleanup (40 CFR Part 761.61).

With best management practices and health and safety procedures followed during sediment removal, dewatering, and land application, the protection of the community and workers would be ensured achieved. The amount of time to achieve RAOS is estimated at three to six months. Thus, short-term effectiveness would be achieved using this alternative.

The materials and equipment necessary to implement and maintain this alternative are readily available. A joint wetland permit application has been submitted to the Tidal/Non-Tidal Sections of MDE in order to complete construction. Thus, this alternative meets the criteria for implementability.

Estimated costs to excavate and dewater the sediment are estimated at $25 per cubic yard (USEPA 1993). Assuming 3,200 cubic yards, the estimated costs are $80,000. Costs for reestablishing the wetland areas are not included in these estimates.

5.2.3 SED-3: Sediment Removal/Off-Site Disposal

Under this alternative, impacted sediment is dredged from the site and transported off-site to a non-hazardous waste landfill (based upon historical PCB concentrations of less than 50 parts per million). The major components of this alternative include:

- Site preparation;
- Excavation of impacted sediment;
- Dewatering of sediment;
- Transportation and disposal of sediment at a non-hazardous waste landfill;
- Backfilling/capping of excavated wetland areas; and
- Revegetation.

A brief description of each component follows.

Site preparation would include securing all necessary permits, phragmite removal, and establishing a dewatering area, and a decontamination area and laydown area for equipment.

The sediment would be excavated using a long reach tracked excavator. The excavation would be completed during lower tide and silt fencing and/or carbon booms would be used to minimize re-suspension of impacted sediment into the Back River. Marsh mats may also be used to stabilize the shoreline for the excavator and to extend the reach of the excavator.

Dewatering of the excavated material would be accomplished by thinspreading over the site, minimizing infiltration and maximizing evaporation of any residual water.

Following dewatering, a backhoe would be used to excavate and place the impacted sediment into trucks for transport to an off-site non-hazardous waste landfill.

Once the benchmark has been achieved (two feet below existing grade) backfilling activities could be performed. The excavated areas would be backfilled with clean sand and graded. Wetland vegetation would be re-established following backfilling. A control program would be used to ensure phragmites do not return to the area. Goose control fencing would be used to protect the replanting.

This alternative would be used in conjunction with capping alternatives S-2 or S-3. As impacted sediment would be transported off-site for disposal, the criteria for protection of human health and long-term effectiveness and permanence would be achieved. The implementation of deed restrictions and five-year site reviews will serve as adequate and reliable controls to ensure this alternative remains protective to human health and the environment.

Reduction of toxicity, mobility, and volume is achieved with implementation of this alternative as impacted sediment is excavated and transported off-site for disposal. Hotspot removal of PCB impacted sediment satisfies USEPA requirements for PCB cleanup (40 CFR Part 761.61).

With best management practices and health and safety procedures followed during sediment removal, dewatering, and transportation, the protection of the community and workers would be ensured achieved. The amount of time to achieve RAOS is estimated at three to six months. Thus, short-term effectiveness would be achieved using this alternative.

The materials and equipment necessary to implement and maintain this alternative are readily available. A joint wetland permit application has been submitted to the Tidal/Non-Tidal Sections of MDE in order to complete construction. Thus, this alternative meets the criteria for implementability.

Excavation, transportation, and disposal of impacted sediment are estimated at $260 per ton (FRTR 2002). Assuming a volume of 3,200 tons, the estimated costs are $832,000. Costs for reestablishing the wetland areas are not included in these estimates.

5.3 Comparative Analysis of Alternatives

The purpose of the comparative analysis is to identify the advantages and disadvantages of each alternative relative to one another so that the most effective alternative can be selected. The seven criteria presented in Section 5.0 are considered in this analysis. Overall protection of human health and compliance with ARARs are generally considered threshold criteria as they must be met by any alternative selected. Long-term and short-term effectiveness: reduction of toxicity, mobility, and volume through treatment, implementability and costs are considered primary balancing criteria. Selecting the preferred alternative is the final step in the remedy selection process. Individual evaluation of soil and sediment alternatives are presented in Tables 5 and 6, respectively.

5.3.1 Soil Alternatives

All alternatives except S-1 would be protective of human health and the environment. Alternatives S-2 and S-3 would be protective to human health and the environment assuming the integrity of the cover system is maintained.

