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SUMMARY REPORT
PHASE II SITE ASSESSMENT
EVEREADY BATTERY COMPANY FACILITY
100 WEST GREENVILLE BOULEVARD
GREENVILLE, NORTH CAROLINA
DECEMBER 1991

Prepared for:

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PHASE II SITE ASSESSMENT
EVEREADY BATTERY COMPANY
100 WEST GREENVILLE BOULEVARD
GREENVILLE, NORTH CAROLINA

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1.0 INTRODUCTION

This report presents the results of a Phase II site assessment conducted by the Eveready Battery Company (Eveready) at the former Eveready battery manufacturing facility located in Greenville, North Carolina. The primary objective of the site assessment was to further characterize the potential releases indicated by previous soil and ground water sampling conducted as part of a CERCLA Site Inspection (SI) by the North Carolina Department of Environment, Health and Natural Resources (DEHNR), the United States Environmental Protection Agency (EPA) and Eveready.

Tasks associated with this hydrogeologic investigation consisted of a review of available documents relating to site history and past operating procedures at the facility; a review of available documents relating to the topographic, geologic and hydrogeologic conditions at and in the immediate vicinity of the site; a soil gas survey; soil sampling; ground water sampling; surface water sampling; and aquifer testing.

Field activities associated with these tasks were conducted in July and September 1991.

2.0 BACKGROUND INFORMATION

2.1 Site Location, History and Operations

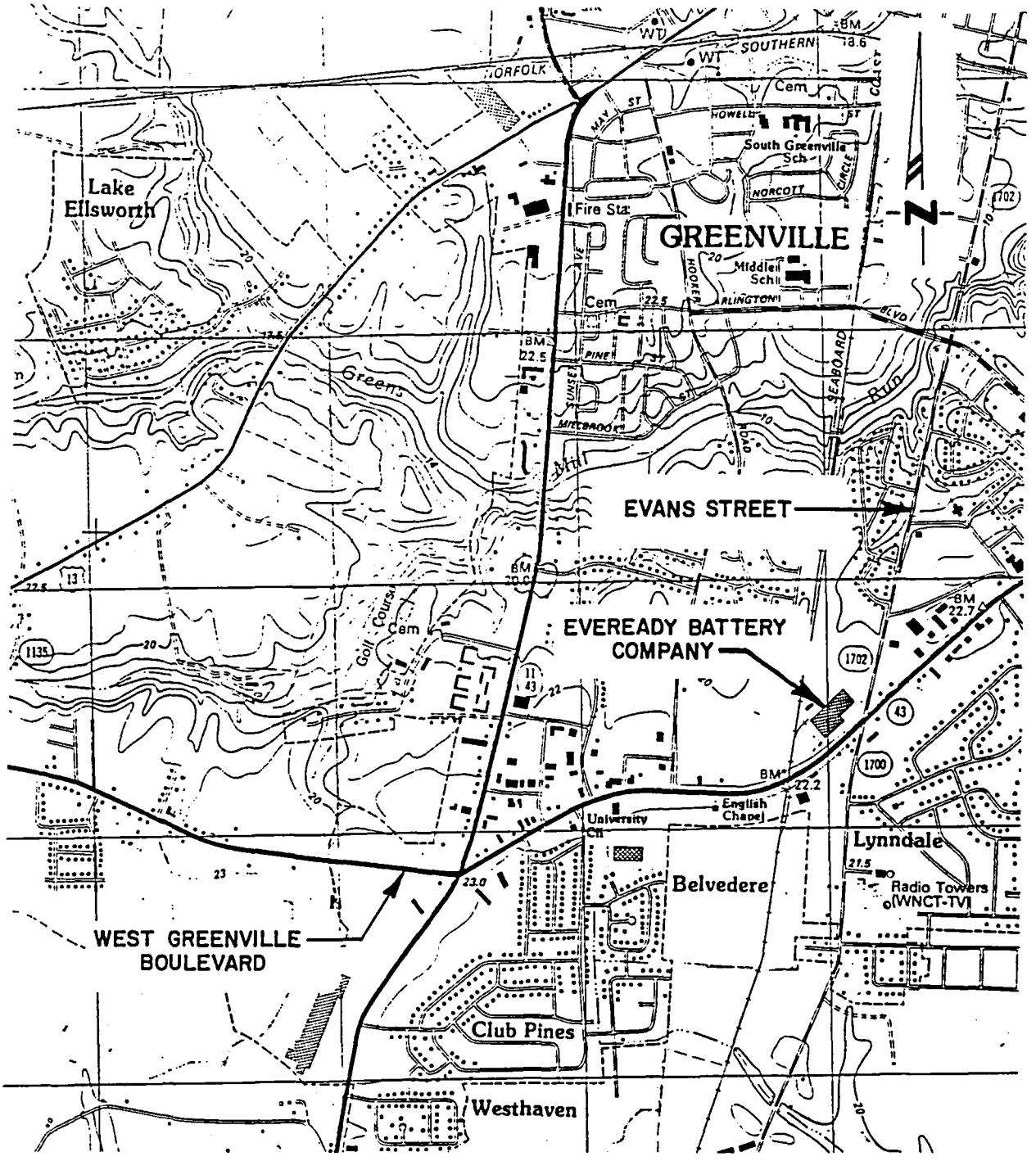
The Eveready property occupies 38.42 acres at the northwest intersection of Evans Street and West Greenville Boulevard (U.S. 264) in Greenville, North Carolina (Figure 1). The original 67,000 ft^2 facility was constructed in 1963 by the Union Carbide Corporation for the purpose of manufacturing dry cell batteries and the facility was expanded to its present size of 178,000 ft^2 in 1967. Ralston Purina (parent company of Eveready) acquired the site from the Union Carbide Corporation in August 1986. A schematic map illustrating the layout of the property grounds is presented in Figure 2.

The primary product manufactured at this former Eveready plant was the LaClanche or acidic dry cell battery (e.g., carbon-zinc cells used in flashlights, toys, and certain transistorized portable radios). In the early 1970s, the facility manufactured a can which housed a magnesium type battery used by the United States military. Facility operations have generated D001, D002, D003, D006, D009 and F002 type wastes. The EPA hazardous waste generator number for the facility is NCD003184249.

Aerial photographs of the property from March 1948, January 1954, November 1963 and March 1970 are presented in Appendix A. Prior to the construction of the facility the property was fields and woods. The property is cleared and appears to be utilized solely for agricultural purposes in the 1948 and 1954 photographs. No structures were visible on the property until the 1963 photograph which depicts the 67,000 ft^2 Union Carbide facility. The 1963 photograph also depicts that approximately twenty private residences have been constructed to the immediate north of the present site boundary. Further development is illustrated in the 1970 photograph, including a residential neighborhood to the southeast of the site, commercial operations along Greenville Boulevard and the 1967 addition to the subject facility.

The facility commenced closure operations in 1990. Lithium, nickel-cadmium and LaClanche battery production and air emission equipment was removed from the plant and transported to other Eveready sites. Closure operations were completed September 1990. The facility is currently vacant.

A prototype assembly line was set up to manufacture alkaline batteries in the early 1980s. The actual production of alkaline batteries, however, was not initiated at the plant. As a planning measure, a RCRA Part A permit application was filed by Eveready for a potential alkaline battery process wastewater treatment system. Subsequent RCRA regulatory changes exempted such wastewater treatment systems from a permit requirement. That rule change, in conjunction with a decision by Eveready not to manufacture alkaline



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SOURCE: USGS GREENVILLE SW TOPO MAP.

FIGURE 1. SITE LOCATION MAP
EVEREADY BATTERY FACILITY
GREENVILLE, NORTH CAROLINA

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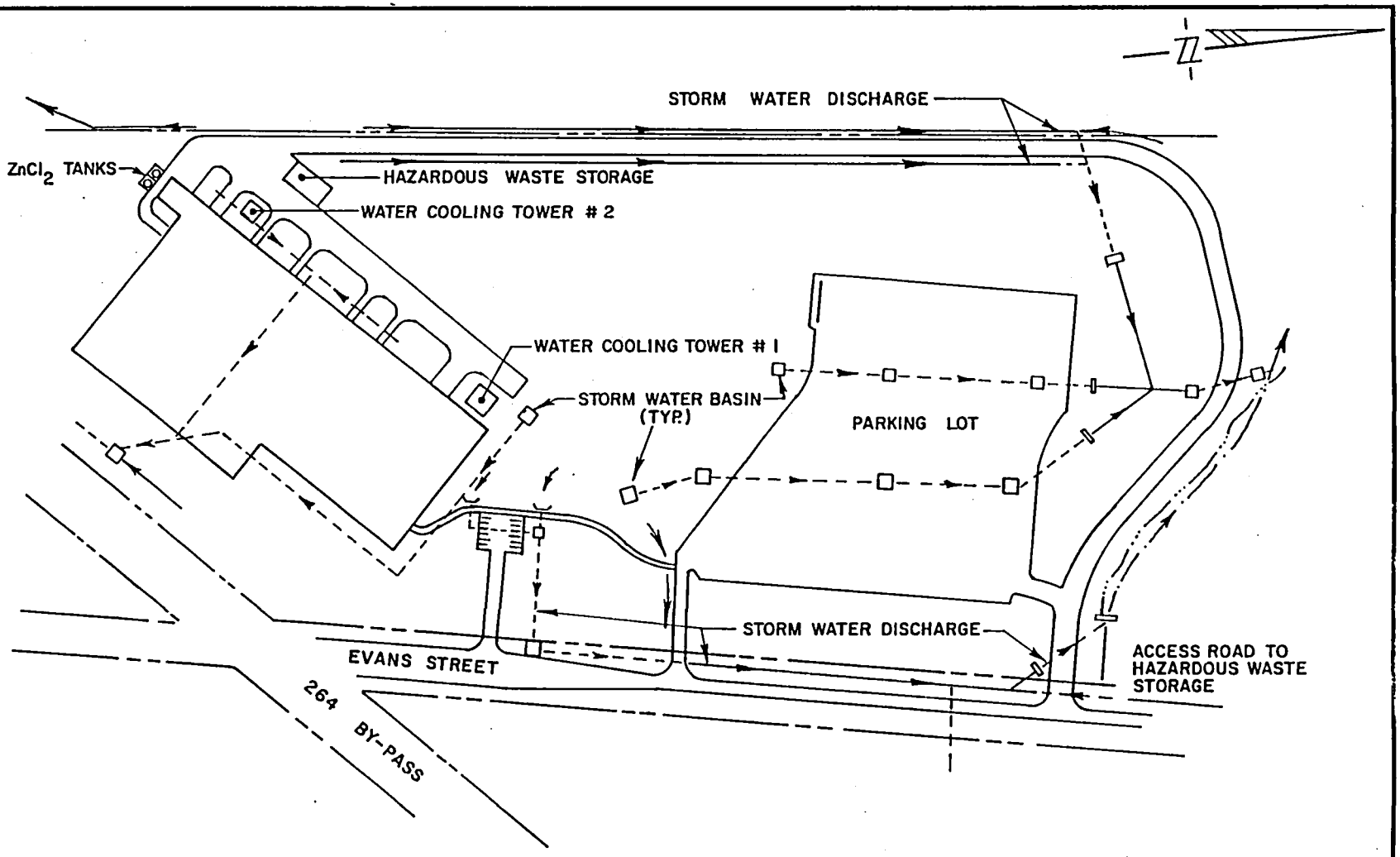

FIGURE 2. SCHEMATIC MAP ILLUSTRATING THE GROUNDS OF THE EVEREADY BATTERY FACILITY, GREENVILLE, N.C.

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batteries at the Greenville Eveready facility, resulted in the withdrawal of the Part A permit application. No wastewater treatment system ever existed at the Greenville plant associated with the alkaline battery production process. The filing of the Part A permit, however, automatically initiates inspections of the facility by DEHNR Solid and Hazardous Waste officials.

The facility was placed on the WASTELAN Preremedial Report by the EPA Region IV in August 1980. In February 1985, the DEHNR Superfund Branch (CERCLA Section) completed a Preliminary Assessment (PA) of the facility. The PA assigned the site a "low priority" ranking. In July 1990, a Phase I Site Inspection (SI) was conducted at the Eveready facility by Greenhorne and O'Mara, Inc. of Greenbelt, Maryland under the oversight of the CERCLA Section of the DEHNR. The nature of this Phase I investigation was to determine actual or potential releases of hazardous materials at the site and evaluate the need for further action. As a result of the July 1990 investigation, the EPA required that soil and ground water sampling be conducted at the site. In November 1990, a Phase II SI of the Eveready property was conducted by Greenhorne and O'Mara under the supervision of the CERCLA Section of the DEHNR. Six soil and four ground water samples were collected as part of the Phase II SI and analyzed for EPA Target Compound List (TCL) volatile and semi-volatile organic compounds and TAL metal compounds.

The soil and ground water analytical data generated from the November 1990 Phase II SI sampling program indicated that previous facility operations may have resulted in releases to the soil and ground water at the site. In March 1991, Eveready retained ERM-Southeast, Inc. (ERM) to evaluate the November 1990 Phase II SI analytical data. In order to further assess the soil, surface water, and ground water conditions at the Greenville site, Eveready implemented a Phase II site assessment which was initiated by ERM in June 1991.

2.2 Property Setting and Surrounding Land Usage

The Eveready facility is located in the northwest quadrant formed by the intersection of West Greenville Boulevard (Hwy. 264 By-Pass) and Evans Street. The site is bounded to the north by the Sherwood Acres residential neighborhood, to the west and northwest by the Seaboard Coastline Railroad tracks, across the tracks to the northwest by the Cambridge and Williamsburg Manor North residential developments, across the tracks to the west by City of Greenville property where a power substation and municipal Supply Well #4 are located, to the south by West Greenville Boulevard and to the east by Evans Street.

A variety of commercial development is located on West Greenville Boulevard, primarily consisting of mini-mart service stations, fast food restaurants, hotels and retail stores. Similar commercial-

type development is located along Evans Street in the vicinity of the Eveready site. Unlike west Greenville Boulevard, which is almost exclusively commercially developed, private residences and neighborhoods are located along Evans Street. No manufacturing-type facilities were observed in the vicinity of the site.

2.3 Hazardous Materials Used During Plant Operations

Initial manufacturing operations at the facility were limited to the production of carbon-zinc and nickel-cadmium batteries. By 1984, lithium type batteries were also being produced at the facility. A schematic map illustrating the general layout of the Eveready facility and the various production areas is presented in Figure 3.

A review of the SARA Title III Tier II Inventory Report and EPA Form R Chemical Categories was conducted in order to identify hazardous materials handled at the site prior to plant closure. These materials include:

1. manganese compounds - manganese dioxide
2. zinc compounds - zinc chloride solution
3. cadmium compounds
   - cadmium hydroxide
   - cadmium oxide
4. nickel compounds
   - nickel hydroxide
   - nickel metal
5. lithium compounds
   - lithium metal
   - lithium hydroxide
6. other compounds
   - thionyl chloride
   - petroleum naptha
   - potassium hydroxide
   - acetylene black
   - mercurous chloride

These products were stored in various ways at the facility: above ground tanks outside the building, tanks inside the building, as well as in bags and tote bins at various work stations located throughout the facility. Figure 4 illustrates the general areas where hazardous materials were used in day-to-day plant operations.

The Eveready Greenville facility was a large quantity generator of hazardous waste registered under EPA identification number NCD003184249. Hazardous wastes generated at the facility included scrap paper containing mercury (D009), materials (scrap paper, gloves, etc.) containing cadmium (D006), corrosive solids and liquids (D002 and D003), flammable waste lithium metal (D003), combustible waste petroleum naptha (D001) and solvent-laden

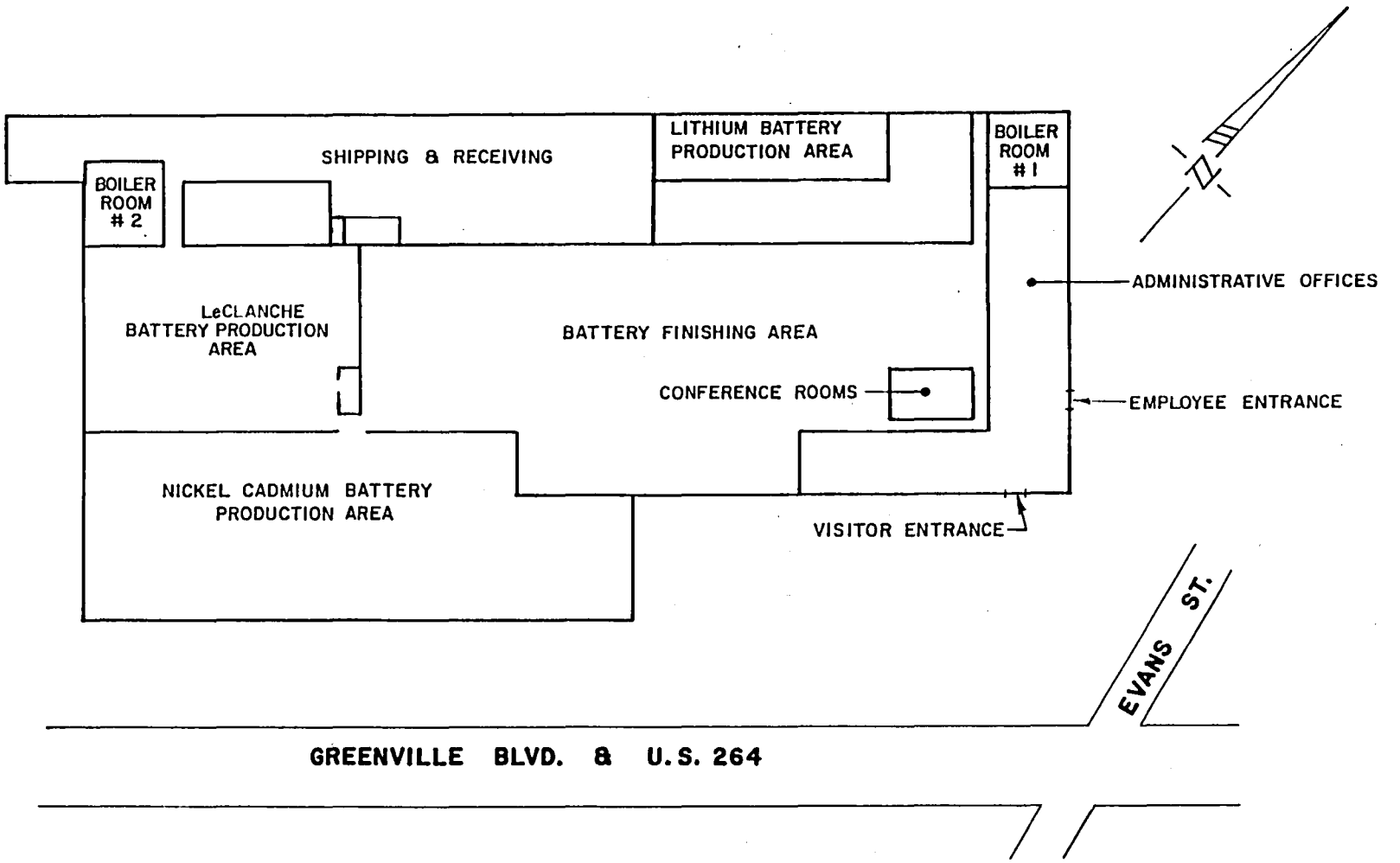

FIGURE 3. SCHEMATIC MAP ILLUSTRATING THE GENERAL LAYOUT OF EVEREADY PLANT, GREENVILLE, N.C.

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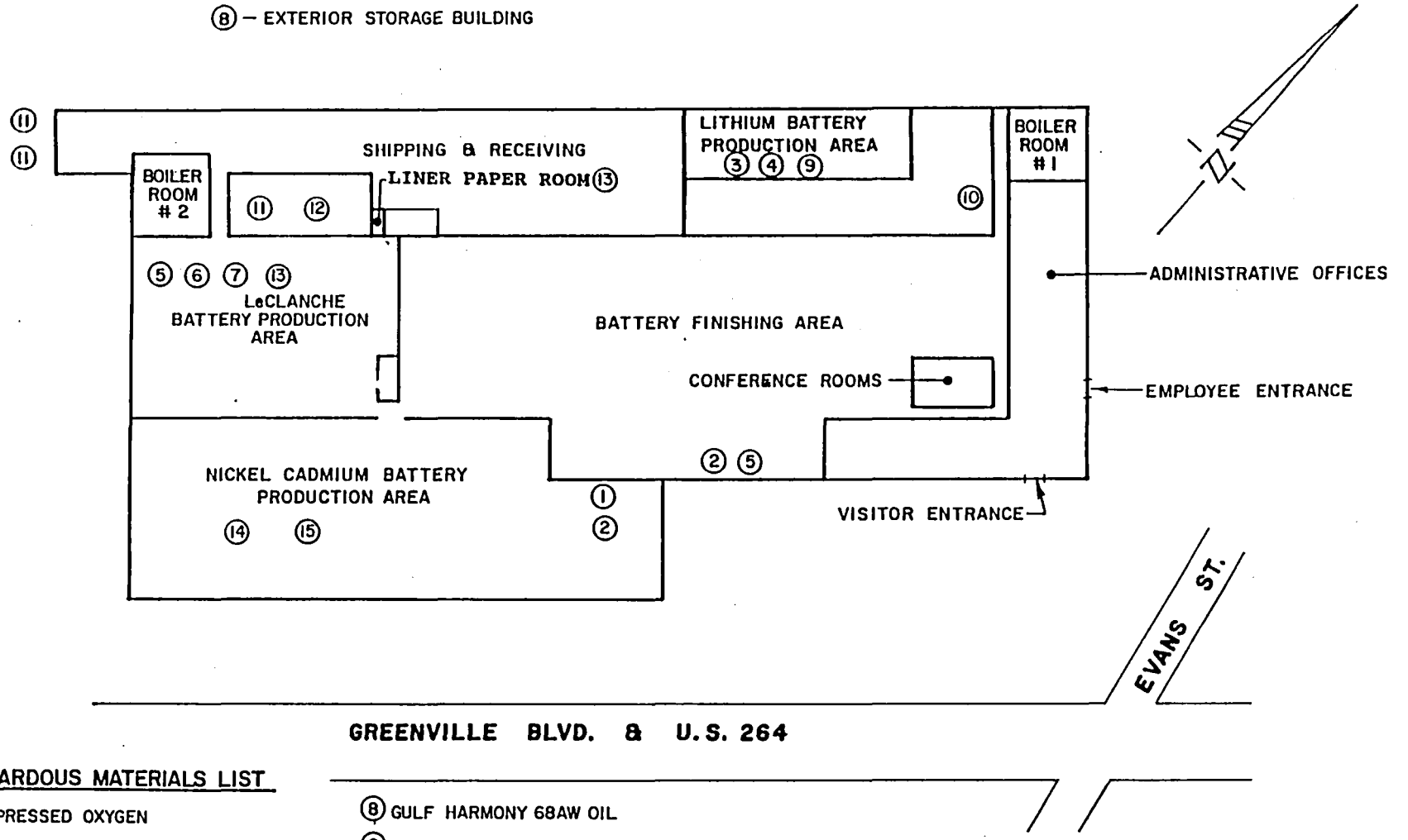

HAZARDOUS MATERIALS LIST

① COMPRESSED OXYGEN
② COMPRESSED ACETYLENE
③ LITHIUM METAL
④ THIONYL CHLORIDE
⑤ SAFETY-KLEEN MS140
⑥ GULF NO-RUST C
⑦ GULF KEROSENE
⑧ GULF HARMONY 68AW OIL
⑨ METHYL ISOBUTYL KETONE (MIBK)
⑩ TOLUENE
⑪ ZINC CHLORIDE
⑫ ACETYLENE BLACK
⑬ LINER PAPER CONTAINING MERCUROUS CHLORIDE
⑭ CADMIUM
⑮ NICKEL

FIGURE 4. HAZARDOUS MATERIALS LOCATED IN FACILITY PRODUCTION AND STORAGE AREAS, EVEREADY, GREENVILLE , N.C.

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materials (rags, gloves, absorbent material) (D001 and F002). Spent hazardous materials were routinely placed in drums or other appropriate containers which were stored temporarily pending disposal in the Hazardous Waste Containment Building located approximately 250 feet to the southwest of the main facility (Figure 2). The hazardous wastes were transported routinely from the site and disposed at approved disposal facilities. No hazardous materials are currently stored at the facility.

2.4 Above and Underground Storage Tanks

A 6,000 gallon above ground tank and a 8,000 gallon above ground tank used to store a zinc chloride solution were located on the southwest side of the facility. These tanks were removed from the site during closure operations. The concrete tank containment area and bermed tanker delivery station remain at the site (Figure 2).

No underground storage tanks are known to currently exist at the site. A below grade concrete pit formerly located in the front (east) lawn area of the facility that fronts on West Greenville Boulevard was excavated in April 1986. The original feature was a concrete-lined pit which housed a fiberglass in-line process tank. The in-line process tank received spent chromic acid which was generated during the production of the magnesium cans and was pumped back to the process for re-use. Operations were conducted in the late 1960s and early 1970s. The fiberglass tank was removed in the 1970s. According to Eveready personnel present at the time of the process tank removal, there was no evidence of chromic acid or any other residue on the pit bottom. Prior to the excavation of the concrete pit, water in the pit was sampled and analyzed for barium and chromium content. The laboratory analyses indicted 0.277 milligrams per liter (mg/l) barium and 0.027 mg/l chromium. Internal correspondence concerning the excavation of the concrete pit including laboratory data sheets and photographs are presented in Appendix B.

2.5 Nearby Ground Water Incidents

In order to investigate the potential degradation of ground water at the Eveready site due to off-site sources and to determine the general ground water quality in this area, a review of the Ground Water Incident report maintained by the DEHNR was conducted by ERM. Two locations of reported ground water incidents are located in the general vicinity of the Eveready property, including the Ann-Carr Inc. site located at 210 West Greenville Boulevard and the Cox Armature-Patel Convenience Store (presently a Texaco) located at the intersection of West Greenville Boulevard and Evans Street, adjacent to the Eveready property. Each incident involved the release of gasoline or diesel fuel from underground storage tanks. The Pitt County listings are presented in Appendix C.

2.6 Previous Site Investigations

2.6.1 CERCLA Preliminary Assessment

In February 1985, the CERCLA Section of the DEHNR conducted a Preliminary Assessment (PA) of the Eveready site. The PA primarily involved a review of existing records related to waste streams, waste management practices and disposal. According to Mr. Harvey Allen of the CERCLA Section of the DEHNR, the PA investigation indicated that waste disposal was properly conducted by Eveready and the site was assigned a low priority.

2.6.2 Phase I Environmental Assessments

2.6.2.1 ERM Phase I Site Assessment

Eveready retained ERM to perform a Phase I environmental assessment of the Greenville facility as part of plant closure operations in July 1990. This Phase I investigation indicated no obvious environmental problems associated with the handling, storage, and utilization of raw and intermediate manufacturing materials, finished products or generated waste streams at this Eveready facility. Hazardous materials and waste streams appear to have been appropriately handled, stored, and disposed of off-site. The ERM Phase I environmental assessment summary report was submitted to Eveready on September 24, 1990.

2.6.2.2 CERCLA Phase I Site Inspection

The DEHNR, as the agent for the EPA, also retained Greenhorne and O'Mara of Greenbelt, Maryland to conduct a Phase I SI in July 1990. The purpose of the investigation was to collect additional site data in order to determine the potential need for further action at the site.

The CERCLA Section of the DEHNR forwarded the Phase I summary report prepared by Greenhorne and O'Mara to the EPA for review and comment concerning the reclassification of the site from the "low priority" to "no further action" list. The disposition of the Greenhorne and O'Mara Phase I summary report is unknown. EPA directed that a soil and ground water sampling and analysis plan be implemented at the site.

2.6.3 CERCLA Phase II Site Investigation

Due to proximity of the facility to a City of Greenville water supply well (Supply Well #4), EPA directed the CERCLA Section of the DEHNR to conduct soil and ground water sampling at the site. The water supply well is located approximately 1,500 feet west of the Eveready property boundary behind the power substation that fronts on West Greenville Boulevard.

A Phase II soil and ground water sampling and analyses program was conducted on November 8 and 9, 1990. The field work was performed by Greenhorne and O'Mara personnel with DEHNR oversight. A total of six soil samples (SS01 through SS06) and four ground water samples (GW01 through GW04) were collected at the site. The DEHNR also collected a ground water sample from supply well #4. Eveready representatives collected splits of the soil and ground water samples collected at the Eveready property. The figure which illustrates the soil and ground water sample collection points and tables that summarize the data generated by the analysis of the split samples collected by Eveready personnel are presented in Appendix D. Laboratory analytical results for the ground water sample collected by the DEHNR at supply well #4 are also presented in Appendix D.

Analysis of the soil and ground water samples collected during the November 1990 Phase II SI indicated that previous manufacturing operations conducted at the Eveready facility may have impacted the site. The soil and ground water samples were analyzed for TAL metals including cyanide, and TCL semi-volatile and volatile compounds.

Site-specific metals related to hazardous materials handled at the facility include cadmium, mercury, potassium and zinc. Of these metal compounds, zinc was detected in three soil samples (SS02, SS05 and SS06) at concentrations greater than three times the background sample (SS01). Other notable occurrences of metal concentrations relative to the background soil sample include chromium (SS05) and cyanide (SS02, SS03 and SS06). These site-specific metals were not detected at concentrations greater than three times the background ground water sample (GW01) in the monitor wells. The remaining TAL metal compounds are believed to have been detected at concentrations within the range of naturally occurring values for soil and ground water at the site.

Relatively low values of TCL semi-volatile compounds were detected solely in soil sample SS06. With the exception of GW03, no significant levels of any TCL semi-volatile or volatile compounds were indicated by analyses of water samples collected from the five other observation wells. At GW03, 1,2-dichloroethene (1,2-DCE), trichloroethene (TCE) and tetrachloroethene (PCE) were detected in the ground water. These volatile compounds were not detected in any of the soil samples collected at the site.

The analytical results of the ground water sample collected by the DEHNR at the City of Greenville supply well #4 indicated no detectable levels of VOCs, SVOCs and no ground water degradation due to metals.

3.0 REGIONAL HYDROGEOLOGIC SETTING

3.1 Regional Hydrogeology

The Greenville area, including the location of the Eveready facility, is located within the Coastal Plain physiographic province of North Carolina. The geology of the North Carolina Coastal Plain province has been described by Brown (1959) and summarized by Winner and Coble (1989), Winner and Lyke (1989) and Giese and others (1991). The lithology of the North Carolina Coastal Plain generally consists of unconsolidated sedimentary rocks which were deposited on top of crystalline basement rocks. Typically, the Coastal Plain sediments dip and thicken toward the southeast. The thickness of the sedimentary rocks in the Coastal Plain ranges from several feet at the western limit of deposition to over 10,000 feet along the North Carolina coastline. Approximately 700 to 750 feet of sedimentary rock overlie the crystalline basement rocks in the Greenville area (Winner and Lyke, 1989).

The regional aquifer units present in Pitt County, in ascending order above the basement rocks, are the lower Cape Fear aquifer, the lower Cape Fear confining unit, the upper Cape Fear aquifer, the upper Cape Fear confining unit, the Black Creek aquifer, the Black Creek confining unit, the Peedee aquifer, the Peedee confining unit, the Yorktown aquifer, the Yorktown confining unit and a surficial aquifer (Winner and Lyke, 1989).

The sediments of the upper and lower Cape Fear confining units and aquifers in the vicinity of Greenville are referred to as the Cape Fear Formation which is late Cretaceous in age and unconformably overlies the crystalline basement rocks. The Cape Fear Formation is generally composed of alternating beds of unconsolidated sand and clay that typically range in thickness from three to fifteen feet (Winner and Coble, 1989). The average thickness of the upper Cape Fear aquifer and confining unit are 252 feet and 71 feet, respectively. The average thickness of the lower Cape Fear Aquifer and confining unit are 324 feet and 66 feet, respectively (Winner and Lyke, 1989). In Pitt County, the Cape Fear Formation outcrops along the banks of the Tar River approximately ten miles northwest of Greenville.

Overlying the Cape Fear Formation is the Black Creek Formation which comprises the sediments of the Black Creek aquifer and associated confining unit. The Black Creek Formation is also late Cretaceous in age and consists of thinly laminated gray to black clay interlayered with gray to tan sands (Winner and Coble, 1989). The average thickness of the Black Creek aquifer and confining unit are 193 feet and 45 feet, respectively (Winner and Lyke, 1989). Outcrops of the Black Creek Formation are visible along the banks of the Tar River within the City limits of Greenville.

The Peedee aquifer and associated confining unit are comprised of sediments of the Peedee Formation which unconformably overlies the Black Creek Formation and is the uppermost and youngest Cretaceous geological unit in the area. The Peedee aquifer is comprised of fine-to-medium grain sand interbedded with gray to black marine clay and silt (Winner and Coble, 1989). The average thickness of the Peedee aquifer and the Peedee confining unit are approximately 94 feet and 24 feet, respectively (Winner and Lyke, 1989). Outcrops of the Peedee Formation are also present along the banks of the Tar River within the City limits of Greenville.

The Yorktown Formation unconformably overlies the Peedee Formation and is Pliocene in age. The Yorktown aquifer is composed of fine sand to clayey sand and is characterized by shells and shell beds through out the unit and is approximately 20 feet thick in the Greenville area. The Yorktown confining unit is comprised of clay to sandy clay and is approximately 22 feet thick in the Greenville area, where present. The confining unit, where present, serves as the hydrogeologic boundary between the Yorktown aquifer and the surficial aquifer (Winner and Coble, 1989).

The surficial aquifer consists of post-Yorktown deposits of Quaternary age at the land surface. The surficial aquifer is composed of sandy silts and silty sands in the vicinity of the subject site. The average thickness of the surficial aquifer in the North Carolina Coastal Plain is approximately 35 feet (Winner and Coble, 1989).

3.2 Water Supply

The Greenville Utility Commission, which provides sewer and water service to the City of Greenville, obtains potable water from four ground water wells and one intake along the Tar River. The ground water wells are located within a four mile radius of the Eveready site. These wells are located at the intersection of the rail line and West Greenville Boulevard (Supply Well #4 - approximately 1,500 feet southwest of the site), at the intersection of Arlington Boulevard and Evans Street (approximately one half mile north of the site), at the intersection of Washington Street and 13th Street (approximately one and one half miles north of the site) and at the intersection of North Green Street and Airport Road (approximately three and one half miles north of the site). The Airport Road well is located on the other side of the Tar River from the Eveready property. Each of these water supply wells produce ground water from the Black Creek and Upper Cape Fear aquifers.

According to Mr. Ricky Langley of the Greenville Utility Commission, Supply Well #4 produces a daily volume of approximately 650,000 gallons of water. Mr. Langley estimated that this well accounted for approximately 4% to 6% of daily water production managed by the utility commission. A schematic diagram of the well construction details and the drilling logs may be referenced in

Appendix E.

The surface water intake area is located on the Tar River approximately four miles northwest and upstream of the Eveready site. According to Mr. Cliff Strickland, Manager of the Water Treatment Plant, the average annual volume of water taken from the Tar River is 2.713 billion gallons. River intake water accounts for approximately 80% of the city water supply. The city water system serves approximately 56,000 residents. The 1990 Census indicated that 44,972 people reside in the city of Greenville.

The residential neighborhoods in the vicinity of the Eveready property are serviced by city water. A windshield survey of the area conducted September 9, 1991 by ERM did not indicate the presence of houses with private wells within a one mile radius of the site.

4.0 INVESTIGATIVE METHODS

A Phase II soil gas, soil, ground water and surface water sampling and analysis investigation was conducted by ERM at the Eveready facility in July and September 1991. A total of fifty-five borings were advanced to examine soil gas for volatile compounds by portable gas chromatograph in July. A total of sixteen soil samples, fifteen ground water samples and two surface water samples were collected for laboratory analysis in September.

The investigative methods conducted during the collection of these samples are discussed below.

4.1 Soil Gas Survey

The soil gas survey was the initial task of a site investigation. The survey was implemented as a field screening method for identifying areas of potential subsurface contamination indicated by laboratory analysis of soil and ground water samples collected during the Phase II SI conducted by the DEHNR in November 1990. The soil gas survey results were evaluated and subsequently used to provide additional basis for the location of the monitor well and soil sampling points advanced in September 1991.

The investigation was performed by Mr. William Goldschmidt, ERM gas chromatograph operator, and Mr. Donald Hankins, ERM hydrogeologist, under the surveillance of Mr. Jones Card, former assistant plant manager of this Eveready facility, on July 22 through July 24, 1991. A photographic survey of the investigation is presented in Appendix F.

A total of fifty-five one-inch soil vapor boring points were advanced at the site. The boring points were concentrated in the vicinity of the hazardous waste storage building in order to delineate a potential plume or affected soil area indicated by the Phase II November 1990 SI data (Figure 5). Additional borings were advanced on approximately 200-foot intervals along the southern and eastern boundaries of the Eveready property adjacent to Greenville Boulevard and Evans Street, respectively (Figure 6). The borings advanced along the property boundary were sited to assess the possible migration of volatile compounds to the property from potential off-site source areas.

Each boring was advanced to a depth of approximately three feet below the ground surface using a power auger equipped with one-inch diameter auger flights. A one-inch diameter PVC soil gas probe was then inserted into the boring. The annulus between the probe and the ground surface was sealed with the auger cuttings to ensure that soil gas vapors were derived solely from the holes located in the bottom six inches of a probe. A Foxboro Model 128 Organic Vapor Analyzer (OVA) with a flame ionization detector (FID) was

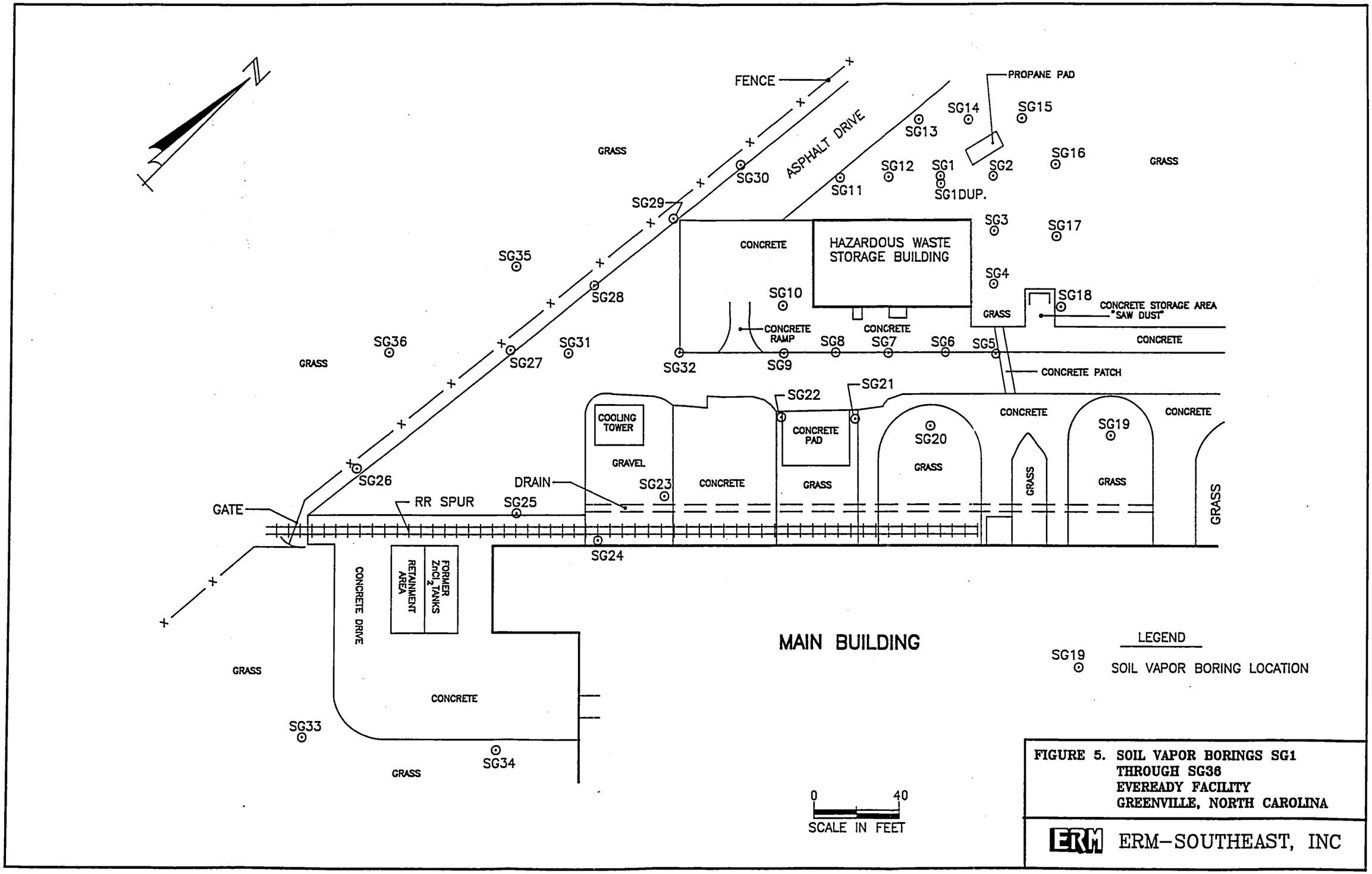

FIGURE 5. SOIL VAPOR BORINGS SG1 THROUGH SG36 EVEREADY FACILITY GREENVILLE, NORTH CAROLINA

ERM ERM–SOUTHEAST, INC

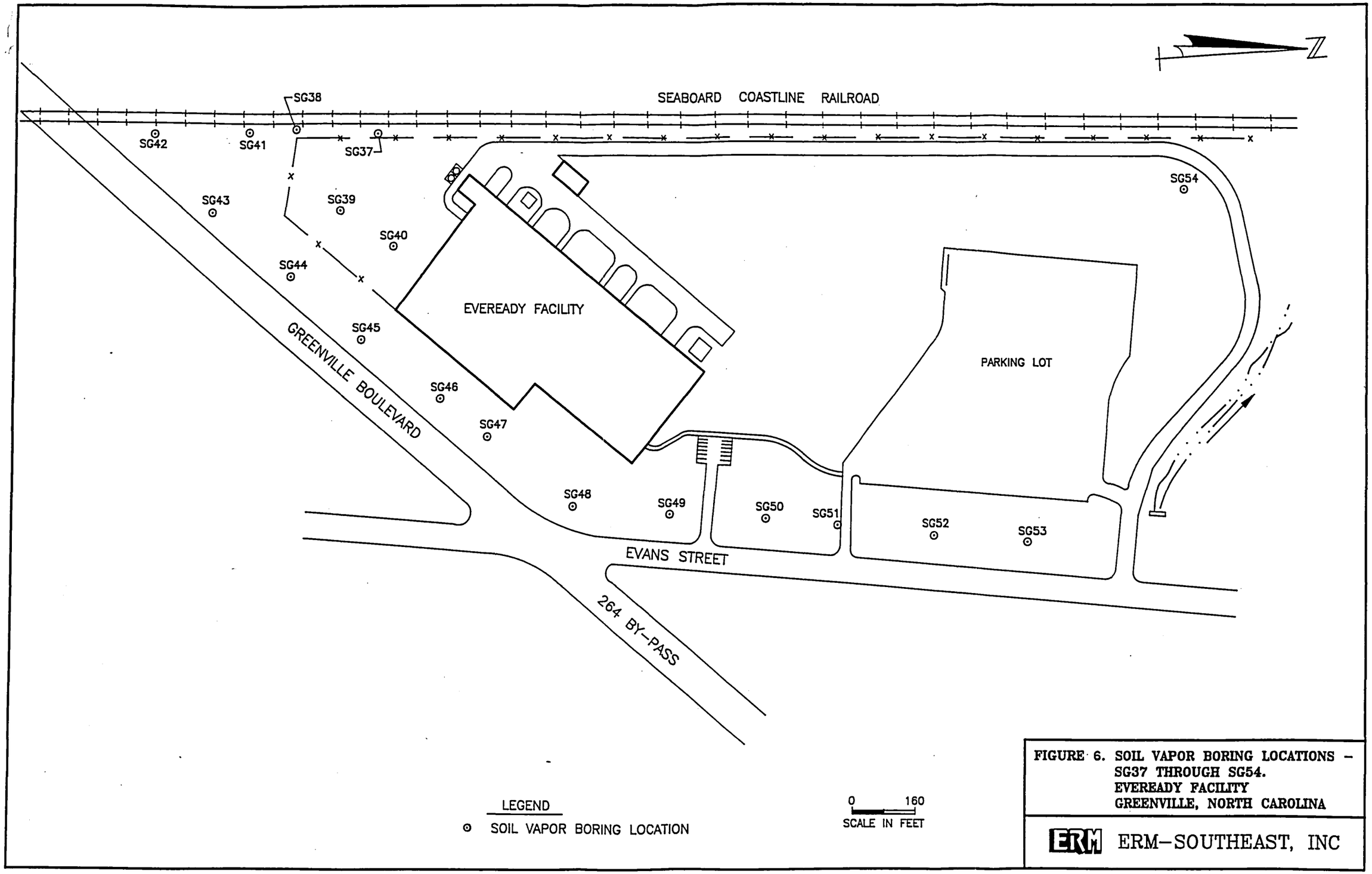

FIGURE 6. SOIL VAPOR BORING LOCATIONS – SG37 THROUGH SG54. EVEREADY FACILITY GREENVILLE, NORTH CAROLINA

ERM–SOUTHEAST, INC

then connected to the soil gas probe and utilized to draw soil gas vapors from medium surrounding each boring. When the maximum total volatile organic compound (VOC) reading was indicated with the OVA instrument, a Hamilton gas-tight syringe was inserted into the tygon tubing which extends from the top of the probe. At the time of the maximum OVA reading, an appropriate gas volume (based on the maximum total VOC reading) was then withdrawn from the tygon tubing and injected into the column of a Photovac 10S50 Photionization Detector (PID) portable gas chromatograph (GC).

The GC was equipped with a CPSil 5 CP capillary column encapsulated in an isothermal oven to provide temperature controlled release of the targeted compounds. Chromatograms of each soil vapor sample are generated by the GC as a function of the relative retention time of a given volatile compound. Soil gas vapor sample chromatograms were compared to the appropriate calibration standard chromatograms to qualitatively determine the presence of the volatile compounds of interest.

The location of sample points, sample injection volumes, analyses run number, and the Photovac GC responses to calibration standards and other compounds were documented in the field. Each chromatogram was labeled with the project name, date, time and sample location number.

Each day prior to utilizing the GC, the instrument was calibrated with 0.5 parts per million (ppm) level standards of PCE, TCE, trans 1,2-dichloroethene (t-1,2-DCE), cis 1,2-dichloroethene (c-1,2-DCE), 1,1-dichloroethene (1,1-DCE), vinyl chloride (VC), benzene (B), toluene (TOL), ethylbenzene (ETH) and xylene (X). The standards were also run at the discretion of the GC operator to track the effects of ambient temperatures on the analyses. Blanks were analyzed as necessary to allow a determination of potential carry-over contamination from the syringe, probes and/or Photovac instrument.