Alternative S-1 would not comply with ARARs, RAOs, or TBCs. Although compliance with TBC would not be achieved through implementation of alternatives S-2 and S-3, these alternatives would comply with ARARs and meet RAOs for soil if proper maintenance of the cap is performed.

Alternative S-1 does not meet the criteria for long-term effectiveness or reduction in toxicity, mobility, or volume. Alternatives S-2 and S-3 meet the criteria for long-term effectiveness and reduction of toxicity, mobility, or volume through treatment through hotspot removal.

Alternatives S-2 and S-3 meet the criteria for short-term effectiveness through the use of best management practices and appropriate health and safety procedures. Alternative S-1 does not meet this criteria as contaminants would be left on site without a physical barrier to prevent contact.

Alternative S-1 is easily implementable as no actions would be taken. Alternatives S-2 and S-3 would require extensive site work and on-going maintenance.

No costs were estimated for alternative S-1 as no action is implemented. The estimated cost for alternative S-2 is approximately $310,000. The estimated cost for alternative S-3 is approximately $186,000.

5.3.2 Sediment Alternatives

Sediment alternative SED-1 does not meet the criteria for protection of human health and the environment. Alternative SED-2 is protective of human health and the environment assuming the integrity of the cover system is maintained. Alternative SED-3 is protective of human health and the environment.

Alternative SED-1 would not provide compliance with ARARs, RAOs, or TBCs. Alternative SED-2 is compliant with ARARs as sediment applied to the site that is impacted above MDE Residential Soil Cleanup Standards (RSCSs) is contained by capping alternative S-2 or S-3. Alternative SED-3 would be compliant with ARARs as impacted sediments are removed and disposed of off-site at an appropriate facility.

Alternative SED-1 does not meet the criteria for long-term effectiveness and permanence or reduction in toxicity, mobility, or volume as no actions are implemented. Alternative SED-2 would meet the criteria for long-term effectiveness and reduction of toxicity, mobility, and volume through treatment as a result of removal and on-site capping. Alternative SED-3 would be effective in the long-term and permanent as impacted sediments are removed and disposed of off-site at an appropriate facility.

Alternatives SED-2 and SED-3 meet the criteria for short-term effectiveness through the use of best management practices and appropriate health and safety procedures. Alternative S-1 does not meet this criterion as impacted sediments would remain in place.

Alternative SED-1 is easily implemented as no action is taken. Alternatives SED-2 and SED-3 would require moderate site work and maintenance.

There are no costs associated with alternative SED-1 as no actions are taken. The estimated cost for alternative SED-2 is approximately $80,000. The estimated cost for alternative SED-3 is approximately $832,000

6.0 SELECTED REMEDIAL ALTERNATIVES

Based upon the detailed analysis of alternatives, remedial alternatives S-2 (hot spot removal/single barrier cover/land use controls) and SED-2 (sediment removal/on-site containment) were selected as the remedy for the Site. This selection was based on the following:

- Alternative S-2 meets the RAOs and was chosen by MDE/ERRP as the alternative that is more protective of human health and the environment as this alternative will minimize the infiltration of water through the waste material; and
- SED-2 was chosen by MDE/ERRP as the lowest cost alternative that meets RAOs.

7.0 REFERENCES

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Federal Remediation Technologies Roundtable, 2002, *Remediation Technologies Screening Matrix and Reference Guide, Version 4.0, 4.28 Excavation, Retrieval, and Off-Site Disposal* (Internet Site), http://www.frtr.gov/matrix2/section4/4-29.html, accessed May 29, 2002.

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8.0 REMARKS

The conclusions contained in this report represent our professional opinions. These opinions were arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

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Richard E. Powell
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Reviewed by:

Gary Wisniewski, P.E.
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/vn

cc:

TABLES

Ta 1
Synopsis of Potential Federal and State ARARs and To-Be-Considered Criteria
Sauer Dump
Baltimore County, Maryland

Federal and State Standards, Regulations, or Guidance	Consideration in the Remedial Response Process	Type
Occupational Safety and Health Act (OSHA), (29 CFR Parts 1904, 1910 and 1926)	Applicable. All personnel working on site must follow OSHA requirements.	Action-Specific
Department of Transportation Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171, 173, 178, and 179)	Relevant and appropriate. These requirements will be applicable for transport of hazardous material from the site for laboratory analysis.	Action-Specific
Resource Conservation and Recovery Act (RCRA), Land Disposal Restrictions (LDRs) and Solid Waste Land Disposal Requirements (40 CFR Parts 258 and 268)	Relevant and appropriate. May be applicable if off-site soil disposal is selected as a remedial alternative	Action-Specific
RCRA, Closure and Post-closure care (40 CFR Part 258, Subpart F)	Relevant and appropriate. These requirements will be applicable for closure and post closure care.	Action-Specific
RCRA, Identification and Listing of Hazardous Waste (40 CFR Part 261)	To-Be-Considered. Contaminated soil or ground water from the site may be classified as a RCRA hazardous waste.	To-Be-Considered as Guidance
RCRA, Standards Applicable to Generators and Transporters of Hazardous Waste (40 CFR Part 262 and 263)	To-Be-Considered. If an alternative involves the offsite transportation of hazardous wastes, these requirements must be attained.	To-Be-Considered as Guidance
RCRA, Landfill closure and post-closure care (40 CFR Part 264.117 through 264.120, and Part 264.310)	Relevant and appropriate. These requirements will be applicable for closure and post closure care.	Action-Specific
RCRA, Manifest System, Recordkeeping, and Reporting (40 CFR Part 264, Subpart E)	To-Be-Considered. These regulations apply if a remedial alternative involves the offsite treatment, storage, or disposal of hazardous waste.	To-Be-Considered as Guidance
Toxic Substances Control Act (TSCA), PCB remediation waste (40 CFR Part 761.61)	Applicable. These requirements provide cleanup levels and disposal options for PCB remediation waste.	Action-Specific
TSCA, Chemical waste landfills (40 CFR 761.75)	Applicable. These requirements provide for the design requirements of facilities used for the disposal of PCBs.	Action-Specific
Code of Maryland Regulations (COMAR) 26.02, Occupational, Industrial, and Residential Hazards	Applicable. Provides limits on maximum noise levels allowed during site remediation work.	Action-Specific

Notes: ARARs = Applicable or relevant and appropriate requirements

Ta 1
Synopsis of Potential Federal and State ARARs and To-Be-Considered Criteria
Sauer Dump
Baltimore County, Maryland

Federal and State Standards, Regulations, or Guidance	Consideration in the Remedial Response Process	Type
COMAR 26.04, Regulation of Water Supply, Sewage Disposal, and Solid Waste	Applicable. Provides of maximum contaminant levels (MCLs) of contaminants in drinking water; provides specifications for well construction and abandonment, and provides for proper closure and post closure monitoring and maintenance of landfills.	Action- and Chemical-Specific
COMAR 26.08, Water Pollution	Relevant and Appropriate. Establishes criteria and standards for discharge limitations and policy for anti-degradation of waters of the State.	Action- and Chemical-Specific
COMAR 26.13, Disposal of Controlled Hazardous Substances	Applicable. Provides criteria to identify hazardous waste and listed waste, including Maximum Concentration of Contaminants for the Toxicity Characteristic; establishes standards for generators of hazardous waste; and provides regulation for the transport of hazardous waste.	Action- and Chemical-Specific
COMAR 26.14, Hazardous Substance Response Plan	Applicable, Establishes criteria for hazardous substance removal actions and remedial response activities.	Action-Specific
COMAR 26.17, Waste Management	Applicable. Provides that any land clearing, grading, other earth disturbances require an erosion and sediment control plan.	Action-Specific
COMAR 26.23, Nontidal Wetlands	Applicable. Provides that a regulated activity may not be conducted in a nontidal wetland or wetland buffer without State permitting.	Location-Specific
COMAR 26.24, Tidal Wetlands	Applicable. Provides that activities conducted in tidal wetlands must be permitted by the State. Activities include construction, dredging, filling, removing, or otherwise altering tidal wetlands.	Location-Specific
Maryland Forest Conservation Act	To-Be-Considered. This Act provides guidelines for the amount of forest land retained or planted after the completion of development projects. The Act applies to all activities requiring a permit for subdivision, grading, or similar control that is larger than 40,000 square feet.	To-Be-Considered as Guidance
National Oceanographic and Atmospheric Administration (NOAA) Effects Range-Low (ERL) Benchmarks	To-Be-Considered. May be used to establish sediment cleanup goals.	To-Be-Considered as Guidance
Maryland Department of the Environment (MDE) Residential Soil Clean-up Standards/Groundwater Clean-up Standards	To-Be-Considered. These requirements may be used to evaluate clean-up levels for soil and ground water.	To-Be-Considered as Guidance