The soil gas probes and power auger flights were decontaminated prior to and between each subsequent boring in order to prevent cross-contamination. The decontamination procedure consisted of an initial phosphate-free detergent wash followed by a tap water rinse and an organic-free water rinse. The equipment was then screened with OVA to determine the presence of residue volatile compounds. The OVA did not indicate the presence of volatile constituents at concentrations exceeding 1 ppm greater than background following the decontamination procedure.

4.2 Soil Boring and Monitor Well Installation Procedures

Soil boring and monitor well installation activities were commenced September 9 and completed September 13, 1991. The investigation was performed by Mr. Donald Hankins, ERM hydrogeologist, under the surveillance of Mr. Tom Houser, Eveready Environmental Affairs

Engineer. A photographic survey of the investigation is also presented in Appendix F.

The locations of the soil borings and monitor wells were selected in cooperation with Eveready personnel prior to field activities. Figure 7 illustrates the location of the soil boring and monitor well locations. The monitor well network was designed to determine upgradient ground water quality, assess on-site ground water quality and characterize the site ground water flow pattern and general site hydrogeology.

4.2.1 Soil Borings and Analyses

Soil samples were collected from two depth intervals in eight borings advanced at the site. Five of the eight borings were completed as monitor wells; three of the borings were utilized as hydropunch sampling locations. The borings were advanced by the hollow stem auger method. During drilling, split spoon soil samples were collected from approximately the ground surface to the two-foot depth interval and the seven-foot to nine-foot depth interval for laboratory analysis. These soil samples were visually inspected, scanned with a photoionization detector (PID) for the presence of volatile organics, and logged by an ERM hydrogeologist upon collection. The samples were then gently composited in a stainless steel pan with a stainless steel spoon and placed into the appropriate laboratory-supplied containers. Samples collected for volatile analyses were containerized first. The pH of the collected soil samples was examined in the field by combining distilled water with a representative portion of the sample to form a paste. The paste was then tested with litmus paper to determine a soil pH value.

Additional split spoon sampling was conducted at depths greater than nine feet in order to further describe site stratigraphy. These samples were obtained from within the saturated zone and were not submitted to the laboratory for analysis. Drilling logs which summarize the shallow site lithology, PID readings and pH values of the collected soil samples are presented in Appendix G.

These sixteen soil samples were analyzed for the TAL metal compounds including cyanide (SW-846 Methods) and purgeable halocarbon (volatile organic) compounds (SW-846 Method #8010).

Sample collection, handling and preservation were conducted according to accepted protocol, including strict chain-of-custody documentation. Level I (standard) laboratory QA/QC protocol was conducted for all analytical work. Samples were submitted to Industrial and Environmental Analysts (IEA) by overnight delivery. IEA is State certified and an EPA contract laboratory.

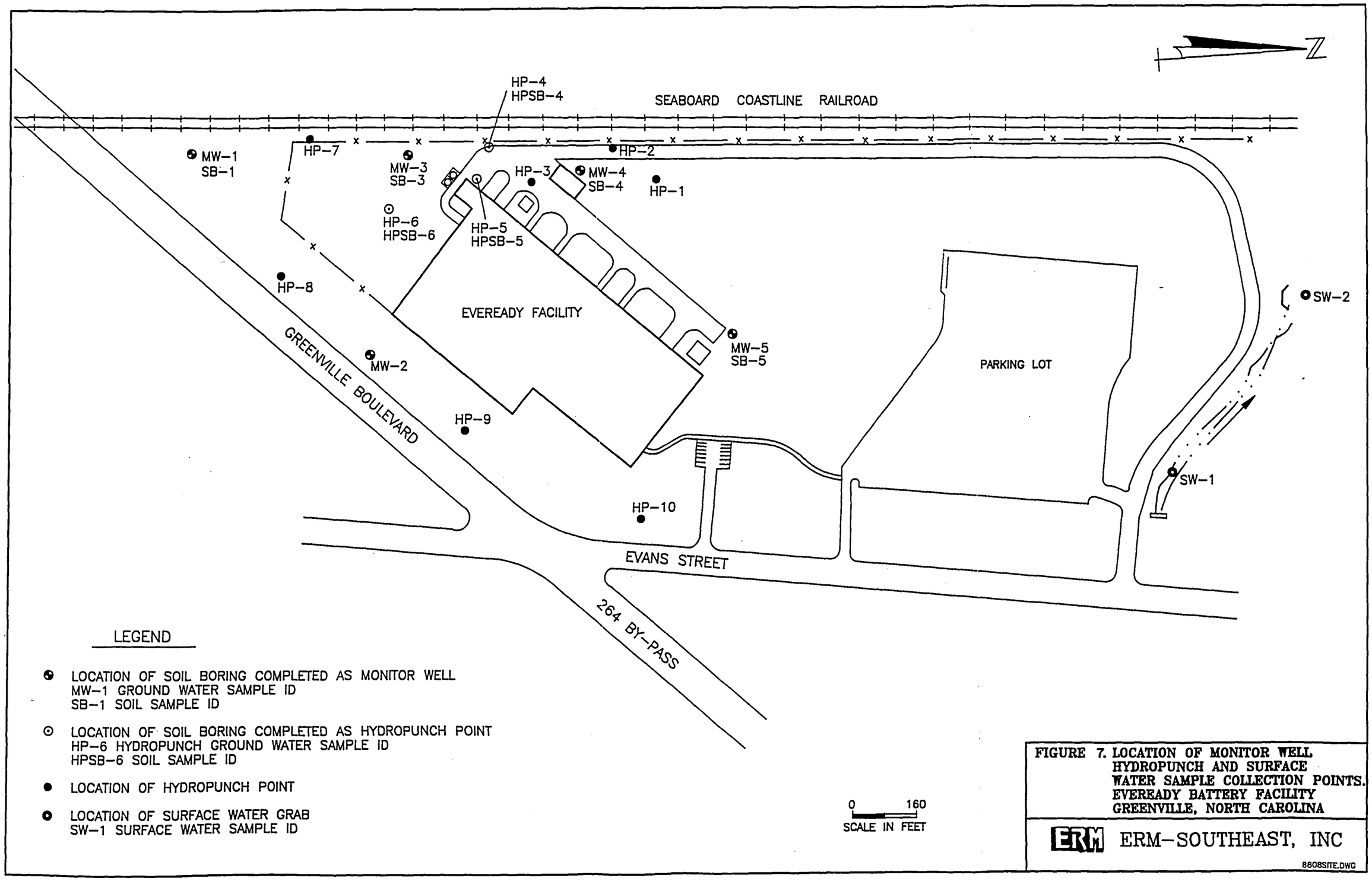

FIGURE 7. LOCATION OF MONITOR WELL HYDROPUNCH AND SURFACE WATER SAMPLE COLLECTION POINTS. EVEREADY BATTERY FACILITY GREENVILLE, NORTH CAROLINA

4.2.2 Monitor Well Construction

The soil borings completed as monitor wells are constructed of 2-inch diameter Schedule 40 threaded PVC casings and screens in accordance with the North Carolina monitor well construction standards. Monitor well construction permit number 73-0157-WM-0173 issued June 28, 1991 and the details of monitor well construction are also presented in Appendix G. The wells are equipped with a ten to fifteen-foot section of 0.010-inch slotted well screen. The well heads were constructed flush with the ground surface inside a bolt-down protective steel access manhole set in a two-foot by two-foot concrete pad. Each monitor well is equipped with a lockable water-tight well cap. The concrete pads are tapered away from the protective manhole covers in order to prevent surface water from infiltrating the bore hole.

Following completion, the wells were properly developed to the fullest extent practical with a hand pump in order to remove drill cuttings or other materials introduced during monitor well installation. The development water was drummed at the well head and is also staged in the hazardous waste storage building.

Monitor well construction details and the shallow ground water table elevations measured on September 20, 1991 are summarized in Table 1. Monitor well locations and top of the casing elevations were determined by a registered surveyor.

4.2.3 Decontamination Procedures

The drilling equipment and split spoon samplers were cleaned prior to and between use by steam cleaning, washing with a phosphate free detergent, rinsing with tap water, rinsing with alcohol and rinsing with distilled water. The former tanker trailer unloading station adjacent to the former zinc chloride tanks was used as the decontamination area. A ten millimeter thick layer of plastic was spread over the area. Decontamination operations were conducted on top of the plastic cover. Minor quantities of wash water and rinseates and soil cuttings generated during the cleaning activities were collected separately and contained in three fifty-five gallon drums. The drums are staged within the locked hazardous waste storage building located at the loading dock area of the facility.

4.3 Ground Water Sampling and Analysis

The monitor wells were allowed to stabilize one week prior to the collection of ground water samples for laboratory analysis. Water level measurements were made to the nearest 0.01 foot with a depth-to-water electrode preceding ground water sample collection.

TABLE 1
MONITOR WELL CONSTRUCTION DETAILS
SURFACE WATER ELEVATIONS
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA
SEPTEMBER 20, 1991

	GROUND SURFACE ELEV.	TOC ELEV.	DEPTH TO WATER BTOC	WATER LEVEL ELEV.	CASING INTERVAL	SCREEN INTERVAL	TD OF WELL
	(Ft. MSL)	(Ft. MSL)	(Ft. BGL)	(Ft. MSL)	(Ft. BGL)	(Ft. BGL)	(Ft. BGL)
MW-1	73.07	72.90	8.46	64.44	0.17-4	4-19	19
MW-2	72.17	71.82	7.68	64.14	0.25-4	4-19	19
MW-3	73.11	72.71	8.58	64.1	0.4-4	4-19	19
MW-4	74.10	73.75	12.57	61.18	0.35-5	5-20	20
MW-5	75.10	74.70	13.87	60.83	0.40-10	10-20	20

NOTES:
MW-1 indicates monitor well location.
TOC indicates Top of Casing.
BTOC indicates Below Top of Casing.
TD indicates Total Depth.
Ft. BGL indicated Feet Below Ground Level
Ft. MSL indicated Feet - Mean Sea Level
All water level measurements collected September 20, 1991

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Before collecting ground water samples for laboratory analysis, each monitor well was purged of three well casing volumes of standing water. Field measurements of pH, specific conductance and temperature were recorded immediately following the bailing of each of the three well bore volumes. Ground water samples were collected with disposable teflon bailers attached to new, braided nylon rope.

A total of ten hydropunch type ground water samples were also collected during the Phase II investigation (Figure 7). A hydropunch sampling device was attached to the drill rods and driven into the ground to a depth approximately five to seven feet below the ground water table. The hydropunch instrument was opened and allowed to fill with ground water, then closed and brought to the surface. One to three hours were necessary to fill the chamber with water. The hydropunch equipment was steam cleaned, washed with a phosphate free detergent, rinsed with tap water, rinsed with alcohol and rinsed with distilled water prior to the collection of each sample.

Upon collection, the bailed and hydropunch-type ground water samples were placed immediately into laboratory supplied containers and stored on ice pending overnight delivery to the laboratory. Sample collection, handling and preservation were conducted according to accepted protocol, including strict chain-of-custody documentation.

One ground water sample from each well and hydropunch point was analyzed for TAL compounds (SW-846 Methods) and for purgeable halocarbon compounds (EPA Method #601). Level I (standard) laboratory QA/QC protocol was conducted for all analytical work. Ground water samples were also submitted to IEA for analyses.

4.4 Surface Water Samples and Analyses

A total of two surface water grabs, one collected upgradient and one downgradient of the holding pond outfall in the creek located along the northern boundary of the site, respectively, were also collected for TAL compounds (SW-846 Methods) and purgeable halocarbon compounds (EPA Method #601) analyses (Figure 7). Field measurements of pH, specific conductance and temperature were determined from creek samples collected immediately following the collection of the samples for laboratory analysis.

Sample collection, handling and preservation were conducted according to accepted protocol, including strict chain-of-custody documentation. Level I (standard) laboratory QA/QC protocol was conducted for all analytical work. The surface water samples were also submitted to IEA for analyses.

4.5 Aquifer Testing

In-situ hydraulic conductivity values were determined by conducting slug tests in the five on-site monitor wells. A slug test is initiated by causing an instantaneous change in the water level inside a monitor well through the introduction or removal of a known volume of water. Water level recovery is then measured with time.

ERM conducted rising head slug tests in the five on-site monitor wells on September 19 and 20, 1991. A stainless steel bailer of known volume (slug) was introduced to the monitor wells. Water levels were then allowed to return to the static values. Water level recovery was measured with time by a down hole transducer and recorded in a data logger following the instantaneous removal of the slug. The slug test data was evaluated to calculate estimated hydraulic properties of the shallow aquifer utilizing procedures developed by Bouwer and Rice (1976).

The slug test equipment was decontaminated prior to the first test and between monitor wells by the procedures described in Section 4.2.3.

5.0 SITE HYDROGEOLOGY

5.1 Site Topography

A review of the United States Geologic Survey (USGS) Greenville SW and Greenville SE 7.5 minute topographic maps indicate that the area extending form West Greenville Boulevard to the Eveready employee parking area is the topographic high for the area. The land surface north of the Eveready parking area slopes to the north toward Greens Mill Run Creek, which flows northeast to the Tar River. The land surface located to the south of West Greenville Boulevard slopes to the south toward Fork Swamp Creek, which flows south to the Neuse River. The topography of the site is subdued. The monitor well survey conducted by Pitt Land Surveying Company indicates that the ground surface gradient between monitor well MW-5 and monitor well MW-1 is approximately 0.002 ft/ft.

5.2 Soils

The stratigraphy beneath the Eveready site was determined based upon lithologic samples collected during the drilling of the five monitor wells and three hydropunch sampling locations. Drilling logs for the borings completed as monitor wells and the borings completed as hydropunch sampling locations are presented in Appendix G.

The stratigraphy beneath the Eveready site generally consists of sandy silts and clayey silts. Two stratigraphic zones were identified at the site. The uppermost zone consists of yellow to brown intermittent layers of sandy silt and silty sand and extends from the ground surface to a depth of approximately fifteen feet in the vicinity of monitor wells MW-1 and MW-2 and to a depth of at least twenty-two feet in the vicinity of monitor wells MW-4 and MW-5. Beneath the uppermost zone is a layer of interbedded black sand and black clay, which was detected solely in the borings completed as monitor wells MW-1 and MW-2. The thickness of this zone was undetermined.

Based upon the appearance and depth of the collected samples and published literature of the stratigraphy in the Greenville area, the strata encountered at the site are interpreted to be those of the surficial aquifer. In the Greenville area, the surficial aquifer overlies the Yorktown confining unit, where present, or the Peedee confining unit.

5.3 Ground Water

Observations during monitor well installation and water level measurements collected from the five on-site monitor wells on September 20, 1991 indicate that the shallow water table occurs at depths ranging from approximately seven and one half feet (MW-2) to fourteen feet (MW-5) below the ground surface (Table 1). The

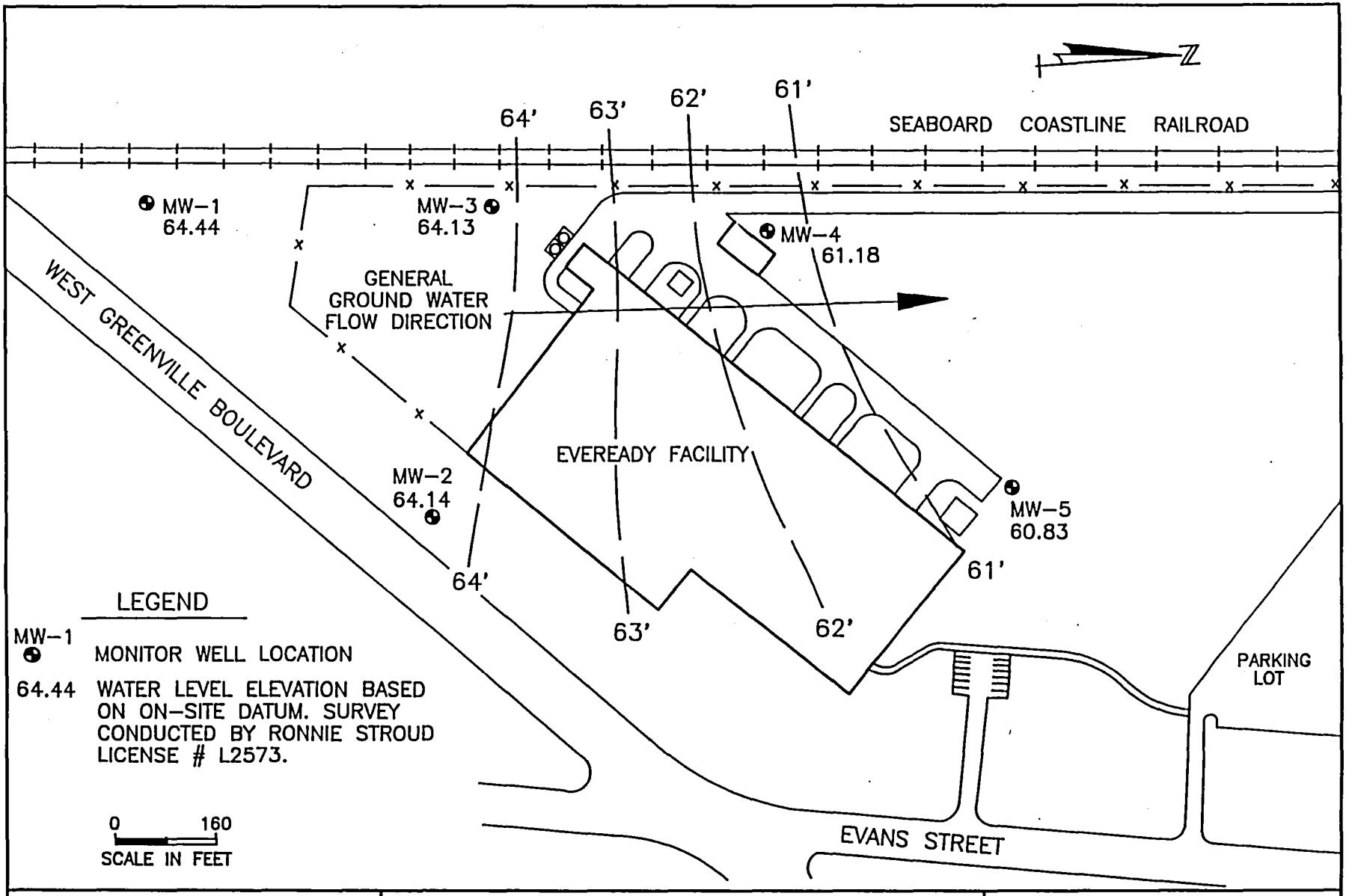
shallow ground water levels of September 20th were measured during wet weather conditions. A ground water elevation map is presented in Figure 8. Lines of equal shallow water table elevations were constructed based upon triangulation of the depth to water measured in the five wells. The potentiometric map indicates that the generalized ground water flow direction at the site is to the north. The water table gradient calculated between monitor wells MW-2 and MW-5 is approximately 0.01 ft/ft.

5.4 Aquifer Testing

Hydraulic conductivity values were determined from the analysis of slug test data collected from the five on-site monitor wells September 19 and 20, 1991. Aquifer test data was evaluated using the Bouwer and Rice Method (Bouwer, 1989 and Bouwer and Rice, 1976). An explanation of the method used to calculate the hydraulic conductivity values and slug test data sheets are presented in Appendix H.

The hydraulic conductivity values calculated by analysis of the slug test data ranged from 1.2×10^{-4} cm/sec (MW-2) to 5.2×10^{-2} cm/sec (MW-4). The geometric mean for the hydraulic conductivity values calculated from all of the slug test data is 2.3×10^{-3} cm/sec. This mean hydraulic conductivity value is less than the typical hydraulic conductivity value of 1×10^{-2} cm/sec (29 ft/day) for the surficial aquifer in the Coastal Plain region of North Carolina (Winner & Coble, 1989). The hydraulic conductivity values calculated for the Eveready site are summarized in Table 2.

Using the mean hydraulic conductivity value of 2.3×10^{-3} cm/sec and the gradient between monitor wells MW-2 and MW-5 of 0.01 ft/ft and assuming an effective porosity value of 30%, the average linear ground water velocity across the site is calculated to be 7.7×10^{-5} cm/sec (0.22 ft/day). These data indicate that the advective front of ground water will migrate across the site at a rate of approximately 79 ft/year.



EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA

FIGURE 8.
WATER TABLE CONTOUR MAP
SEPTEMBER 20, 1991

ERM ERM-SOUTHEAST, INC

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TABLE 2
SUMMARY OF SLUG TEST RESULTS
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA

MONITOR WELL	HYDRAULIC CONDUCTIVITY (K) (cm/sec)
MW-1	9.3 x E-04 (early) 2.6 x E-04 (late)
MW-2	3.0 x E-04 (early) 1.2 x E-04 (late)
MW-3	2.2 x E-04
MW-4	5.2 x E-02 (early) 2.1 x E-02 (late)
MW-5	2.6 E-02 (early) 3.3 E-03 (late)
	Geometric Mean K = 2.3 E-03

NOTES:
- Hydraulic conductivity values calculated by Bouwer and Rice (1976). and Bouwer (1989) method.
- Slug tests conducted September 19 and 20, 1991.
- See Appendix H for slug test data sheets and calculations.
- cm/sec = centimeters per second

misc 2/b:slug 1

6.0 ANALYTICAL RESULTS

6.1 Soil Gas Survey Results

The objective of conducting this soil vapor survey was to detect volatile compounds in soil vapor as an indication of the extent and relative magnitude of subsurface contamination and to provide additional basis for the locations of planned monitor wells and soil sampling points. Reduction of the gas chromatogram data was performed by Mr. William Goldschmidt (ERM) in order to quantify the volatile compounds indicated by the GC analysis. The values of the identified compounds are summarized in Appendix I. These data are also summarized in Table 3 (chlorinated volatile compounds) and Table 4 (non-chlorinated compounds). Figures 9 and 10 present the targeted volatile compounds indicated in borings SG1 through SG36 and SG37 through SG54, respectively.

An evaluation of the chromatograms generated during this investigation indicates elevated PCE, TCE, 1,1-DCE and VC values in soil gas collected at this Eveready facility. The distribution of PCE, 1,1-DCE and VC soil vapor concentrations do not follow a readily identifiable pattern. Consequently, the ability to infer the extent and location of potential source area(s) is limited. The most pronounced area of elevated PCE values, however, is to the south of the hazardous waste storage building in the vicinity of boring SG27. As illustrated in Figure 11 an area in which the soil vapor concentrations of PCE were indicated to exceed 100 ppb is aligned in a north - south direction extending from the southwest corner of the facility (SG33 and SG34) to the immediate west of the hazardous waste storage building (SG29 and SG30).

Elevated PCE anomalies were also indicated in soil vapor borings SG38 (1,100 ppb), SG43 (860 ppb), SG46 (240 ppb), SG48 (600 ppb) and SG49 (600 ppb). These borings were advanced along the property boundary that fronts on West Greenville Boulevard and Evans Street (Figure 10). PCE values along the property boundary could be interpreted to indicate potential off-site sources volatile compounds.

The alignment of elevated PCE concentrations in the vicinity of the hazardous waste storage building may be an indication of a plume of PCE affected ground water. The scattered nature of the data may be an indication of localized releases associated with activities conducted in the loading dock area of the facility rather than a single point source. Borings in this area, however, were advanced along seams in the asphalt drives and concrete loading ramps. The seams may act as conduits for surface water infiltration. These localized releases may have affected only the soil in the vicinity of the seams.