Notes: ARARs = Applicable or relevant and appropriate requirements

Ta

Synopsis of Potential Federal and State ARARs and To-Be-Considered Criteria
Sauer Dump
Baltimore County, Maryland

Federal and State Standards, Regulations, or Guidance	Consideration in the Remedial Response Process	Type
U.S. Army Corps of Engineers(USACE)/MDE, Joint Application for the Alteration of any Floodplain, Waterway, Tidal or Non-tidal Wetland in Maryland	Applicable. Permitting requirements pertaining to alteration of wetlands.	Location-Specific
Chesapeake Bay Critical Area Program	To-Be-Considered. Program establishes land use policies for development for land within 1000 feet of the Chesapeake Bay and its tributaries to minimize adverse impacts on water quality.	To-Be-Considered as Guidance

Notes: ARARs = Applicable or relevant and appropriate requirements

Ta 2
Summary of Action Levels for COCs in Soil
Sauer Dump
Baltimore County, Maryland

Chemical of Concern	MDE Residential Soil Cleanup *Standard (RSCS)* (mg/kg)	Is RSCS *Achievable? If* Not, Why?	*Action Level (mg/kg)*
benzo(a)pyrene	0.33	Yes	0.33
benzo(b)fluoranthene	0.87	Yes	0.87
benzo(a)anthracene	0.87	Yes	0.87
dibenzo(a,h)anthracene	0.33	Yes	0.33
indeno(1,2,3-c,d)pyrene	0.87	Yes	0.87
Arochlor-1242	0.32	Yes	0.32
Arochlor-1248	0.32	Yes	0.32
Aroclor-1254	0.32	Yes	0.32
Aroclor-1260	0.32	Yes	0.32
heptachlor epoxide	0.07	Yes	0.07
dieldrin	0.04	Yes	0.04

Ta 3
Summary of Action Levels for COCs in Sediment
Sauer Dump
Baltimore County, Maryland

Chemical of Concern	NOAA ERL (mg/kg)	Is ERL Achievable? If Not, Why?	Action Level (mg/kg)
acenaphthene	0.016	Yes	0.016
acenaphthylene	0.044	Yes	0.044
anthracene	0.0853	Yes	0.0853
benzo(a)pyene	0.430	Yes	0.430
benzo(a)anthracene	0.261	Yes	0.261
chrysene	0.384	Yes	0.384
dibenzo(a,h)anthracene	0.0634	Yes	0.0634
fluoranthene	0.600	Yes	0.600
fluorene	0.019	Yes	0.019
naphthalene	0.16	Yes	0.16
pyrene	0.665	Yes	0.665
phenanthrene	0.24	Yes	0.24
2-methylnaphthalene	0.07	Yes	0.07
dieldrin	0.00002	Yes	0.00002
endrin	0.00002	Yes	0.00002
4,4'-DDE	0.0022	Yes	0.0022
4,4'-DDD	0.002	Yes	0.002
Total PCBs	0.023	Yes	0.023

Ta 4
Evaluation of Containment Technologies
Sauer Dump
Baltimore County, Maryland

Technology	Long-Term Effectiveness and Permanence	Reduction of TMV through Treatment	Short-Term Effectiveness	Implementability	Cost
Deed Restrictions	Relies on access/development restrictions to manage residual risk. Difficult in enforcement results in low reliability of controls. Because there is virtually no long-term effectiveness, almost no effort to evaluate	Not a treatment technology. No effort to evaluate.	No health or environmental impacts during implementation. This criterion is not very important for this technology and will not vary from site to site. Almost no effort to evaluate	Ability to implement depends on local ordinances. May be difficult if legal requirements are not in place, especially off site. Owner approval needed for deed restrictions. Important criterion since the ability to implement will vary from site to site. Need to contact state or local authorities. Significant effort to evaluate.	Low cost. Significant effort to estimate cost.
Fencing	Relies on limiting access to manage residual risk from direct contact. Reliability of controls is uncertain. Fencing limits access to the site although trespassing is possible. Because there is virtually no long-term effectiveness, almost no effort to evaluate.	Not a treatment technology. No effort to evaluate.	With the exception of physical hazards associated with routine construction activities, minimal health, or environmental impacts during implementation. Almost no effort to evaluate.	Easy to implement. Equipment readily available. Almost no effort to evaluate.	Low cost. Little effort to estimate cost.
Grading/ Revegetation	Minimal reduction of residual risk, may reduce risk from direct contact and reduce leachate formation by controlling runoff. May lessen risk from direct contact. Continued maintenance required to achieve long-term reliability. Because there is virtually no long-term effectiveness, almost no effort to evaluate.	Not a treatment technology. No effort to evaluate.	Inhalation and direct contact risk if waste is disturbed. Proper health and safety protection may mitigate risk. If risk is quantified, moderate effort to evaluate.	Easy to implement. Almost no effort to evaluate.	Low to medium cost. Little effort to estimate cost.
Soil Cover	Reduction of residual risk from direct contact. With proper maintenance is reliable in long-term. May use HELP model to evaluate leachate reduction. Significant effort to evaluate.	Not a treatment technology. No effort to evaluate.	Inhalation and direct contact risk if waste is disturbed. Community impact through increased dust and noise from construction and truck traffic if soil is from offsite. Need to determine amount of truck traffic and risk from vehicular and construction accidents. Moderate effort to evaluate.	Easy to implement. Determine presence of soil nearby. Moderate effort to evaluate.	Low to medium cost. Little effort to estimate cost.
Single-Barrier Cover	Reduction of residual risk from direct contact. Reduces future leachate formation and groundwater contamination by significantly reducing infiltration. With proper maintenance is reliable in long term. May use HELP model to evaluate leachate reduction. Significant effort to evaluate.	Not a treatment technology. No effort to evaluate.	Inhalation and direct contact risk if waste is disturbed. Community impact through increased dust and noise from construction and truck traffic if soil is from offsite. Need to determine amount of truck traffic and risk from vehicular and construction accidents. Moderate effort to evaluate.	Easy to implement. Need a source of clay, which may be difficult to obtain in some regions, or install a geosynthetic liner. Moderate effort to evaluate.	Medium cost. Moderate effort to estimate cost.

Ta 4
Evaluation of Containment Technologies
Sauer Dump
Baltimore County, Maryland

Technology	Long-Term Effectiveness and Permanence	Reduction of TMV through Treatment	Short-Term Effectiveness	Implementability	Cost
Excavation of Hotspots; Offsite Disposal.	Effectiveness dependent on the type of offsite facility and whether or not there was a significant reduction in risk due to excavating the hotspot area. Significant effort to evaluate if using risk assessment.	Not a treatment technology. No effort to evaluate.	Disturbance of waste is a risk to workers. Community impacts dust and increased truck traffic. Significant effort to evaluate to determine release of hazardous waste risk, extent of truck traffic, and risk from vehicular and construction accidents.	Same as cover plus possible added difficulty of excavating waste in water. Difficult to determine extent of hotspot. Need to find hazardous waste landfill with available capacity Significant effort to evaluate.	Medium-high cost. Moderate effort to estimate cost.
Removal, Onsite Consolidation of Sediments	Long-term effectiveness affected by cover type used after consolidation. Effectiveness also depends on magnitude of risk reduced through excavation of sediments. Significant effort to evaluate.	Not a treatment technology. No effort to evaluate.	Disturbance of sediments may further contaminate the surface water. Excavation may have impact on wetlands or surface water biota. Sediments area often left in place to protect aquatic life. Significant effort to evaluate if risk is determined	Technically difficult to implement due to the possibility of dispersing contamination during excavation. Approval for dewatering/rerouting of stream before excavation may be difficult because of environmental impacts. Sampling during removal needed. Feasibility requires significant effort to evaluate.	Low-medium cost. Significant effort to estimate cost.