TABLE 3
GAS CHROMATOGRAPH RESULTS
PCE, TCE, T-1,2,2-DCE, 1,1-DCE, VC, C-1,2-DCE
SOIL GAS SURVEY
EVEREADY FACILITY, GREENVILLE, NC
JULY 1991

	GAS CHROMATOGRAPH RESULTS (ppb)						
SAMPLE	PCE	TCE	t-1,2-DCE	1,1-DCE	VC	C-1,2 DCE	TOTAL PID
SG-1	3	—	30	—	100	223	223
SG-DUP	3	—	180	—	260	130	573
SG-2	—	—	10	—	180	120	310
SG-3	—	—	—	—	55	40	95
SG-4	20	—	—	—	30	—	50
SG-5	120	—	—	—	30	—	150
SG-6	3	—	—	—	110	—	113
SG-7	70	—	—	10	1000	5	1085
SG-8	200	—	<1	—	1440	—	1640
SG-9	190	—	—	—	20	—	210
SG-10	60	—	—	10	50	—	120
SG-11	5	—	<1	—	1480	<1	1485
SG-12	6	2	<1	—	220	<1	228
SG-13	—	—	—	—	620	—	620
SG-14	5	<1	—	4	20	—	29
SG-15	—	—	—	5	20	—	25
SG-16	—	—	—	10	50	—	60
SG-17	1	<1	—	20	50	—	71
SG-18	—	30	—	2	20	—	52
SG-19	4	—	—	10	20	—	34
SG-20	3	<1	<1	20	180	<1	203
SG-21	—	—	—	4	70	—	74
SG-22	40	5	—	5	40	10	100
SG-23	40	760	—	<1	30	—	830
SG-24	200	410	<1	<1	30	1070	1710
SG-25	210	2	3	10	60	150	435
SG-26	2	4340	—	20	40	—	4402
SG-27	11000	10	—	50	80	—	11140
SG-28	830	<1	—	40	70	—	940
SG-29	120	10	5	10	100	—	245
SG-30	850	20	—	10	60	—	940

Notes:
PCE = tetrachloroethene
TCE = trichloroethene
PCE = dichloroethene
VC = vinyl chloride
"—" indicates below detection limit of 1 ppb
Total PID = sum of subject compounds

Gas chromatograph data presented in parts per billion (ppb) as indicated by a portable Photovac 10S50 photoionization detector (PID).

TABLE 3 (continued)
GAS CHROMATOGRAPH RESULTS
PCE, TCE, T-1,2,2-DCE, 1,1-DCE, VC, C-1,2-DCE
SOIL GAS SURVEY
EVEREADY FACILITY, GREENVILLE, NC
JULY 1991

	GAS CHROMATOGRAPH RESULTS (ppb)						
SAMPLE	PCE	TCE	t-1,2-DCE	1,1-DCE	VC	C-1,2 DCE	TOTAL PID
SG-31	380	10	—	10	70	—	470
SG-32	1370	—	—	10	140	—	1520
SG-33	1030	—	<1	5	20	—	1055
SG-34	140	—	<1	20	70	—	230
SG-35	330	—	<1	20	180	—	530
SG-36	50	—	—	20	60	—	130
SG-37	20	10	<1	10	50	—	90
SG-38	1100	3	<1	5	40	—	1148
SG-39	220	—	—	<1	20	—	240
SG-40	3	<1	—	—	30	<1	33
SG-41	180	<1	<1	2	40	—	222
SG-42	130	2	—	<1	60	10	202
SG-43	860	—	10	70	310	—	1250
SG-44	40	—	—	<1	40	—	80
SG-45	40	1	—	4	40	1	84
SG-46	240	—	1	20	50	<1	311
SG-47	7	1	<1	3	50	<1	61
SG-48	600	—	<1	20	40	<1	660
SG-49	600	—	<1	10	50	—	660
SG-50	3	—	—	4	10	—	17
SG-51	20	—	—	2	10	—	32
SG-52	2	—	—	8	90	—	100
SG-53	40	—	<1	4	30	<1	74
SG-54	30	—	1	10	30	1	72

Notes:
PCE = tetrachloroethene
TCE = trichloroethene
PCE = dichloroethene
VC = vinyl chloride
"—" indicates below detection limit of 1 ppb
Total PID = sum of subject compounds

Gas chromatograph data presented in parts per billion (ppb) as indicated by a portable Photovac 10S50 photoionization detector (PID).

TABLE 4
GAS CHROMATOGRAPH RESULTS
BTEX
SOIL GAS SURVEY
EVEREADY FACILITY, GREENVILLE, NC
JULY 1991

	GAS CHROMATOGRAPH RESULTS (ppb)				
SAMPLE	B	TOL	ETH	X	TOTAL PID
SG-1	—	—	—	—	0
SG-DUP	—	—	—	—	0
SG-2	—	—	—	—	0
SG-3	—	—	—	—	0
SG-4	—	—	—	—	0
SG-5	—	—	—	—	0
SG-6	—	—	—	—	0
SG-7	—	—	—	—	0
SG-8	—	—	—	—	0
SG-9	—	—	—	—	0
SG-10	5	—	—	—	5
SG-11	—	—	—	100	100
SG-12	—	—	—	100	100
SG-13	—	—	—	—	0
SG-14	<1	—	—	20	20
SG-15	—	—	—	—	0
SG-16	—	<1	—	—	0
SG-17	3	—	—	—	3
SG-18	—	—	—	—	0
SG-19	—	—	—	100	100
SG-20	3	<1	—	100	100
SG-21	—	—	—	—	0
SG-22	6	—	—	—	6
SG-23	—	—	—	—	0
SG-24	1	<1	—	<1	1
SG-25	2	10	—	10	22
SG-26	—	—	—	—	0
SG-27	40	—	—	—	40
SG-28	10	—	—	10	20
SG-29	—	—	—	20	20
SG-30	—	—	—	—	0

Notes:
B = benzene
TOL = toluene
ETH = ethylbenzene
X = xylene
"—" indicates below detection limit of 1 ppb
Total PID = sum of subject compounds

Gas chromatograph data presented in parts per billion (ppb) as indicated by a Photovac 10S50 photoionization detector (PID).

TABLE 4 (cont)
GAS CHROMATOGRAPH RESULTS
BTEX
SOIL GAS SURVEY
EVEREADY FACILITY, GREENVILLE, NC
JULY 1991

	GAS CHROMATOGRAPH RESULTS (ppb)				
SAMPLE	B	TOL	ETH	X	TOTAL PID
SG-31	—	—	—	20	20
SG-32	—	—	—	10	10
SG-33	—	<1	—	—	0
SG-34	—	—	—	—	0
SG-35	<1	—	—	<1	0
SG-36	<1	<1	—	5	5
SG-37	—	—	—	—	0
SG-38	—	—	—	—	0
SG-39	—	—	—	—	0
SG-40	—	—	—	—	0
SG-41	—	—	—	—	0
SG-42	—	—	—	—	0
SG-43	5	2	—	—	7
SG-44	—	—	—	—	0
SG-45	—	<1	—	—	0
SG-46	6	2	—	—	8
SG-47	—	—	—	—	0
SG-48	5	2	—	10	17
SG-49	—	—	—	—	0
SG-50	—	—	—	—	0
SG-51	—	—	—	—	0
SG-52	—	—	—	—	0
SG-53	—	—	—	—	0
SG-54	—	—	3	3	6

Notes:
B = benzene
TOL = toluene
ETH = ethylbenzene
X = xylene
"—" indicates below detection limit of 1 ppb
Total PID = sum of subject compounds

Gas chromatograph data presented in parts per billion (ppb) as indicated by a Photovac 10S50 photoionization detector (PID).

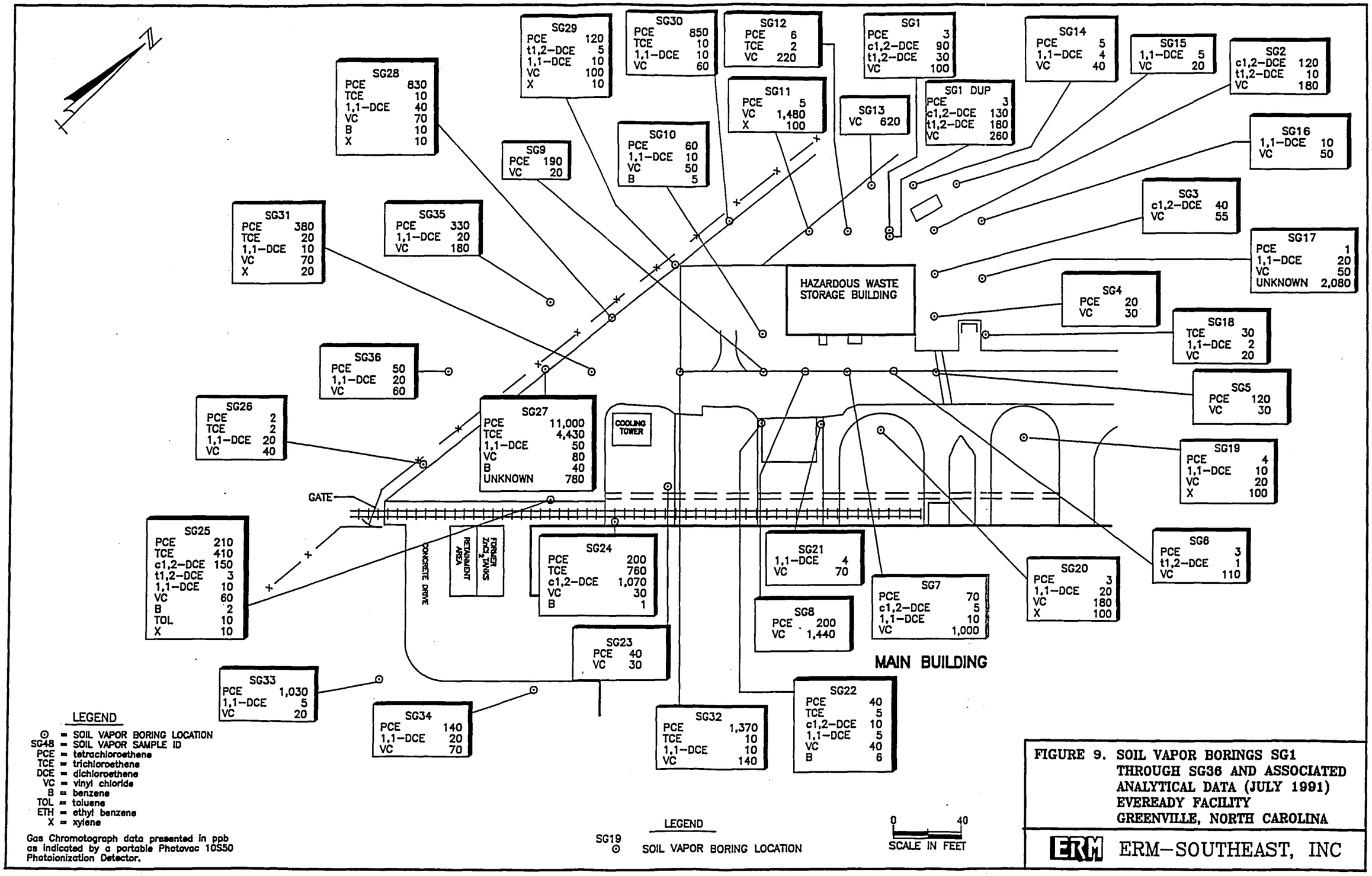
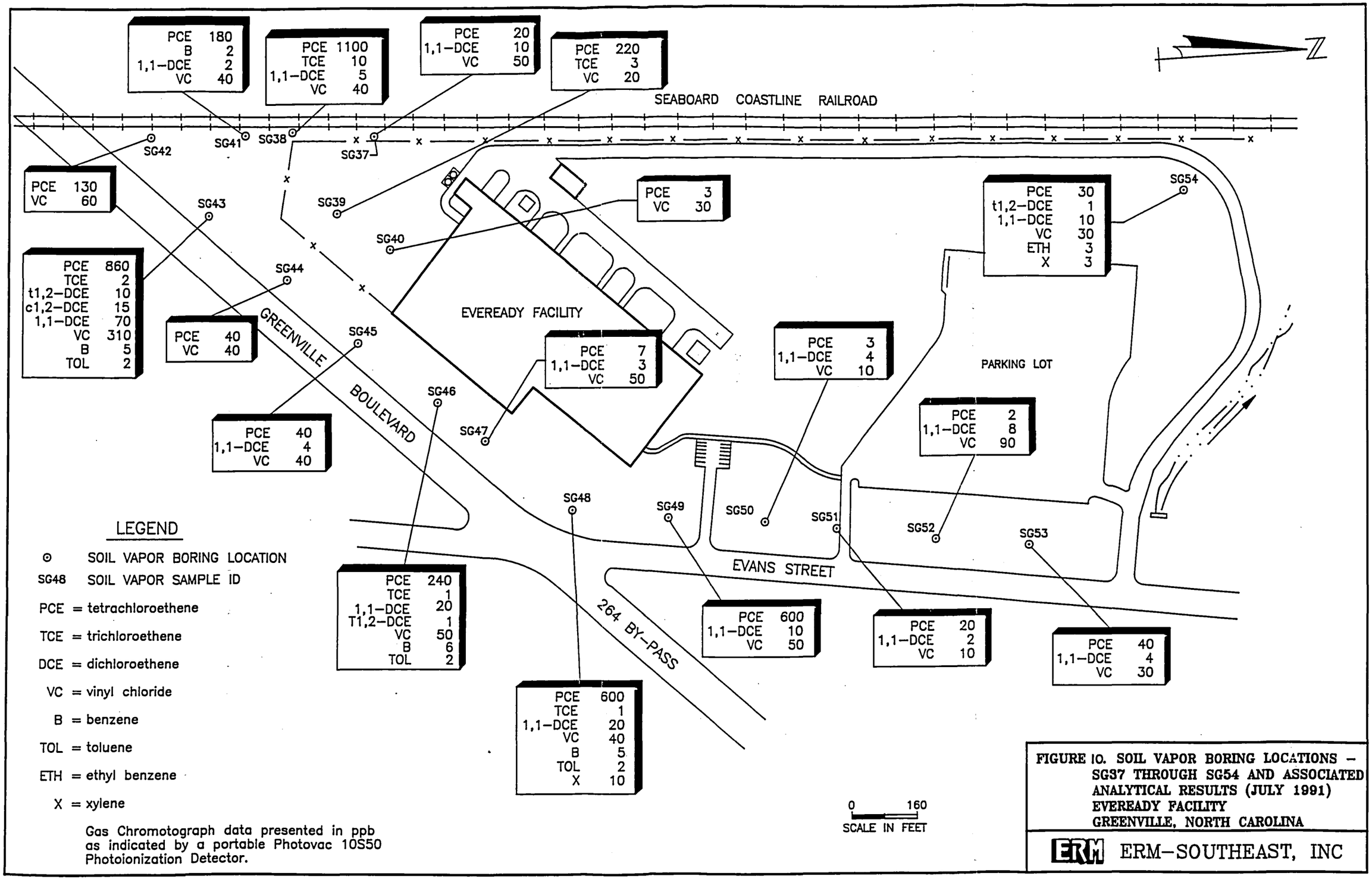


FIGURE 9. SOIL VAPOR BORINGS SG1 THROUGH SG36 AND ASSOCIATED ANALYTICAL DATA (JULY 1991) EVEREADY FACILITY GREENVILLE, NORTH CAROLINA

ERM ERM-SOUTHEAST, INC



LEGEND

⊙ SOIL VAPOR BORING LOCATION

SG48 SOIL VAPOR SAMPLE ID

PCE = tetrachloroethene

TCE = trichloroethene

DCE = dichloroethene

VC = vinyl chloride

B = benzene

TOL = toluene

ETH = ethyl benzene

X = xylene

Gas Chromotograph data presented in ppb as indicated by a portable Photovac 10S50 Photoionization Detector.

FIGURE 10. SOIL VAPOR BORING LOCATIONS – SG37 THROUGH SG54 AND ASSOCIATED ANALYTICAL RESULTS (JULY 1991) EVEREADY FACILITY GREENVILLE, NORTH CAROLINA

ERM ERM–SOUTHEAST, INC

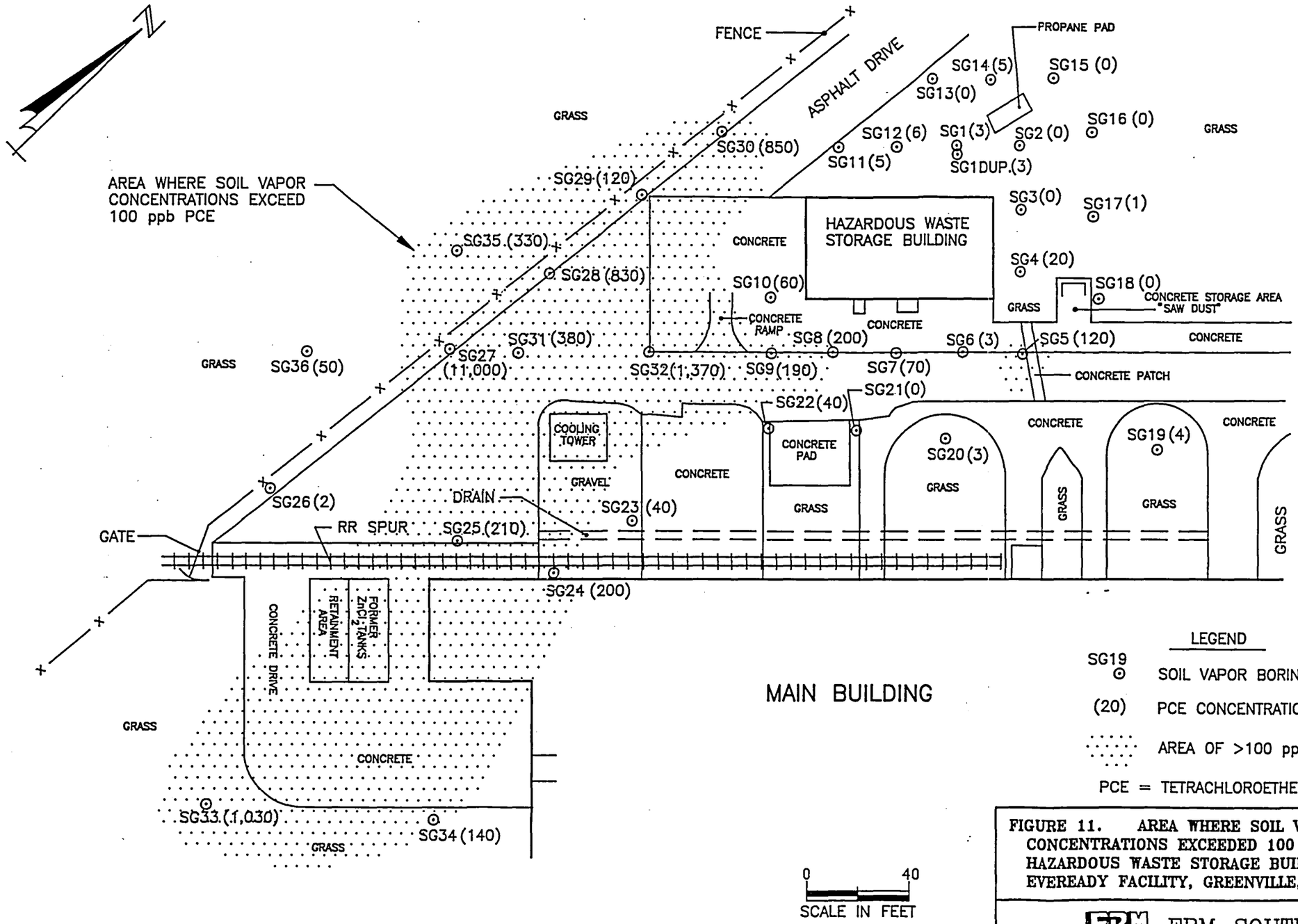


FIGURE 11. AREA WHERE SOIL VAPOR PCE CONCENTRATIONS EXCEEDED 100 ppb, HAZARDOUS WASTE STORAGE BUILDING, JULY 1991 EVEREADY FACILITY, GREENVILLE, NORTH CAROLINA

ERM ERM–SOUTHEAST, INC

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During the drilling of the soil gas points, a dense soil layer was encountered at the two-to-three-foot depth interval across the site. This unit may act to influence the diffusion and migration of solvent-affected vapors beneath the site. The soil above and below this unit typically consisted of clayey to sandy silt.

This soil gas investigation indicated that solvent-affected soil vapor is present in the vicinity of the hazardous waste storage building and at the south and east property boundaries.

6.2 Soil Analyses

The results of the soil analyses are discussed in the following sections. Two soil samples were collected from each monitor well boring (SB-1 through SB-5) and three hydropunch borings (HPSB-4 through HPSB-6). The soil samples were analyzed for volatile organic compounds (SW-846 Method 8010) and TAL metals (SW-846 Methods). Soil pH and PID screening measurements were also determined in the field.

Soil sample descriptions, PID readings and pH values are provided in the drilling logs of each monitor well and hydropunch soil boring which are presented in Appendix G. Field PID and pH values are summarized in Table 5. Laboratory results of the soil analyses are presented in Appendix J. The analytical results are summarized in Table 6 for volatile organic compounds and Table 7 for TAL metals. The location of the soil sampling points, depth interval of sample collection and the associated analytical results are illustrated in Figure 12.

6.2.1 Volatile Organic Analyses

Volatile organic compounds were detected in the unsaturated soil interval at three of the eight borings advanced at the site, HPSB-4, HPSB-5 and HPSB-6 (Figure 12). No volatile organic compounds were indicated in the soil samples collected from the borings completed as monitor wells (SB-1 through SB-5), including the background sampling locations SB-1 (MW-1) and SB-2 (MW-2). The most elevated concentrations of volatile organic compounds occurred at soil boring HPSB-4 where PCE was detected at 13,000 ug/kg (1'-3' sample) and 3,800 ug/kg (7'-9' sample). The magnitude of PCE indicated in the shallow surface grab sample and the attenuation of PCE concentration with depth suggest that a surface release source area may exist in the vicinity of boring HPSB-4.

Relatively low concentrations of PCE, 16 ug/kg (1.7'-3.7') and 180 ug/kg (7'-9'), were indicated in the samples collected from soil boring HPSB-5. HPSB-5 was advanced approximately 80 feet east of HPSB-4 adjacent to the loading dock area (Figure 7). TCE was also detected at HPSB-5 in the upper and lower sample intervals, 20

TABLE 5
SUMMARY OF pH VALUES AND PID READINGS FOR SOIL SAMPLES
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA
SEPTEMBER 1991

SOIL BORING	SB-1		SB-2		SB-3		SB-4		SB-5		HPSB-4		HPSB-5		HPSB-6	
INTERVAL OF SAMPLE COLLECTION	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	1'-3'	7'-9'	1'-3'	7'-9'	1'-3'	7'-9'
pH (standard units)	6	6	6	6	6	6	6	6	6	7	6	6	5	5	6	6
PID readings (ppm)	BG	BG	2.8	2.8	3.4	7	BG	BG	BG	2.2	300	40	4.7	7.4	BG	BG

NOTES:
Soil Samples collected September 1991
BG indicates background reading
SB = Soil Boring
HPSB = HydroPunch Soil Boring
pH analyses conducted in the field with litmus paper.
PID readings are in parts per million (ppm) as indicated by a HNU photoionization detector.