Adapted and modified from U.S. EPA, Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites {69}

Ta

Individual Evaluation of Soil Alternatives
Sauer Dump
Baltimore County, Maryland

	SOIL REMEDIATION ALTERNATIVES		
	S-1	S-2	S-3
Evaluation Criteria	**No Action**	**Hot Spot Removal/Single-Barrier Cover/Land Use Controls**	**Hot Spot Removal/Soil Cover/Land Use Controls**
Protection of human health and the environment	Does not reduce risk to human health or the environment	Criterion achieved, assuming integrity of cover is maintained	Criterion achieved, assuming integrity of cover is maintained
Compliance with ARARs	Does not meet ARARs for soil or sediment	Meets ARARs/RAOs if cover integrity is maintained.	Meets ARARS/RAOs if cover integrity is maintained.
Long-term effectiveness and permanence	Existing risk will remain with no actions or controls	Criterion achieved, assuming integrity of cover is maintained	Criterion achieved, assuming integrity of cover is maintained
Reduction of toxicity, mobility, or volume through treatment	No reductions in toxicity, mobility, or volume	Reductions in toxicity, mobility, and volume through hotspot removal.	Reductions in toxicity, mobility, and volume through hotspot removal.
Short-term effectiveness	No health or environmental impacts during implementation	Criterion would be met, assuming best management practices were followed.	Criterion would be met, assuming best management practices were followed.
Implementability	Easily implemented	Extensive site work and on-going maintenance required	Extensive site work and on-going maintenance required
Cost	No costs	$310,000	$186,000

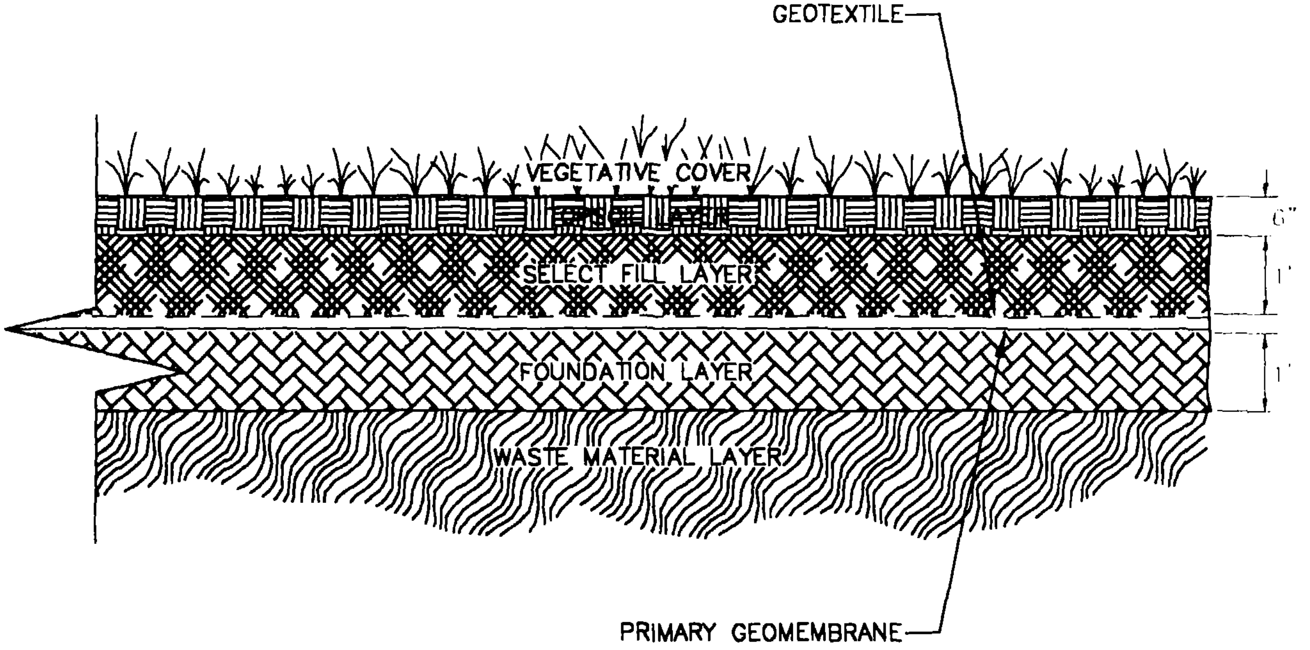
Notes: ARARs = Applicable or relevant and appropriate requirements