TABLE 6
SUMMARY OF VOLATILE ORGANIC ANALYSES
FOR SOIL SAMPLES
EVEREADY BATTERY CO.
GREENVILLE, NORTH CAROLINA

DETECTED VOLATILE COMPOUNDS (ug/kg)	SAMPLE COLLECTION POINT															
	SB-1		SB-2		SB-3		SB-4		SB-5		HPSB-4		HPSB-5		HPSB-6	
	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	1'-3'	7'-9'	1'-3'	7'-9'	1'-3'	7'-9'
1,1-Dichloroethene	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	9	BQL	BQL
t-1,2-Dichloroethene	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	1	1	BQL	BQL
Methylene Chloride	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	4	BQL	BQL
Tetrachloroethene	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	13,000	3,600	16	180	20	BQL
Trichloroethene	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	20	240	BQL	BQL
Trichloroflouromethane	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	50	BQL	BQL	BQL	50	BQL	BQL

NOTES:
Samples collected September 1991.
SW-846 Method 8010 Analyses conducted by IEA of Cary, NC.
All results presented in ug/kg (micrograms per kilogram).
BQL indicated Below Quantitation Limit.
SB = Soil Boring
HPSB = HydroPunch Soil Boring
Other Method 8010 compounds were identified at concentrations less than the quantitation limit; for quantitation limits reference laboratory data sheets.

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TABLE 7
SUMMARY OF METALS ANALYSES FOR SOIL SAMPLES
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA

SOIL BORING	SB-1		SB-2		SB-3		SB-4		SB-5		HPSB-4		HPSB-5		HPSB-6	
INTERVAL OF SAMPLE COLLECTION	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	0'-2'	7'-9'	1'-3'	7'-9'	1'-3'	7'-9'	1'-3'	7'-9'
DETECTED METALS (mg/kg)																
Aluminum	4,000	6,400	4,800	7,100	3,000	5,100	9,500	9,000	2,900	6,500	11,000	5,500	6,500	7,500	2,900	3,600
Arsenic	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.3	<2.0	<2.0	<2.0	<2.0	<2.0
Calcium	<1,000	<1,000	<1,000	<1,000	84,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Chromium	<6.0	7.4	6.8	6.8	6.0	<6.0	12	8.6	<6.0	10	11	13	9.9	<6.0	<6.0	<6.0
Iron	2,300	5,900	3,600	1,500	3,900	980	8,000	2,900	2,100	8,600	8,000	17,000	13,000	2,000	2,700	380
Lead	5.1	5.3	10	3.4	4.9	4.3	7.0	5.5	2.5	4.2	4.7	3.4	5.1	3.6	3.4	4.5
Magnesium	<1,000	<1,000	<1,000	<1,000	1,100	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000	<1,000
Manganese	2.5	<2.0	21	2.5	11	4.6	9.7	2.3	8.8	<2.0	6.1	2.6	5.0	4.4	4.6	<2.0
Vanadium	<10	<10	<10	15	<10	12	18	21	<10	20	20	15	18	<10	<10	13
Zinc	<4.0	<4.0	9.0	<4.0	5.3	<4.0	12	<4.0	4.7	<4.0	170	110	550	290	<4.0	<4.0

NOTES:
Soil Samples collected September 1991
TAL analyses conducted by IEA of Cary, NC.
All results presented in mg/kg (milligrams per kilogram).
BQL indicates Below Quantitation Limit.
Other TAL metals including cyanide indicated at concentrations less than the quantitation limit; for quantitation limits reference laboratory data sheets.
SB = Soil Boring
HPSB = HydroPunch Soil Boring

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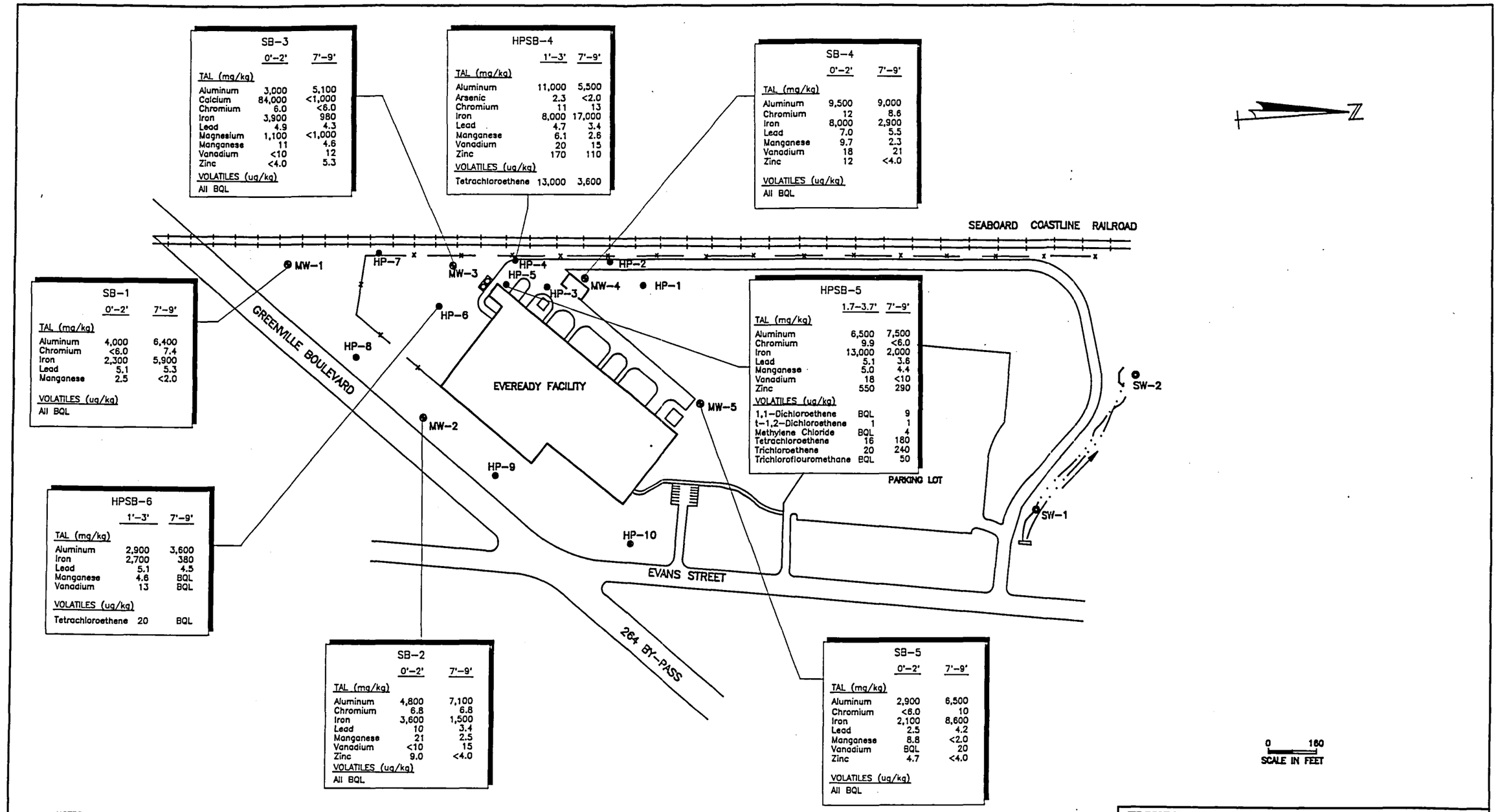

NOTES:

Samples collected September 1991
TAL and SW-846 Method 8010 analyses conducted by IEA of Cary, NC
TAL compounds presented in mg/kg
Volatile organic compounds presented in ug/kg
BQL = Below Quantitation Limit
Other TAL compounds including cyanide indicated at concentrations less than the quantitation limit
For Quantitation limits reference laboratory data sheets
MW = Monitor Well
HP = HydroPunch
SW = Surface Water
SB = Soil Boring
HPSB = HydroPunch Soil Boring

LEGEND

- MONITOR WELL LOCATION
- HYDROPUNCH LOCATION
- SURFACE WATER SAMPLE LOCATION

FIGURE 12. TAL AND VOLATILE ORGANIC ANALYSES FOR SOIL SAMPLES EVEREADY BATTERY FACILITY GREENVILLE, NORTH CAROLINA

ERM-SOUTHEAST, INC

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ug/kg and 240 ug/kg, respectively. Trichlorofluoromethane was indicated in the seven to nine-foot depth interval sample at 50 ug/kg. 1,1-DCE (9 ug/kg at 7'-9') and t-1,2-DCE (1 ug/kg at the 1.7'- 3.7' and 7'-9' intervals) were also detected at HPSB-5. Methylene chloride, a common laboratory contaminant, was also indicated at a trace level in a sample collected from HPSB-4 (4 ug/kg at 7'-9'). Trichlorofluoromethane, 1,1-DCE, t-1,2-DCE and methylene chloride were not detected by laboratory analyses of any other soil or ground water samples collected at the site.

A relatively low concentration of PCE (20 ug/kg) was indicated in the one-foot to three-foot sample interval in soil boring HPSB-6. No other volatile organic parameters were detected at soil boring HPSB-6.

6.2.2 TAL Metals Analyses

As discussed previously in Section 2.3, metals which may be related to former battery manufacturing operations conducted at the site are barium, chromium, manganese, mercury, nickel and zinc. Background metal concentrations are indicated by the analyses of soil samples collected from monitor well borings SB-1 (MW-1) and SB-2 (MW-2).

No detectable levels of barium, cadmium, mercury or nickel were present in any of the soil samples collected at the site. Chromium was indicated in samples collected from five boring locations (SB-3, SB-4, SB-5, HPSB-4 and HPSB-5), but at concentrations less than two times the range of background concentrations of 6.8 mg/kg (SB-2) and 7.4 mg/kg (SB-1). Manganese was detected in soil samples collected from each of the eight borings advanced at the site, however, also at levels less than the background concentration range of 2.5 mg/kg (SB-1) to 25 mg/kg (SB-2)

Zinc was indicated at concentrations above the background value of 9 mg/kg (SB-2) at HPSB-4, 170 mg/kg (1'-3') and 110 mg/kg (7'-9'), and HPSB-5, 550 mg/kg (1.7'-3.7') and 290 mg/kg (7'-9'). As discussed previously, the soil samples collected from HPSB-4 and HPSB-5 also indicated the presence of volatile organic compounds. Zinc was also detected at concentrations below or near the background value in soil samples collected from soil borings SB-3, SB-4 and SB-5. Zinc was not indicated in the samples collected from soil boring HPSB-6.

6.2.3 Field pH Analyses

The field pH values for soil samples are summarized in Table 5. All litmus paper measurements indicated pH values ranging from 5 to 6 standard units. This range of pH values is considered typical of shallow soil in the Greenville area (USDA, 1974).

6.3 Ground Water Analyses

Ground water samples were collected from monitor wells completed in the shallow surficial aquifer (MW-1 through MW-5) and analyzed for volatile organic compounds (EPA Method 601) and TAL metals (SW-846 Methods). Ground water samples were also collected from ten hydropunch locations (HP-1 through HP-10) to provide a preliminary indication of the presence of volatile organic compounds and metals at additional shallow water table sampling locations. Laboratory reports of the ground water analyses are presented in Appendix J.

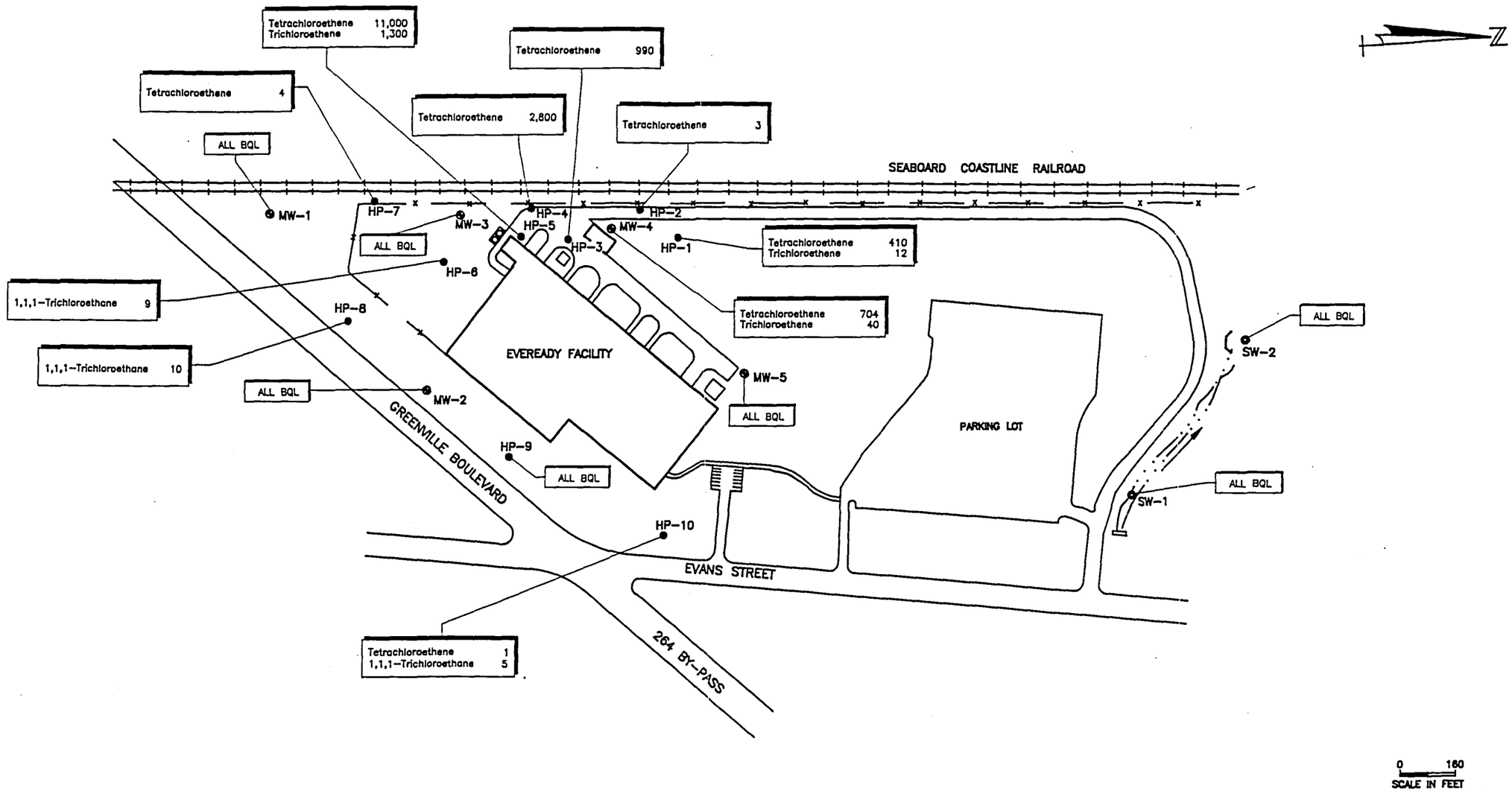
The results of volatile organic and TAL metal analyses for the ground water samples are illustrated in Figures 13 and 14 and summarized in Tables 8 and 9, respectively. Field parameters (pH, specific conductance and temperature) for the monitor well ground water samples are presented in Table 10. The results of the ground water analyses are discussed below.

6.3.1 Volatile Organic Analyses

Volatile organic compounds were detected in only one of the shallow monitor wells, MW-4, located on the west side (downgradient) of the former hazardous waste storage building. PCE and TCE were detected at MW-4 at concentrations of 704 ug/l and 40 ug/l, respectively. No detectable levels of VOCs were present in the ground water samples collected from MW-1, MW-2, MW-3 and MW-5.

Analyses of the ground water samples collected by hydropunch method indicated the presence of VOCs at nine of the ten hydropunch sampling locations. No detectable levels of VOCs were present at HP-9 located on the east side of the main plant building. PCE was detected at seven of the hydropunch sampling points. The highest concentration of PCE (11,000 ug/l) was observed at HP-5, located near the southwest building corner and adjacent to the former railroad loading dock. A relatively high level of PCE (2,800 ug/l) was also detected at HP-4, located approximately 80 feet west (sidegradient) of HP-5. Relatively lower levels of PCE were indicated at HP-3 (990 ug/l) and HP-1 (410 ug/l) located approximately 150 feet and 470 feet north (downgradient) of HP-5, respectively. Low levels (<5 ug/l) of PCE were also detected at HP-7 (4 ug/l) located approximately 450 feet south (upgradient) of HP-5, at HP-2 (3 ug/l) located 360 feet north (downgradient) of HP-5, and at HP-10 (1 ug/l) located approximately 130 feet east of the northeast corner of the main plant building.

TCE was detected at two of the hydropunch sampling points. The highest concentration of TCE (1,300 ug/l) occurred at HP-5, which also showed the highest concentration of PCE (11,000 ug/l). A relatively lower level of TCE (12 ug/l) was detected at HP-1 located approximately 460 feet north (downgradient) of HP-5. No TCE was detected at HP-3 which is located downgradient of HP-5 and between HP-5 and HP-1.



NOTES:
Samples collected September 1991
EPA 601 analyses conducted by IEA of Cary, NC
All compounds presented in ug/kg
BQL = Below Quantitation Limit
Other EPA 601 compounds were indicated at concentrations less than the quantitation limit
For Quantitation limits reference laboratory data sheets
MW = Monitor Well
HP = HydroPunch

LEGEND

- MONITOR WELL LOCATION
- HYDROPUNCH LOCATION
- SURFACE WATER SAMPLE LOCATION

FIGURE 13. VOLATILE ORGANIC ANALYSES FOR GROUND WATER AND SURFACE WATER SAMPLES EVEREADY BATTERY FACILITY GREENVILLE, NORTH CAROLINA

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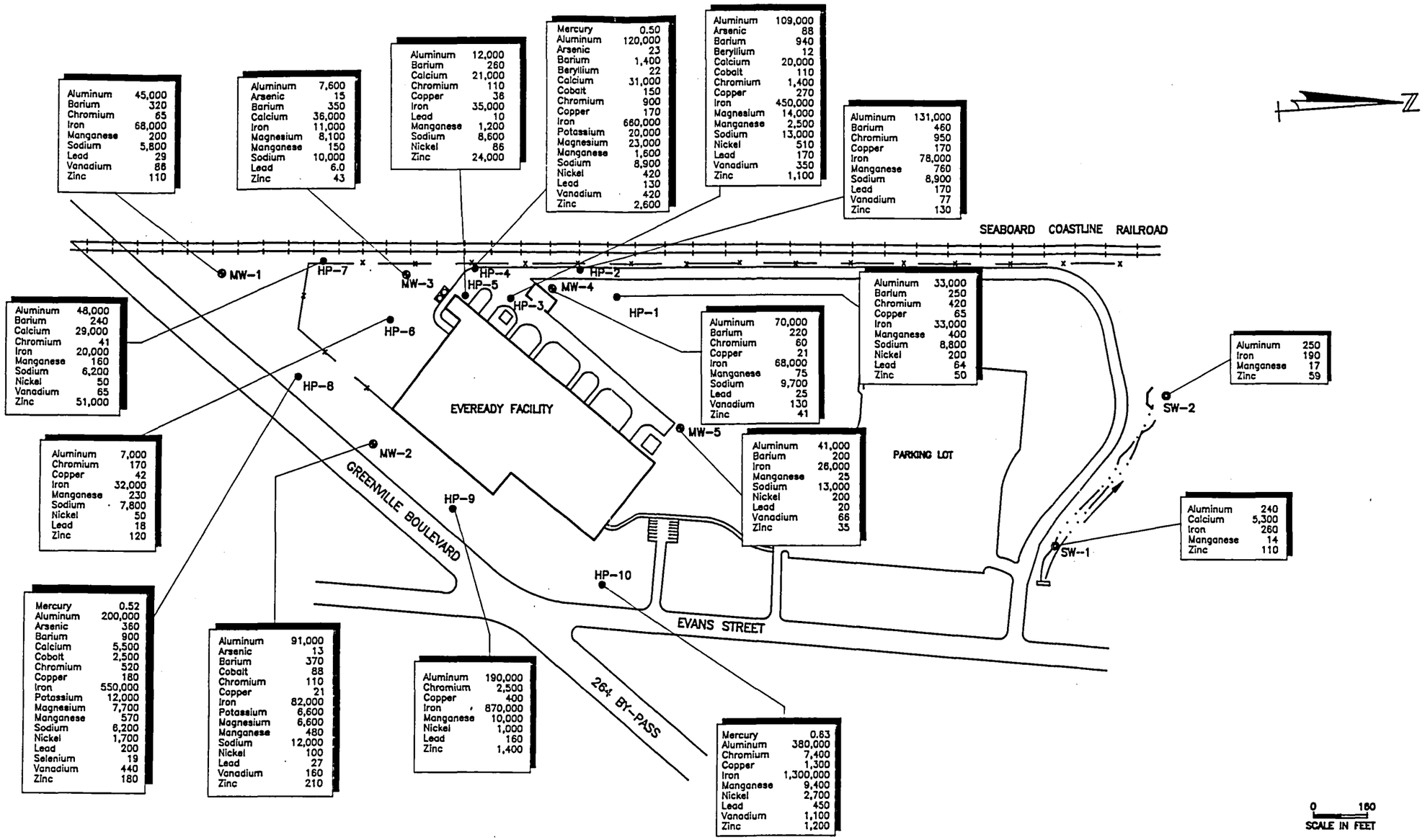

NOTES:

Samples collected September 1991
Analyses conducted by IEA of Cary, NC
All compounds presented in ug/l
BQL = Below Quantitation Limit
Other TAL compounds indicated at concentrations less than the quantitation limit
For Quantitation limits reference laboratory data sheets
MW = Monitor Well
HP = HydroPunch
SW = Surface Water

LEGEND

- MONITOR WELL LOCATION
- HYDROPUNCH LOCATION
- SURFACE WATER SAMPLE LOCATION

FIGURE 14. TAL ANALYTICAL RESULTS FOR GROUND WATER AND SURFACE WATER SAMPLES EVEREADY BATTERY FACILITY GREENVILLE, NORTH CAROLINA

ERM ERM–SOUTHEAST, INC

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TABLE 8
VOLATILE ORGANIC ANALYSES
FOR GROUND WATER AND SURFACE WATER SAMPLES
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA

DETECTED VOLATILE COMPOUNDS (ug/kg)	SAMPLE COLLECTION POINT																
	MW-1	MW-2	MW-3	MW-4	MW-5	HP-1	HP-2	HP-3	HP-4	HP-5	HP-6	HP-7	HP-8	HP-9	HP-10	SW-1	SW-2
Tetrachloroethene	BQL	BQL	BQL	740	BQL	410	3	990	2,800	11,000	BQL	4	BQL	BQL	1	BQL	BQL
Trichloroethene	BQL	BQL	BQL	40	BQL	12	BQL	BQL	BQL	1,300	BQL	BQL	BQL	BQL	BQL	BQL	BQL
1,1,1-Trichloroethane	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	9	BQL	10	BQL	5	BQL	BQL

NOTES:
Samples collected September 1991
EPA 601 analyses conducted by IEA of Cary, NC.
All results presented in ug/kg (micrograms per kilogram).
BQL = Below Quantitation Limit.
Other EPA 601 compounds were identified at concentrations less than the quantitation limit; for quantitation limits reference laboratory data sheets.
MW = Monitor Well
HP = HydroPunch

misc 2/b:ever 3

TABLE 9
SUMMARY OF METALS ANALYSES FOR GROUND WATER AND SURFACE WATER SAMPLES
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA

SAMPLE COLLECTION POINT	MW-1	MW-2	MW-3	MW-4	MW-5	HP-1	HP-2	HP-3	HP-4	HP-5	HP-6	HP-7	HP-8	HP-9	HP-10	SW-1	SW-2
Detected Metals (ug/l)																	
Aluminum	45,000	91,000	7,600	70,000	41,000	33,000	131,000	109,000	120,000	12,000	7,000	48,000	200,000	190,000	380,000	240	250
Arsenic	<10	13	15	<10	<10	<10	<10	88	23	<10	<10	<10	360	<10	<10	BQL	BQL
Barium	320	370	350	220	200	250	460	940	1,400	260	<200	240	900	<4,000	<4,000	<200	<200
Beryllium	<10	<10	<10	<10	<10	<10	<10	12	22	<10	<10	<10	<10	<200	<200	<10	<10
Calcium	<5,000	<5,000	36,000	<5,000	<5,000	<5,000	<5,000	20,000	31,000	21,000	<5,000	29,000	5,500	<100,000	<100,000	5,300	<5,000
Chromium	65	110	<30	60	<30	420	950	1,400	900	110	170	41	520	2,500	7,400	<30	<30
Cobalt	<50	88	<50	<50	<50	<50	<50	110	150	<50	<50	<50	2,500	<1,000	<1,000	<50	<50
Copper	<20	21	<20	21	<20	65	170	270	170	36	42	<20	180	400	1,300	<20	<20
Iron	68,000	82,000	11,000	68,000	26,000	33,000	78,000	450,000	660,000	35,000	32,000	20,000	550,000	870,000	1,300,000	260	190
Lead	29.	27	6.0	25	20	64	170	170	130	10	18	<5.0	200	160	450	<5.0	<5.0
Magnesium	<5,000	6,600	8,100	<5,000	<5,000	<5,000	<5,000	14,000	23,000	<5,000	<5,000	<5,000	7,700	<100,000	<100,000	<5,000	<5,000
Manganese	200	480	150	75	25	400	760	2,500	1,600	1,200	230	160	570	10,000	9,400	14	17
Mercury	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	<0.50	<0.50	0.52	<0.50	0.63	BQL	BQL
Nickel	<40	100	<40	<40	<40	200	450	510	420	86	50	50	1,700	1,000	2,700	BQL	BQL
Potassium	<5,000	6,600	<5,000	<5,000	<5,000	<5,000	<5,000	13,000	20,000	<5,000	<5,000	<5,000	12,000	<100,000	<100,000	<5,000	<5,000
Selenium	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	19	<5	<5	<5	<5
Sodium	5,800	12,000	10,000	9,700	13,000	8,800	8,900	13,000	8,900	8,600	7,800	6,200	6,200	<100,000	<100,000	<5,000	<5,000
Vanadium	86	160	<50	130	66	<50	77	350	420	<50	<50	65	440	<1,000	1,100	<50	<50
Zinc	110	210	43	41	35	50	130	1,100	2,600	24,000	120	51,000	180	1,400	1,200	110	59

NOTES:
Samples collected September 1991
Analyses conducted by IEA of Cary, NC
All results presented in ug/l (micrograms per liter).
BQL = Below Quantitation Limit
Other TAL metals indicated at concentrations less than
the quantitation limit; for quantitation limits reference laboratory data sheets.
MW = Monitor Well
HP = HydroPunch
SW = Surface Water

TABLE 10
FIELD PARAMETERS
FOR GROUND WATER AND SURFACE WATER
EVEREADY BATTERY COMPANY
GREENVILLE, NORTH CAROLINA
SEPTEMBER 19, 1991

SAMPLE LOCATION	TEMPERATURE (degrees centigrade)	SPECIFIC CONDUCTANCE (umhos/cm)	pH (std. units)
MW-1	24	70	5.50
MW-2	24	125	5.67
MW-3	21	320	5.50
MW-4	23	120	5.37
MW-5	22	170	5.20
SW-1	19	40	6.40
SW-2	19	50	6.47

NOTES:
umhos/cm = micromhos per centimeter
Field parameters measured by ERM-Southeast on September 19, 1991 using calibrated meter.
MW = Monitor Well (ground water)
SW = Surface Water

BH MISC2/B:EVER 5

Low levels (10 ug/l or less) of 1,1,1-trichloroethane (1,1,1-TCA) were detected at three of the hydropunch sampling points, HP-6 (9 ug/l), HP-8 (10 ug/l), and HP-10 (1 ug/l). These sampling points are located on the south and east sides of the main plant building. No 1,1,1-TCA was detected in any of the ground water samples collected on the west side of the plant where PCE was the primary VOC detected.

Based on the combined analytical results of the shallow ground water samples collected from the monitor wells and the hydropunch locations, the most frequently detected VOC at the site is PCE. The concentration distribution of PCE indicates a source area in the vicinity of HP-5, where the highest PCE concentrations occurred. The PCE concentrations in the ground water decrease northward (downgradient) along a line from HP-5 (11,000 ug/l) to HP-3 (990 ug/l) to MW-4 (704 ug/l) to HP-1 (410 ug/l). The northern and western extent of the PCE-affected ground water is not delineated by the current ground water monitoring network.

The North Carolina ground water quality standards for VOCs have been exceeded at eight ground water sampling locations for PCE (NC GW Std of 0.7 ug/l) and at three ground water sampling locations for TCE (NC GW Std of 2.8 ug/l).

6.3.2 TAL Metals Analyses

Metals which may be related to previous site operations at the former battery manufacturing facility are barium, cadmium, chromium, manganese, mercury, nickel and zinc. Background levels of metals at the site are indicated by the analytical results of ground water samples collected at upgradient monitor wells MW-1 and MW-2.

Due to the significant differences in the sampling methods, the analytical results of the monitor well ground water samples and the hydropunch ground water samples cannot be directly compared. Analyses of hydropunch ground water samples are less likely to provide a true indication of the dissolved metals content of the shallow ground water.

The monitor wells are constructed with a filter (sand) pack opposite the well screen and are developed prior to sampling to minimize the amount of suspended sediment in the ground water samples. No filter pack or development procedures are involved with the hydropunch sampling technique. As a result, the hydropunch ground water samples often contain an unavoidable higher level of suspended sediments than a monitor well sample. The suspended sediments may contain particulate metals which occur naturally in the native soils of the aquifer. A total metals analyses (dissolved metals and particulate metals) of a turbid ground water sample may indicate an anomalously high level of total metals in the ground water due to the particulate metal content of

the suspended sediments and the artificial acidic conditions required for proper sample preservation.

The ground water samples collected by hydropunch method at the Eveready site exhibited obviously higher turbidity levels than the monitor well samples. As a result, the metals concentrations of the hydropunch ground water samples are generally much higher than the monitor well samples (Table 9). Consequently, ERM does not consider the hydropunch ground water analyses to be representative of the dissolved metals content of the shallow ground water beneath the site. The discussion which follows focuses on the TAL metals analyses of the monitor well ground water samples.

Based on the analytical results for upgradient monitor wells MW-1 and MW-2, the background levels of the site-related metals were 320 to 370 ug/l for barium, 65 to 110 ug/l for chromium, 200 to 480 ug/l for manganese, 100 ug/l for nickel, and 110 to 210 ug/l for zinc. It should be noted that the background levels of chromium and manganese are greater than the respective federal Maximum Contaminant Levels (MCL) for chromium of 50 ug/l and the secondary MCL for manganese of 50 ug/l. No detectable levels of cadmium were present in the upgradient monitor wells or any of the other monitor wells at the site.

The levels of barium, chromium, manganese and zinc detected in the downgradient monitor wells (MW-3, MW-4 and MW-5) were all below the range of background concentrations. The chromium concentration at MW-4 (60 ug/l) was slightly higher than the MCL for chromium and the manganese concentrations at MW-3 (150 ug/l) and MW-4 (75 ug/l) were slightly higher than the secondary MCL for manganese. However, the chromium level at MW-4 and the manganese levels at MW-3 and MW-4 are lower than the background concentrations in upgradient wells MW-1 and MW-2. At downgradient well MW-5, nickel was detected at 200 ug/l which is slightly higher than the North Carolina ground water quality standard for nickel of 150 ug/l. The metals analyses of the monitor well ground water samples provide no definitive evidence of a release of site-related metals to the shallow ground water.

6.3.3 Field Parameters

Field parameters were measured during sampling of the five monitor wells (Table 10). The highest pH value (5.67) occurred at upgradient monitor well MW-2 and the lowest pH value (5.20) occurred at downgradient monitor well MW-5. The pH values at MW-4 (5.37) and MW-5 (5.20) which are located on the west side of the main plant building are slightly lower than the pH values of the other monitor wells (MW-1, MW-2 and MW-3) which are upgradient of MW-4 and MW-5.

The background levels of specific conductance were 70 umhos/cm at MW-1 and 125 umhos/cm at MW-2. The highest specific conductance values were observed at MW-3 (320 umhos/cm) and MW-5 (170 umhos/cm). The temperatures of the ground water samples ranged from 21 to 24 degrees centigrade. A comparison of the field parameter values of the upgradient and downgradient monitor wells does not indicate a definitive difference in ground water quality.

6.4 Surface Water Analyses

Two surface water samples (SW-1 and SW-2) were collected from the drainage ditch at the north end of the site. The surface water samples were analyzed for VOCs (EPA Method 601) and TAL metals (SW-846). The laboratory reports are presented in Appendix J. A summary of the analytical results is presented in Table 8 (VOCs) and Table 9 (TAL metals). The detected VOC and TAL metal parameters are also illustrated on site maps presented in Figures 13 and 14, respectively. Field parameters are presented in Table 10. The surface water analytical results are discussed below.

6.4.1 Volatile Organic Analyses

The two surface water samples (SW-1 and SW-2) collected from the drainage ditch at the north end of the site contained no detectable levels of VOCs (Table 8).

6.4.2 TAL Metals Analyses

The metals analyses of he surface water samples indicate no evidence of surface water degradation. Manganese and zinc were the only site-related metals detected in the surface water samples. The manganese and zinc concentrations of the upstream (SW-1 and downstream (SW-2) surface water samples were similar and were well below the respective secondary MCLs for manganese (50 ug/l) and zinc (5,000 ug/l).

6.4.3 Field Parameters

The upstream (SW-1) and downstream (SW-2) surface water samples exhibited nearly identical values of pH, specific conductance, and temperature (Table 10). No surface water degradation is indicated.

7.0 CONCLUSIONS

A Phase II site assessment of the Eveready Battery facility located in Greenville, North Carolina was conducted by ERM in July and September 1991. The site assessment was implemented following the completion of a Preliminary Assessment and Site Inspections (Phase I and Phase II) of the facility conducted by the DEHNR and EPA Region IV under the CERCLA Hazardous Substance Response regulations (40 CFR Section 300 Subpart E). Additional data was generated during the Phase II site assessment that allows further evaluation of the potential releases of hazardous substances at the facility and characterization of the environmental setting of the site.

Based on the results of the Phase II site assessment, the following conclusions have been developed:

1) The Eveready Greenville facility was closed in September 1990 and is currently inactive. No hazardous substances related to the manufacturing of batteries have been stored at the site since November 1990.

2) The Eveready site is underlain by interbedded silty sands and sandy silts to a depth of at least twenty-two feet below the ground surface. The shallow ground water table occurs at depths ranging from between approximately eight feet to fourteen feet below the ground surface. The ground water flow direction is northward at an approximate velocity of 79 feet per year.

3) The results of soil analyses for site-related metals (barium, cadmium, manganese, mercury, nickel and zinc) indicate the occurrence of zinc at two soil sampling points at concentrations above background levels. Otherwise, the other site-related metals were not detected in soils or were present at levels below or less than two times the background concentrations.

4) The results of the soil gas survey and soil sampling program indicate the presence of volatile organic compounds in the unsaturated zone in the vicinity of a former loading dock area and near a former hazardous waste storage building.

5) Ground water monitoring at the site indicates the presence of volatile organic compounds in the shallow ground water in the area to the west of the main plant building near the former loading dock area and to the north of the former loading dock area toward the former hazardous waste storage building. The metals analyses of ground water samples collected from the monitor wells indicate no release of site-related metals to the shallow ground water.

6) The analyses of surface water samples collected from the drainage ditch at the north end of the site indicate no evidence of surface water degradation.

7) The City of Greenville municipal Water Supply Well #4 is located approximately 1,500 feet southwest (upgradient) of the Eveready plant and property line. The supply well is double cased to a depth of 130 feet and single cased to a depth of 192 feet below the ground surface. The screened interval of the well occurs in the depth range of 192 to 458 feet below ground level. The well does not obtain water from the shallow water table aquifer being investigated at the site. Water samples collected by the North Carolina DEHNR indicated no VOC contamination of the supply well.

   No other potential ground water receptors are known to exist in the area immediately downgradient of the Eveready facility.

Based on the findings of the Phase II site assessment, ERM believes that additional ground water monitoring for VOCs is warranted. ERM will submit recommendations to Eveready for a thorough site assessment to adequately characterize the affected ground water at the site and evaluate effective remedial alternatives.

References

Bouwer, H. 1989. Bouwer and Rice slug test - an update. Ground Water. v. 27, pp. 304-309.

Bouwer, H. and Rice, R.C. 1976. A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. Water Resources Research. V. 12, pp. 423-428.

ERM-Southeast, November 1989; Remedial Investigation/ Feasibility Study Work Plan, Geigy Chemical Corporation Site.

ERM-Southeast, April 1990; Project Operations Plan, Geigy Chemical Corporation Site.

Brown, P.M., 1959, Geology and Groundwater Resources of the Greenville Area; Ground Water Bulletin No. 73, North Carolina Department of Conservation & Development, 87p.

ERM-Southeast, September 1990; Environmental Assessment of Eveready Battery Facility, Greenville, North Carolina.

Giese, G.L., Eimers, J.L. and Coble, R.W., 1991. Simulation of Ground Water Flow in the Coastal Plain Aquifer System of North Carolina. United States Geological Survey Open File Report 90-372, United States Geological Survey, Raleigh, North Carolina, 178 p.

Karnowski, E.H., Newman, J.B., Dunn, J., and Meadows, J.A., 1974. Soil Survey Pitt County, North Carolina, United States Department of Agriculture, Washington, D.C., 74p.

Winner, M. and Coble, R. 1989, Hydrogeologic Framework of the North Carolina Coastal Plain Aquifer System; U.S. Geologic Survey Open-File Report 87-690, United States Geological Survey, Raleigh, North Carolina, 155 p.

Winner, M. and Lyke, W., 1989. Aquifers in Cretaceous Rocks of the Central Coastal Plain of North Carolina. U. S. Geologic Survey Water-Resources Report 87-4178; United States Geological Survey, Raleigh, NC, 71p.

HARTSFIELD WATER COMPANY, INC.
P. O. DRAWER 3109 - PH. 523-2154
KINSTON, NORTH CAROLINA 28501

H-1

CUSTOMER: ell 4 reenville tili[illegible] ommission ADDRESS: reenville, [illegible]

TYPE OF FORMATION CLAY - SAND ROCK & ETC.	COLOR	RATE OF DRILLING HARD - SOFT JETTED & ETC.	SIZE OF GRAIN IF SAND	OTHER INFORMATION	THICKNESS FROM	TO
and	[illegible]	oose	[illegible]	ight in places	238	248
and	[illegible]	oose	[illegible]	ight in places	248	258
and	[illegible]	oose	[illegible]	reak clay	258	268
and	ray	oose	[illegible]	reak of clay	268	276
lay	hite	ed. ard			276	280
and & ravel	ray	ed. ard	[illegible]	ard in places	280	290
and & ravel	ray	ed. ard	[illegible]	ard in places	290	300
and	ray	ed. oose	[illegible]	reak of clay	300	310
and	ray	oose	[illegible]		310	320
and	ray	oose	[illegible]		320	329
lay	hite	ery ard			329	337
lay	hite	ery ard			337	343
and	ray	et	ed. [illegible]		343	353
and	ray	et	[illegible]		353	363
and	ray	et	[illegible]		363	365
lay	ray	ery ard			365	372
and	ray	et	[illegible]		372	380
and	ray	et	[illegible]		380	390
and	ray	et	[illegible]		390	394
lay	ray	ard			394	399
and	ray	oose	[illegible]		399	403
lay	ed	ery ard			403	413
lay	ed	ery ard		o sample	413	419
lay	ed	ery ard		o sample	419	429
lay	ed	ery ard		o sample	429	433
and	eddish	oose	[illegible]		433	440

HARTSFIELD WATER COMPANY, INC.

P. O. DRAWER 3109 - PH. 523-2154
KINSTON, NORTH CAROLINA 28501

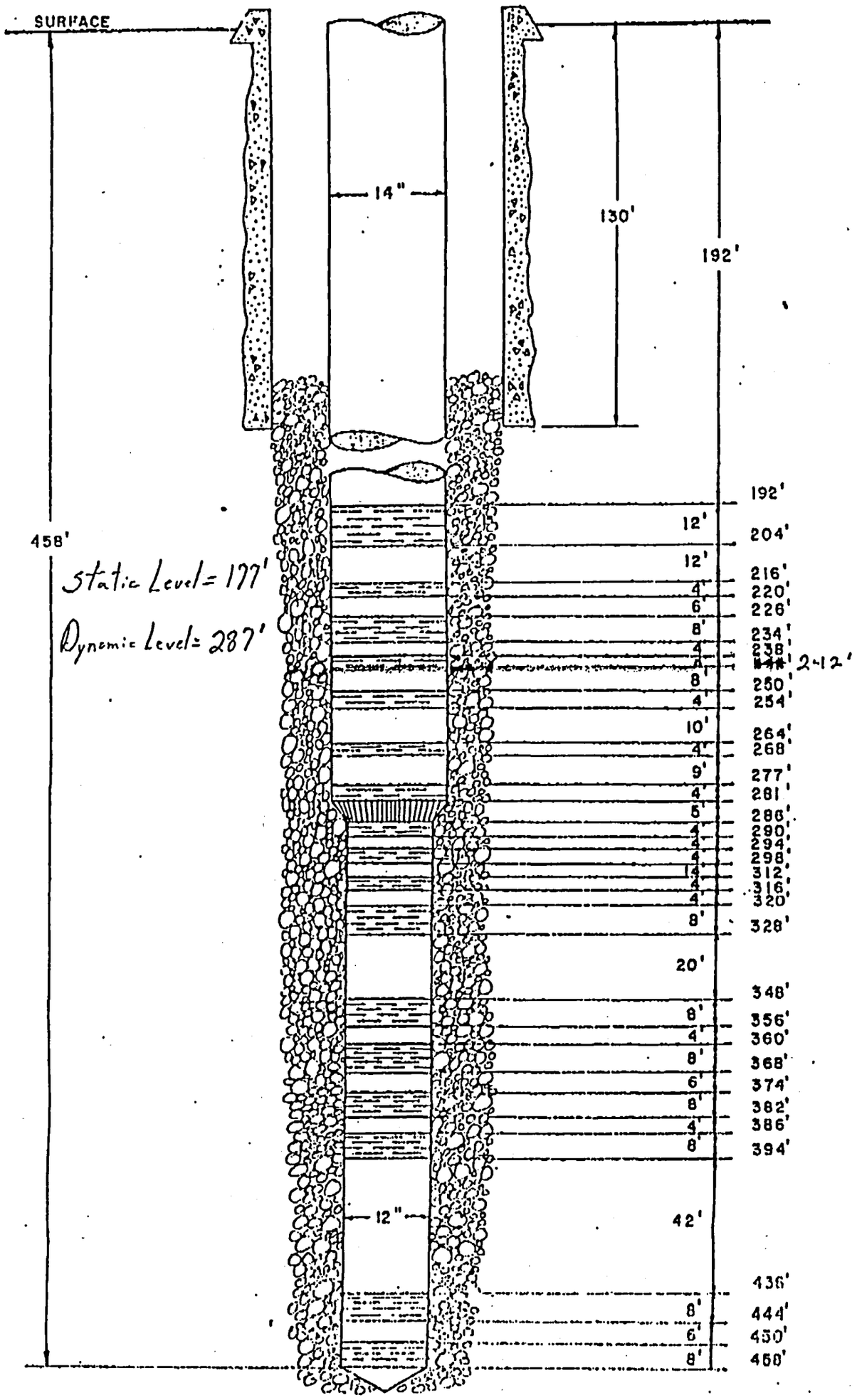
H-1

CUSTOMER: ell 4 reenville tilities ommission ADDRESS: reenville, orth arolina

TYPE OF FORMATION CLAY - SAND ROCK & ETC.	COLOR	RATE OF DRILLING HARD - SOFT JETTED & ETC.	SIZE OF GRAIN IF SAND	OTHER INFORMATION	THICKNESS FROM	TO
and	eddish	oose	/2	ood	440	450
and	eddish	oose	/2	ood	450	460
and	eddish	oose	/2	ood	460	462
lay	ed	ery ard			462	472
lay	ed	ery ard			472	480
and lay	ed	d. ard	/2	ore and	480	490
and lay	ed	d. ard	/2	ore and	490	500
and lay	ed	d. ard		2' clay at bottom	500	507