Table 6
Individual Evaluation of Sediment Alternatives
Sauer Dump
Baltimore County, Maryland

	SEDIMENT REMEDIATION ALTERNATIVES		
	SED-1	SED-2	SED-3
Evaluation Criteria	**No Action**	**Excavation/On-site Containment**	**Excavation/Off-site Disposal**
Protection of human health and the environment	Does not reduce risk to human health or the environment	Human health and environment protected assuming cover system is properly maintained.	Human health and environment protected as contaminant source is removed.
Compliance with ARARs	Does not meet ARARs for soil or sediment	Meets sediment ARARs	Meets sediment ARARs
Long-term effectiveness and permanence	Existing risk will remain with no actions or controls	Meets criteria; however no treatment of sediment is provided.	Meets criteria as sediments are removed from site.
Reduction of toxicity, mobility, or volume through treatment	No reductions in toxicity, mobility, or volume	Reductions in toxicity, mobility, and volume used in conjunction with capping alternatives S-2 or S-3	Reductions in toxicity, mobility, and volume through removal
Short-term effectiveness	Does not meet criteria as sediments remain in place.	Criterion would be met assuming best management practices were followed.	Criterion would be met assuming best management practices were followed.
Implementability	Easily implemented	Moderate site work and on-going maintenance required.	Moderate site work and on-going maintenance required.
Cost	No costs	$65,000	$832,000

Notes: ARARs = Applicable or relevant and appropriate requirements
RSCRs = Residential Soil Cleanup Standard

FIGURES



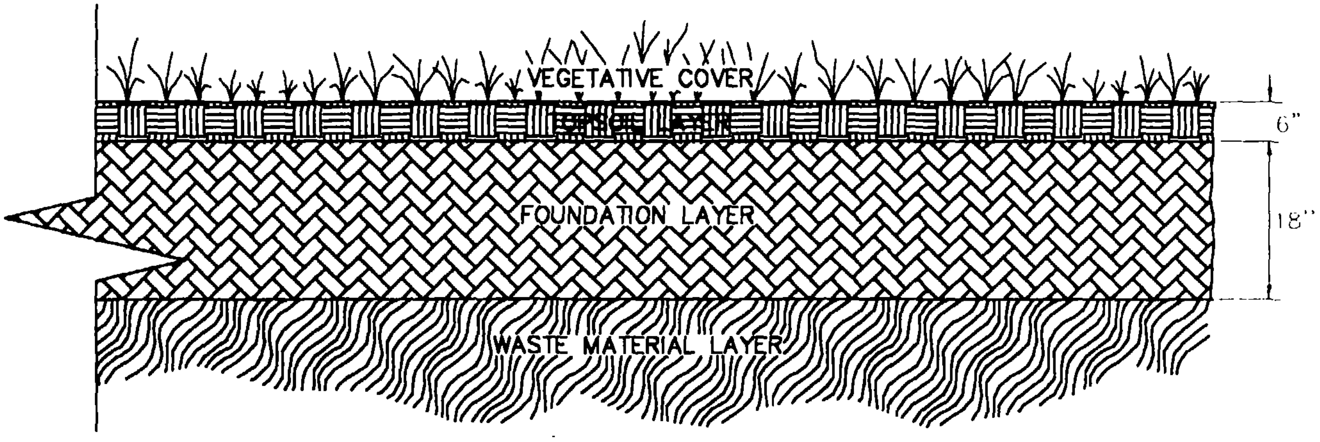
TYPICAL SINGLE-BARRIER COVER CROSS SECTION

NOT TO SCALE

Delta
Environmental
Consultants, Inc.

TITLE:
SINGLE-BARRIER COVER SCHEMATIC
SAUER DUMP SITE
BALTIMORE, MARYLAND

DWN:	DES.:	PROJECT NO.: E002-600
CHKD:	APPD:	FIGURE NO.: 1
DATE: 07/19/02	REV.:	



TYPICAL SOIL COVER CROSS SECTION

NOT TO SCALE

Delta
Environmental
Consultants, Inc.

TITLE:
SOIL COVER SCHEMATIC
SAUER DUMP SITE
BALTIMORE, MARYLAND

DWN:	DES.:	PROJECT NO.: E002-600
CHKD:	APPD:	
DATE: 07/19/02	REV.:	FIGURE NO.: 2