WELL NUMBER 4

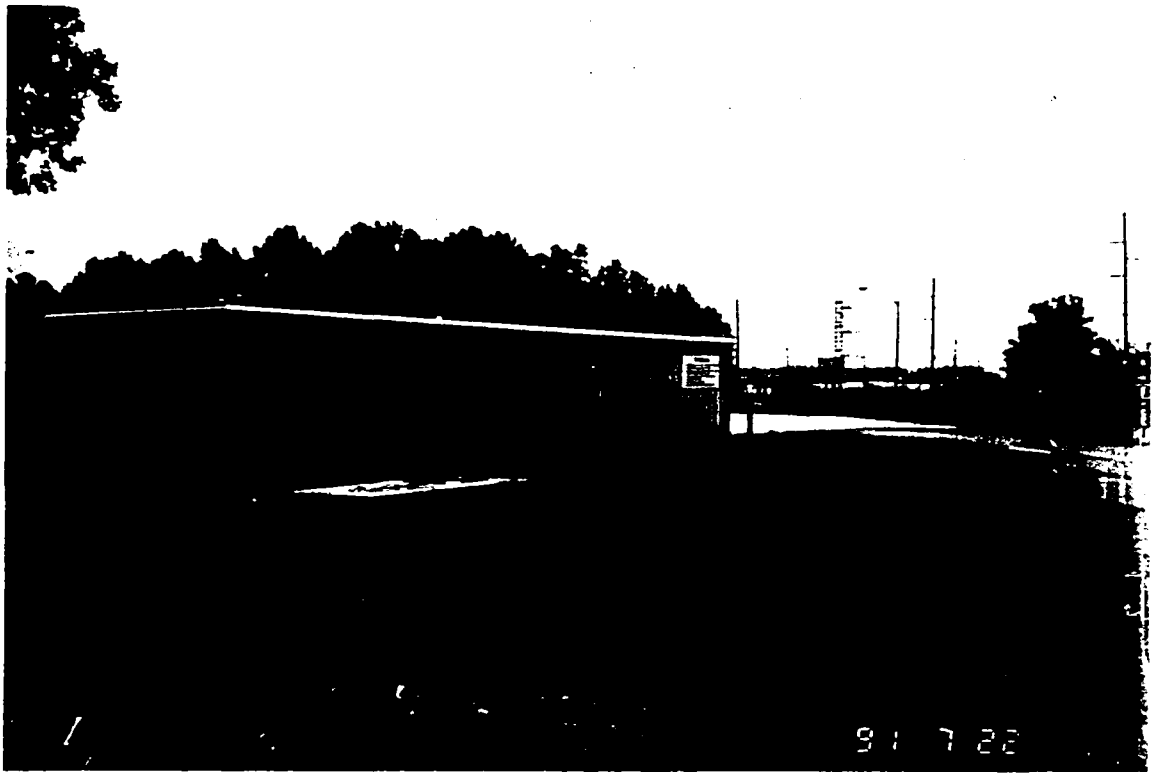
LOCATION: SOUTHSIDE



Appendix F

Photographic Survey of July and September 1991 Field Activities

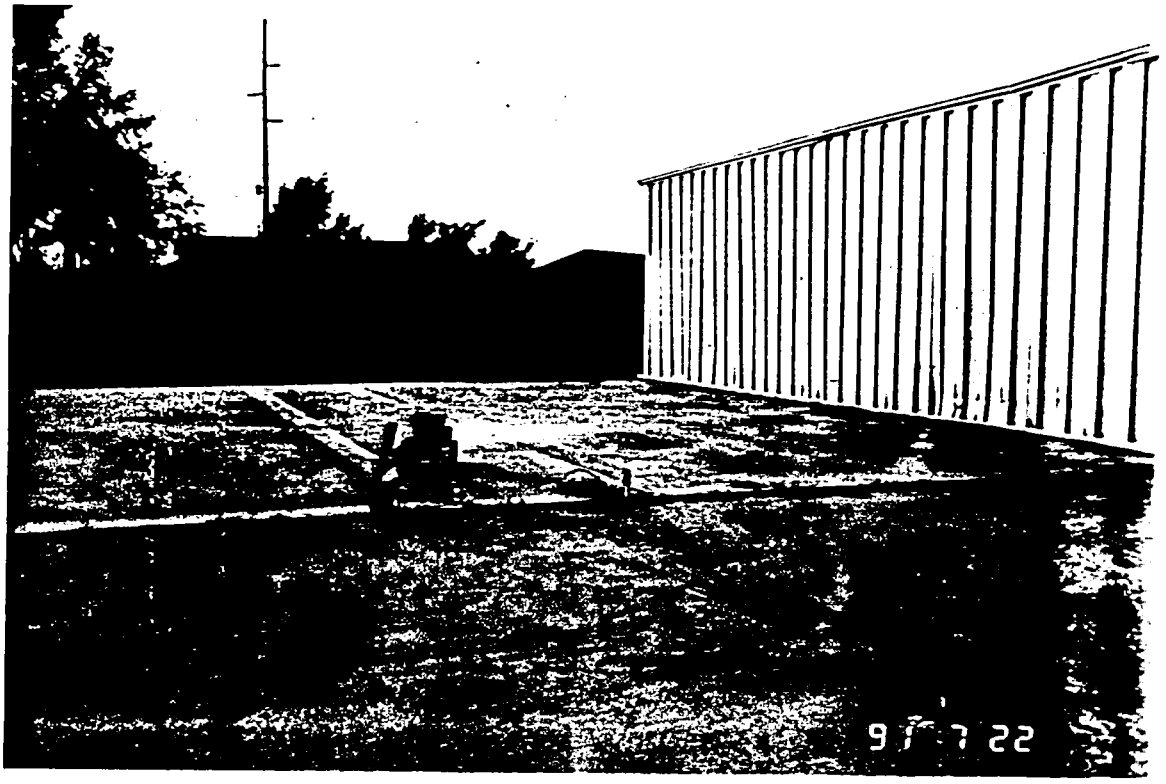
Soil Gas Survey Investigation
July 1991



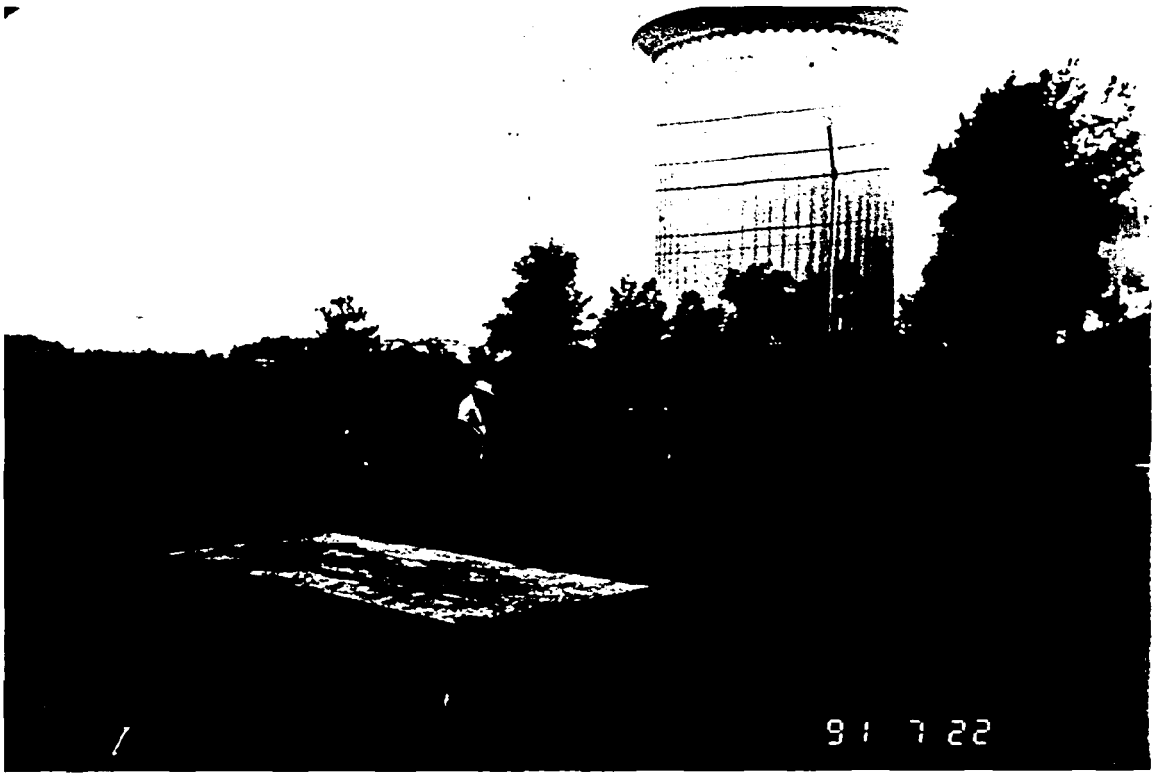
1. View of the northwest side of the hazardous waste storage building. Stake indicates location of temporary monitor well GW03 advanced and sampled during the Site Investigation conducted by the State.

2. View of the northeast side of the hazardous waste storage building.

3. View of the southeast side of the hazardous waste storage building, including the locations of soil vapor borings SG5, SG6, SG7, SG8, and SG9 advanced along the seam between the asphalt and concrete.

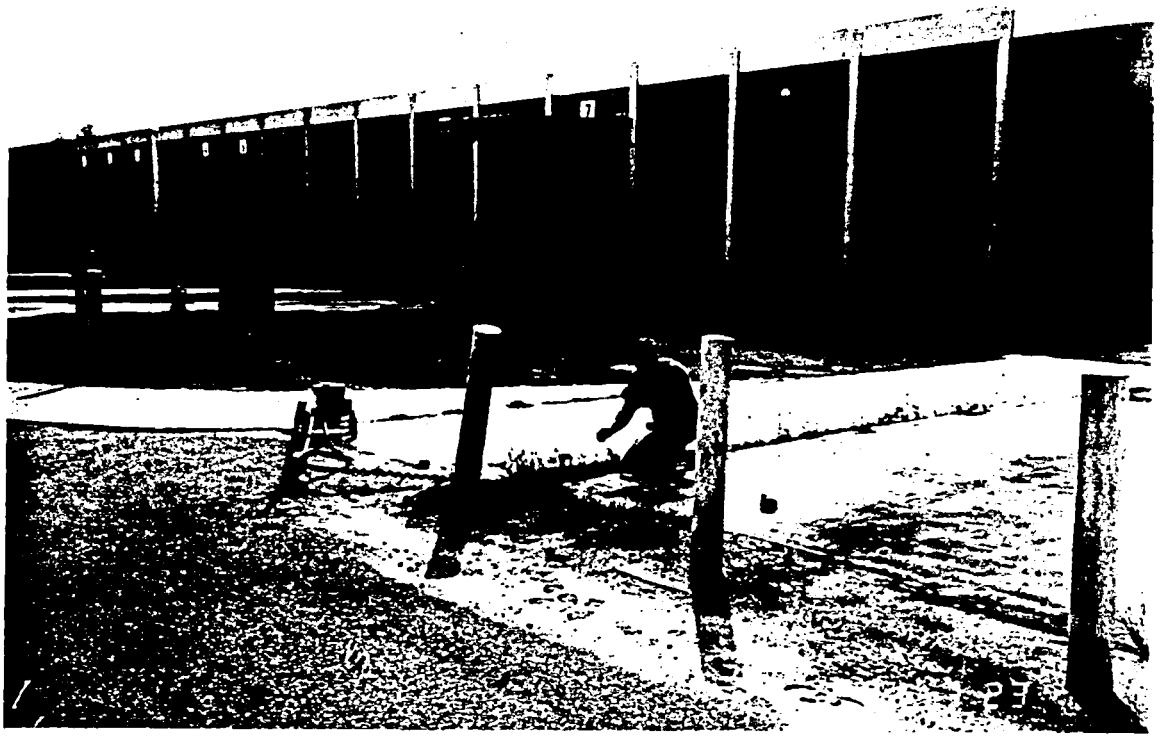


4. Soil boring SG10 was advanced on the southwest side of the hazardous waste storage building.



5. View of the concrete pad that formerly housed a propane storage tank and the location of soil vapor boring SG14.

6. View toward the northwest of the locations of soil borings SG18, SG17, and SG16.

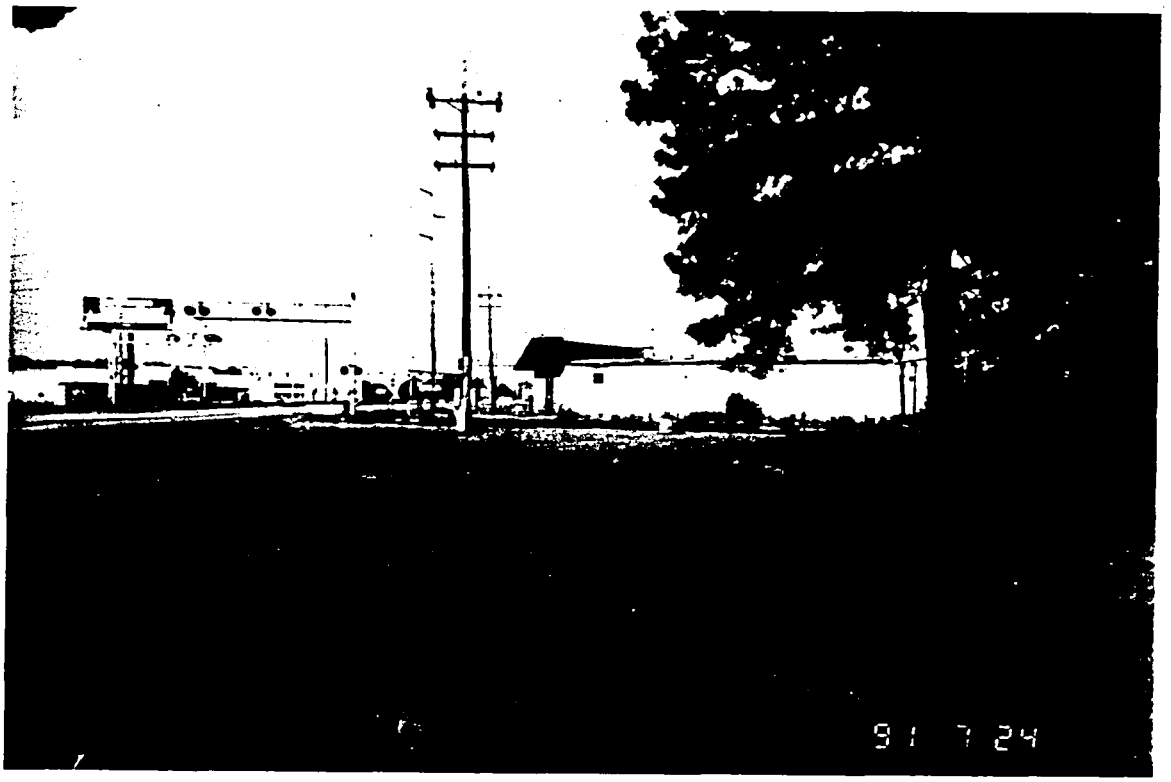


7. View toward the east of the loading dock area of the Eveready facility and the location of soil boring SG21.

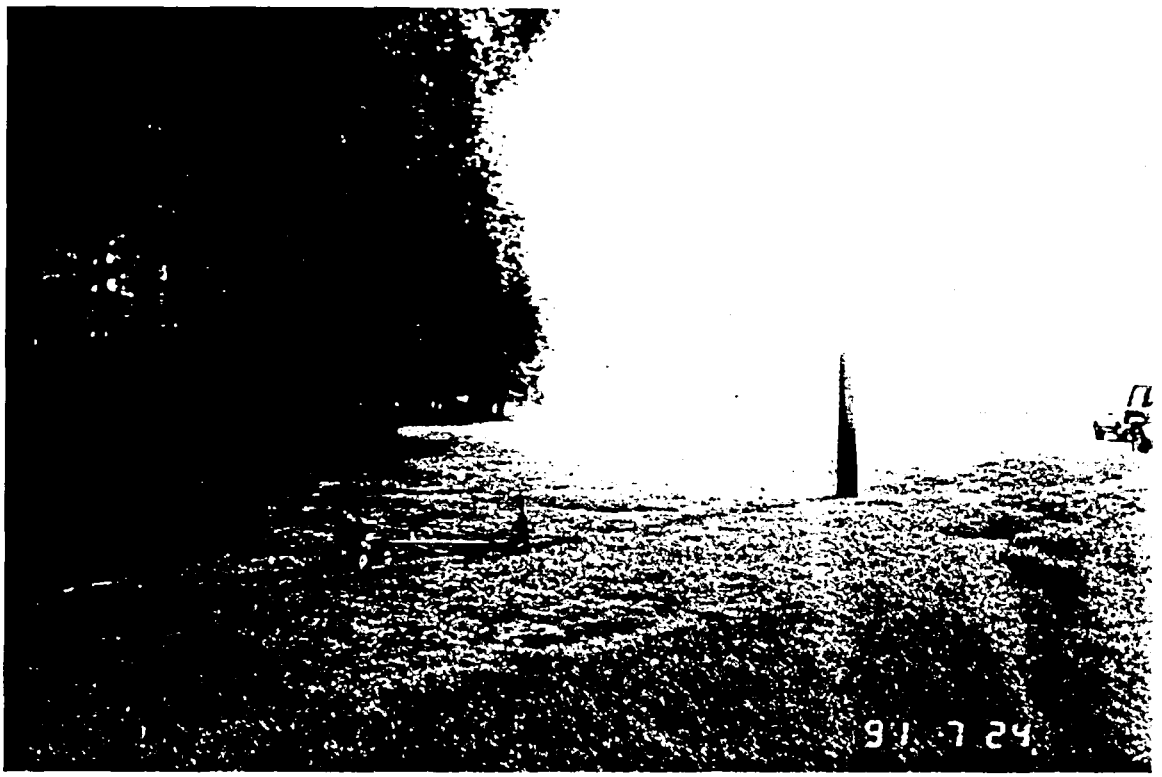
8. View toward the southwest of the location of soil vapor borings SG24 and SG25.

9. Area where soil vapor borings SG39 and SG40 were advanced.

10. View toward the north along the west boundary of the facility adjacent to the rail line. Soil vapor boring SG37 was advanced midway along this fence.



11. View toward the southwest along Greenville Boulevard, including the location of soil vapor boring SG42.

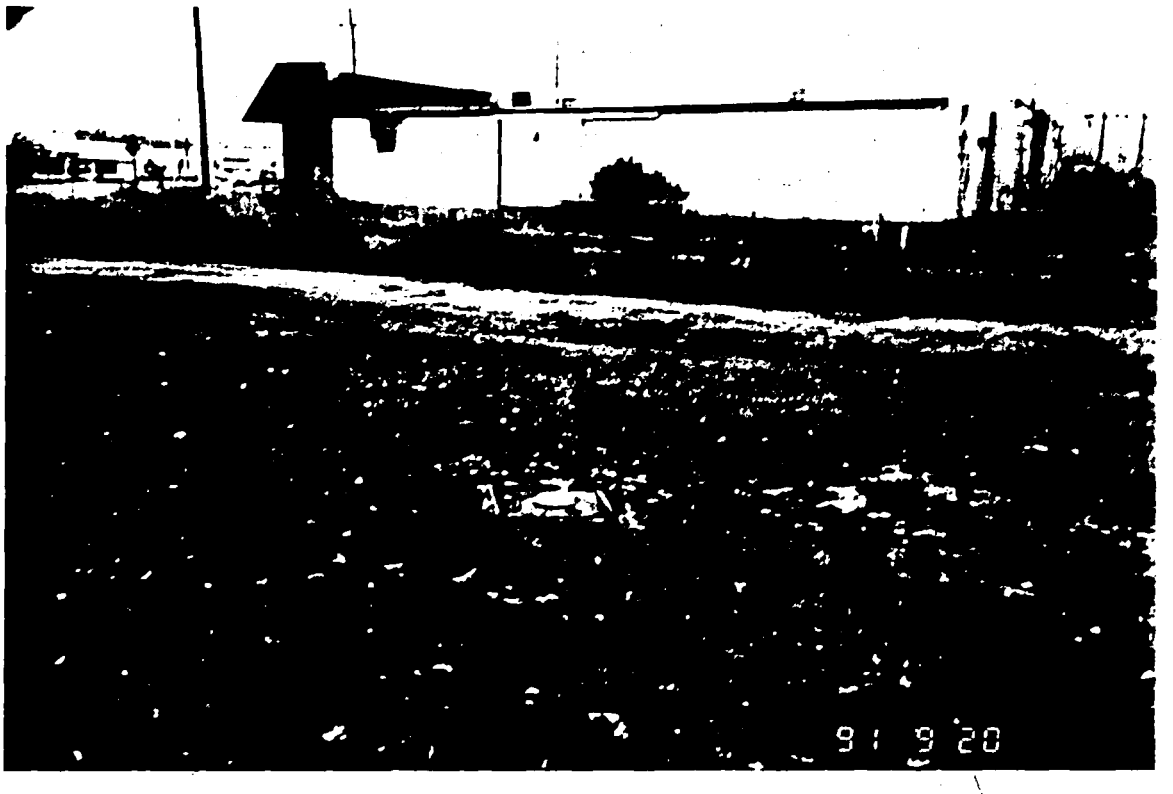


12. View toward the northeast along Greenville Boulevard, including the location soil vapor boring SG44.

13. View toward the north along Evans Street, including the locations of soil vapor borings SG52 and SG53.

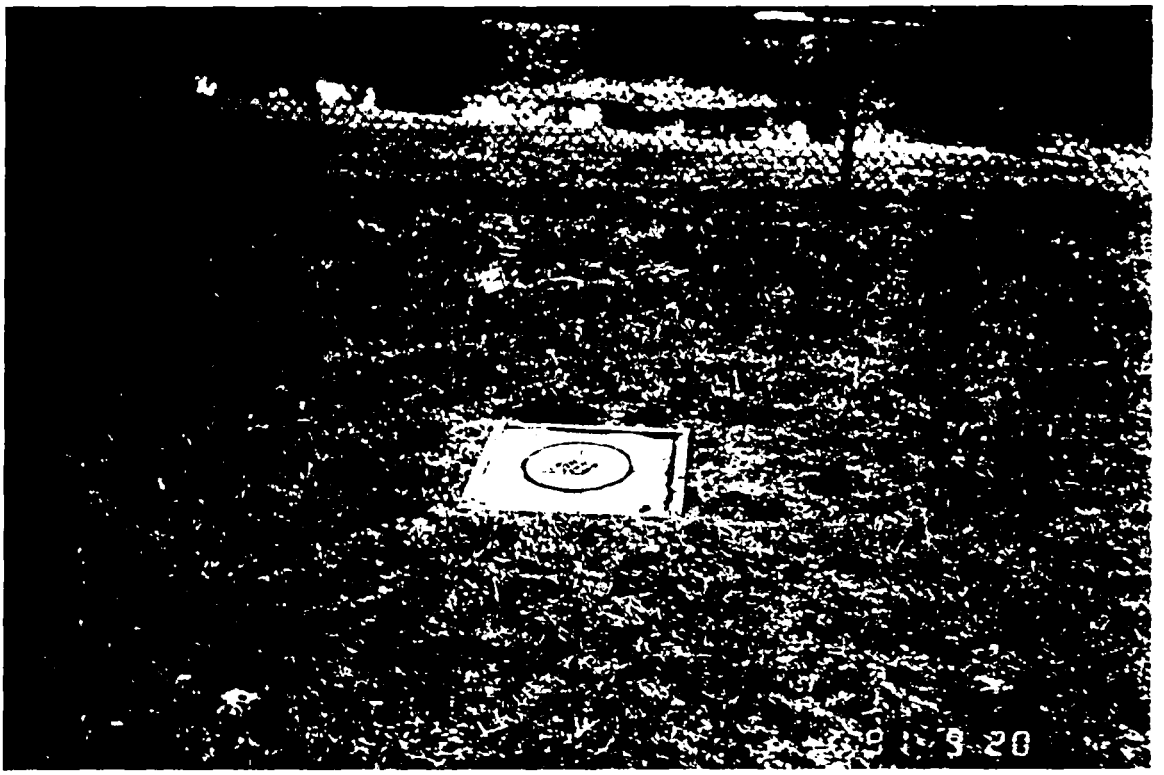
14. View of the storm water retainment area from the location of soil vapor boring SG54.

Soil and Ground Water Sampling Investigation
September 1991

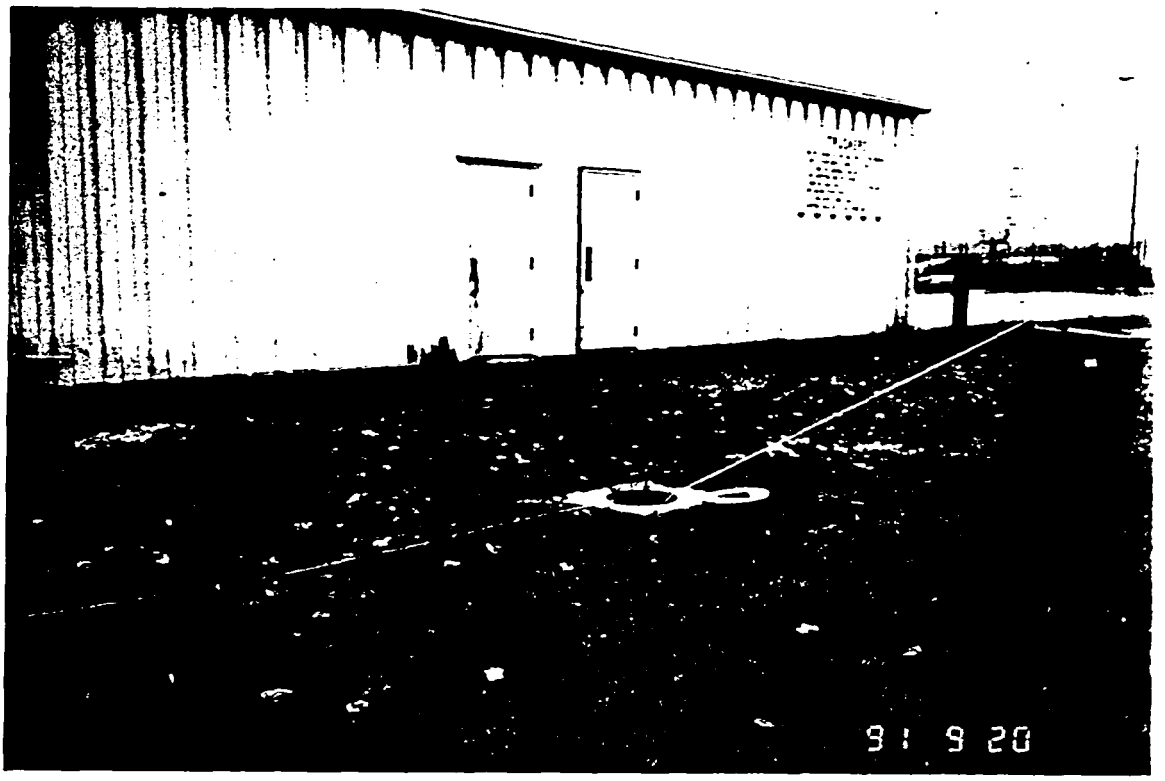


1. Monitor Well MW-1 is located at the southwest corner of the property adjacent to West Greenville Boulevard.

2. Monitor well MW-2 is located in the front lawn of the facility adjacent to West Greenville Boulevard.

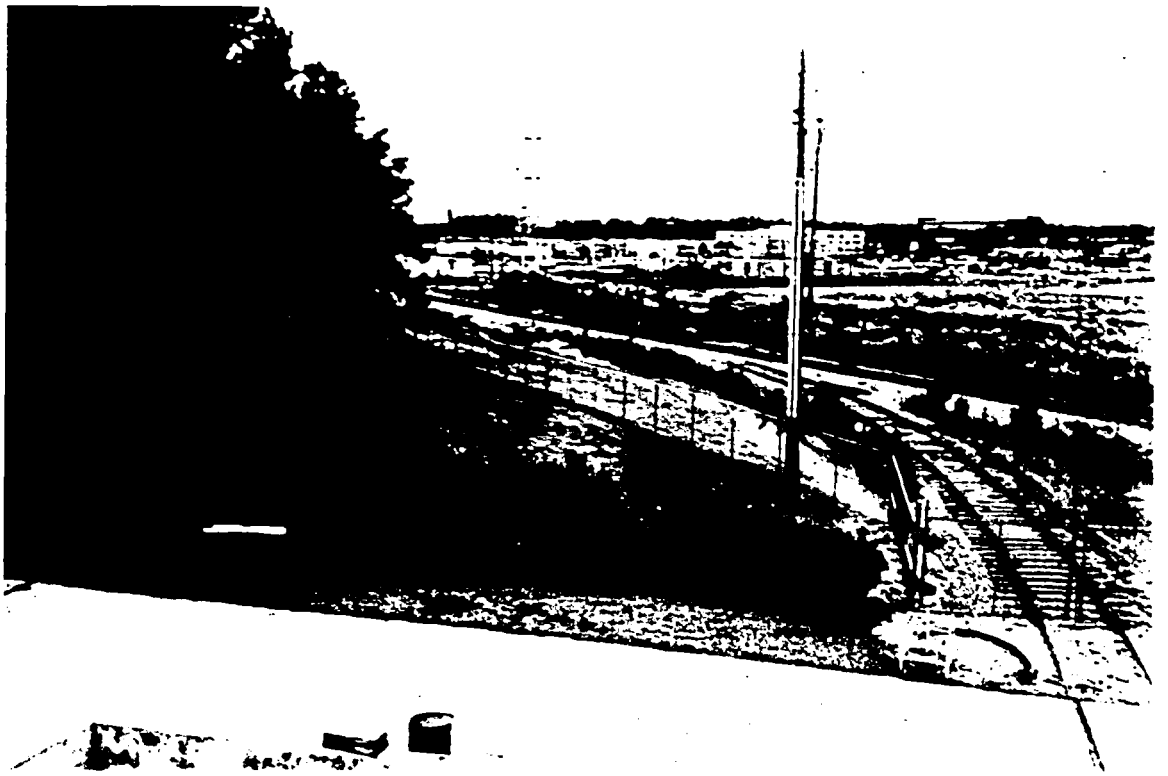


3. Monitor well MW-3 is located west of the facility adjacent to the railroad line.

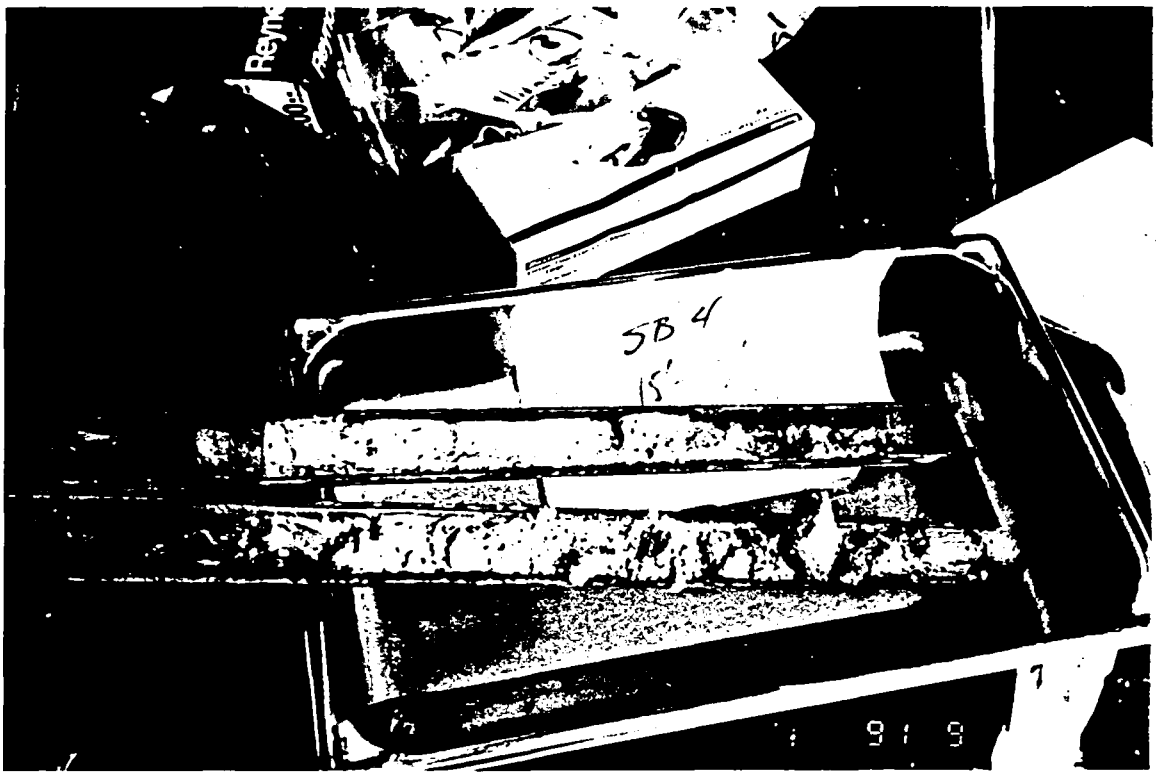


4. Monitor well MW-4 is located directly to the northwest (behind) the hazardous waste storage building. A pressure transducer and slug are lowered into the monitor well prior to conducting a slug test.

5. Monitor well MW-5 is located to the immediate north of the Eveready plant.

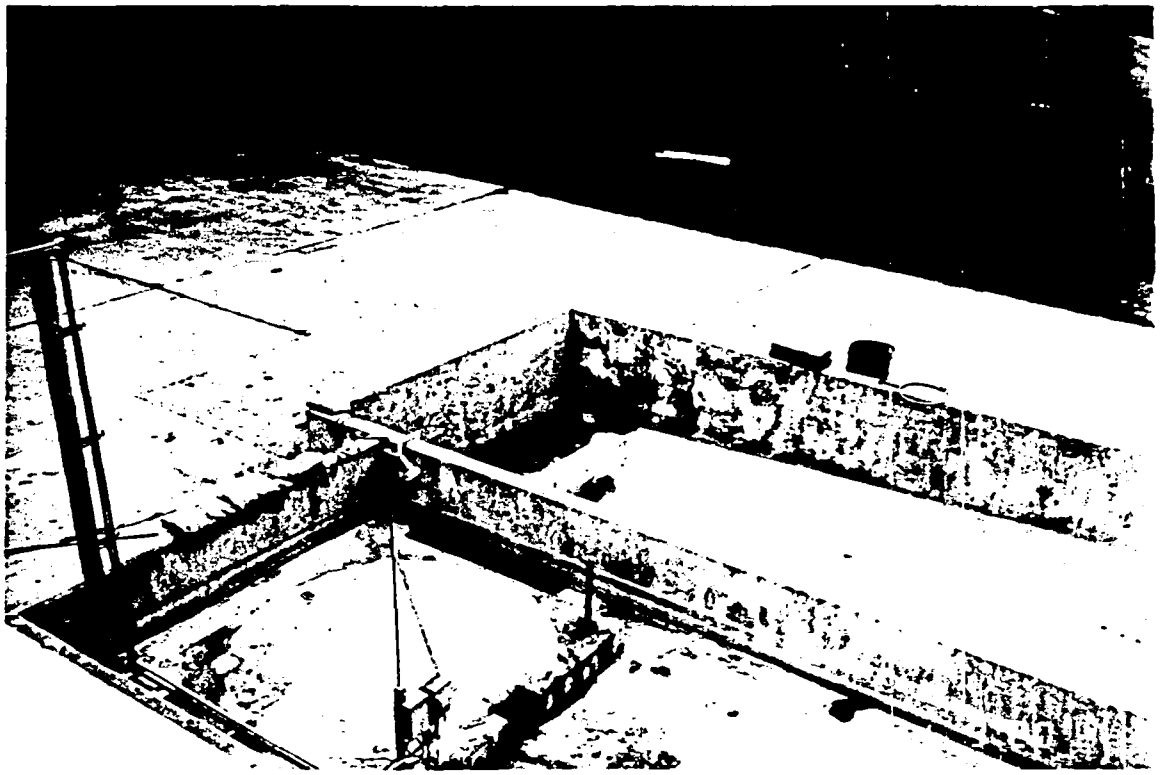


6. View toward the southwest of the rail spur leading into the Eveready facility, the power substation that fronts on west Greenville boulevard and the vacant lot that contains the municipal water supply well #4 from the southwest corner of the building.



7. Yellow-brown silty sand strata located beneath the Eveready site.

8. Black silty sand strata located at depth in the soil borings completed as monitor wells MW-1 and MW-2.



9. Concrete bermed former zinc chloride tank area and tanker trailer unloading station.

10. The tanker trailer unloading station was utilized as the decontamination area during field activities conducted at the site.

11. Surface water sample SW-1 was collected upgradient of the holding pond discharge point.

12. Surface water sample SW-2 was collected downgradient of the holding pond discharge point.

13. View toward the north along Evans Street, including the locations of soil vapor borings SG52 and SG53.

14. View of the storm water retainment area from the location of soil vapor boring SG54.

Appendix G

Monitor Well Construction Permit
Details of Monitor Well Construction
Drilling Logs for September 1991 Investigation

RECEIVED
JUL - 1 1991
Ans'd.....

State of North Carolina
Department of Environment, Health and Natural Resources
Northeastern Region
1424 Carolina Avenue, Washington, North Carolina 27889

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Lorraine G. Shinn
Regional Manager

DIVISION OF ENVIRONMENTAL MANAGEMENT

June 28, 1991

Eveready Battery Company, Inc.
25225 Detroit Road
Westlake, Ohio 44145

SUBJECT: Well Construction Permit No.
73-0157-WM-0173
Pitt County

Dear Sirs:

In accordance with your application received June 20, 1991, we are forwarding herewith Well Construction Permit No. 73-0157-WM-0173, dated June 28, 1991, issued to Eveready Battery Company, Inc., for the construction of five (5) monitoring wells and three (3) hydropunch sampling points located at the Eveready Plant site, 100 West Greenville Blvd., Greenville, North Carolina, in Pitt County.

This Permit will be effective from the date of its issuance until December 28, 1991, and shall be subject to the conditions and limitations as specified therein.

If any parts, requirements, or limitations contained in this Permit are unacceptable to you, you have the right to an adjudicatory hearing before a hearing officer upon written demand to the Director within 30 days following receipt of this Permit, identifying the specified issues to be contended. Unless such demand is made, this Permit shall be final and binding.

You will also find enclosed Well Construction Record(s) (GW-1) that must be filled out by the driller and submitted to the Department within 30 days upon completion of the well construction.

Sincerely,

Jim Mulligan
Regional Supervisor

Enclosure

cc: Bob Cheek
ERM - Southeast, Inc.
McCall Brothers, Inc.
WaRO

Environmental Resources Management

Drilling Log

Project: Eveready Phase II Owner: Eveready Battery Co.

Location: Greenville, NC Sampling Methods: Split Spoon

Boring Number: MW-1 Total Depth: 19' Diameter: 8"

Surface Elevation: 73.07' Water Level: Initial: _____ 24-hrs: 64.44'

Drilling Company: McCall Bros. Drilling Method: Hollow Stem

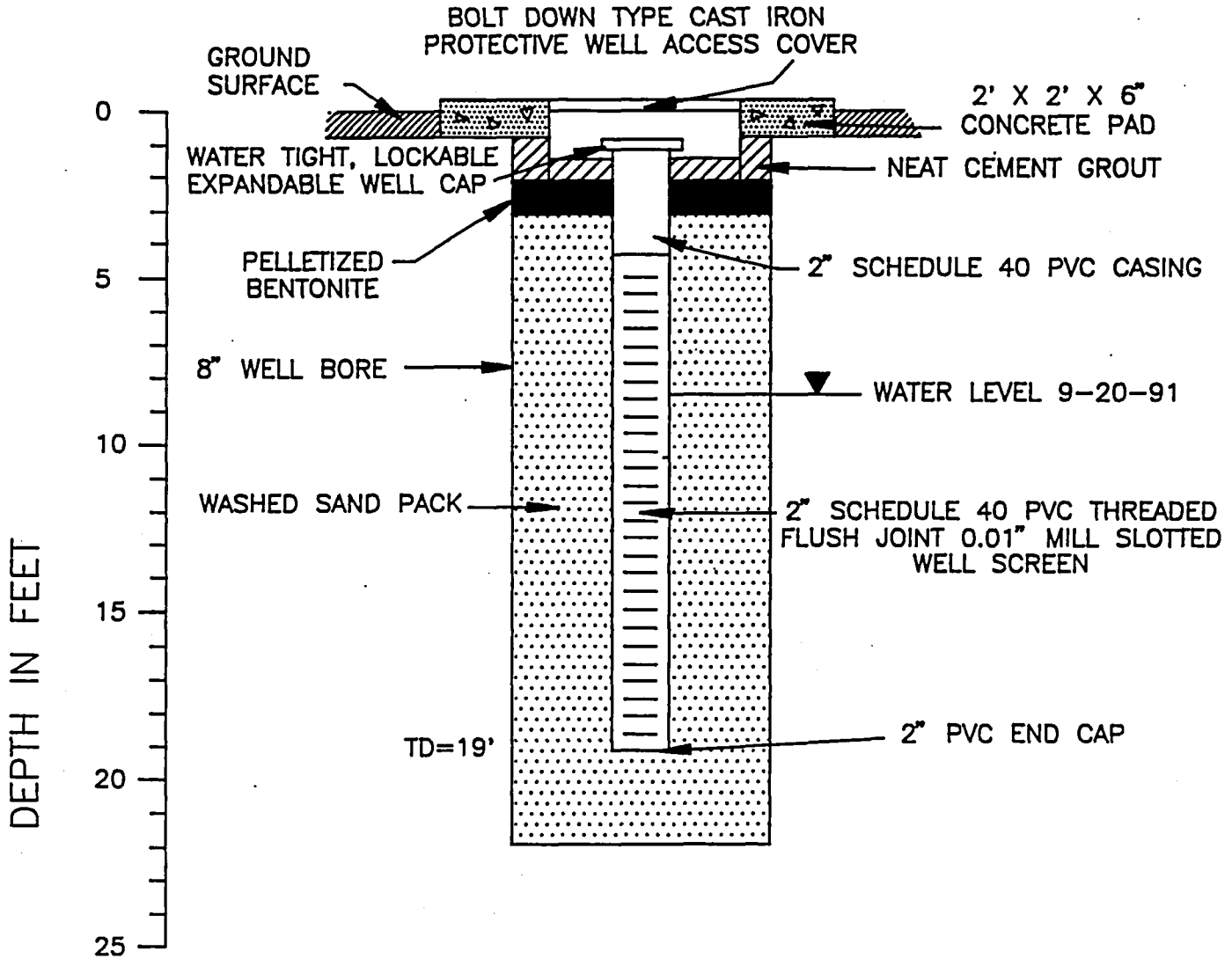
Driller: Pete Florea Log By: Don Hankins Date Drilled: 9-10-91

Comments: _____

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6 inches	Description/Soil Classification (Color, Texture, Structures)
1			SS	6,7	Recovery + 1.7', A-B soil horizons; dark brown silt with roots of grass into mottled yellow to light brown clayey silt; PID = BG; pH = 6
2			SB-1	12,11	
3					
4			A		yellow-brown clayey silt
5					
6					
7			SS	2,3	recovery = 2', .4' "full in" of dark brown clayey silt 1.6' mottled tan and white silty clay PID = BG; pH = 6
8			SB-1	3,4	
9					
10					
11					
12			A		yellow-brown clayey silt, very moist - in water
13					
14					
15					
16					
17			A		black silty sand, saturated cuttings PID = BG pH = 5 to 6
18					
19					
20					
21					
22					
23					



MONITOR WELL CONSTRUCTION DETAILS
MW-1, EVEREADY BATTERY FACILITY
100 WEST GREENVILLE BLVD.
GREENVILLE, NC

ERM ERM-SOUTHEAST, INC

Environmental Resources Management

Drilling Log

Project Eveready Phase II Owner Eveready Battery Co.

Location Greenville, NC Sampling Methods Split Spoon

Boring Number MW-2 Total Depth 19' Diameter 8"

Surface Elevation 72.17' Water Level: Initial _____ 24-hrs. 64.14'

Drilling Company McCall Bros. Drilling Method Hollow Stem

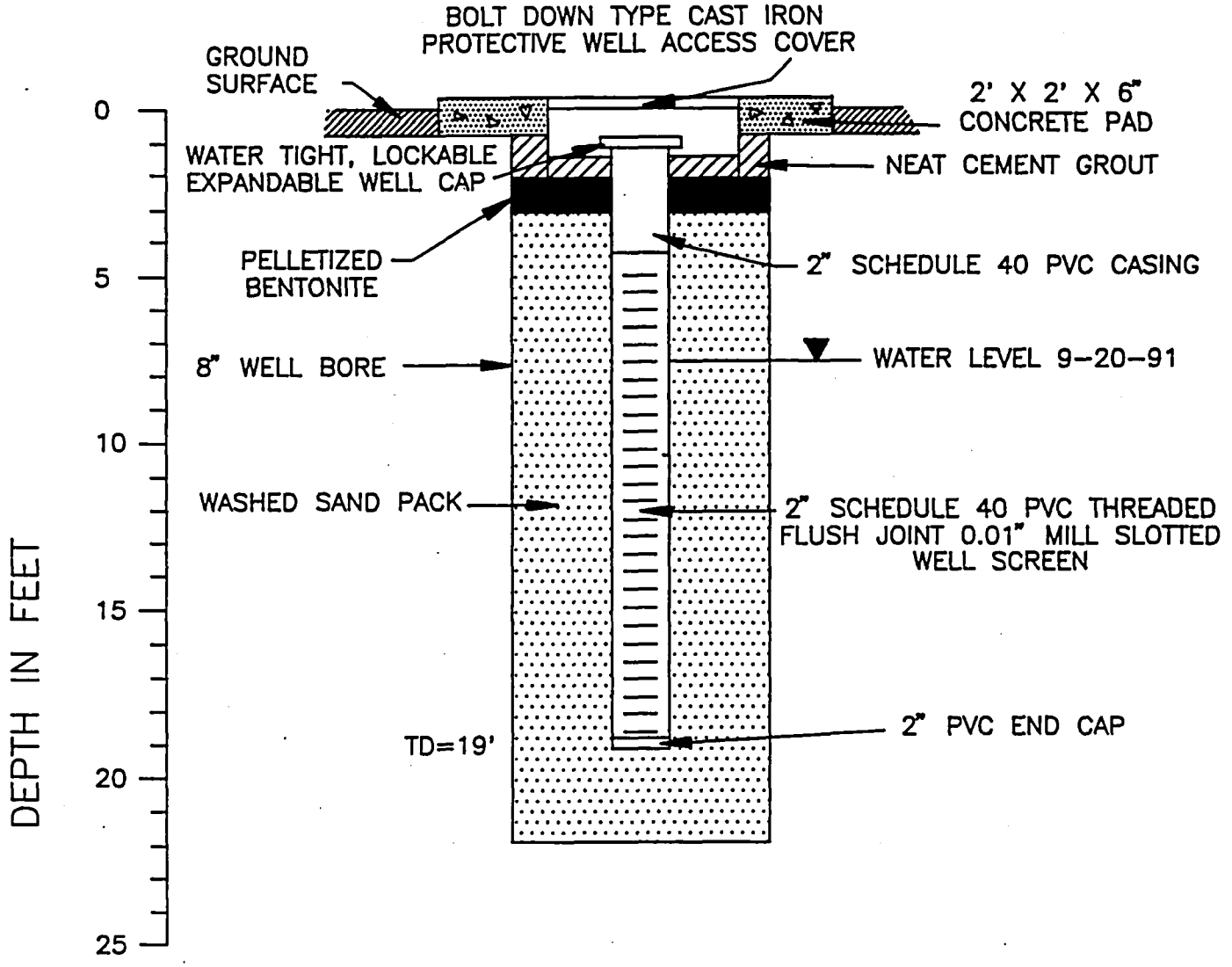
Driller Pete Florea Log By Don Hankins Date Drilled 9-11-91

Comments _____

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6 inches	Description/Soil Classification (Color, Texture, Structures)
1			SS	17,17	recovery = 1.5', dark brown to black silt PID = 2.8 very dry and very friable pH = 6 0'-1' contains < 10% 1/4" gravel
2					
3					
4			A		moist dark brown silty clay, auger cuttings from 1/2" to 1" balls
5					
6					
7			SS	1,1	recovery 1.3', molttled gray to white fine sandy clay very moist PID = 2.8, pH = 6
8					
9					
10					
11					
12			A		light brown to yellow silty sand
13					
14					
15			SS	1,1 1,0	recovery = 1.8', fine to medium sand with black hue PID = 6.2 pH = 5 - 6
16					
17					
18					
19					
20			A		black sandy silt, saturated cuttings
21					
22					
23					



MONITOR WELL CONSTRUCTION DETAILS
MW-2, EVEREADY BATTERY FACILITY
100 WEST GREENVILLE BLVD.
GREENVILLE, NC

ERM ERM-SOUTHEAST, INC

Environmental Resources Management

Drilling Log

Project: Eveready Phase II Owner: Eveready Battery Co.

Location: Greenville, NC Sampling Methods: Split Spoon

Boring Number: MW-3 Total Depth: 19' Diameter: 8"

Surface Elevation: 73.11' Water Level: Initial: ____ 24-hrs: 64.13'

Drilling Company: McCall Bros. Drilling Method: Hollow Stem

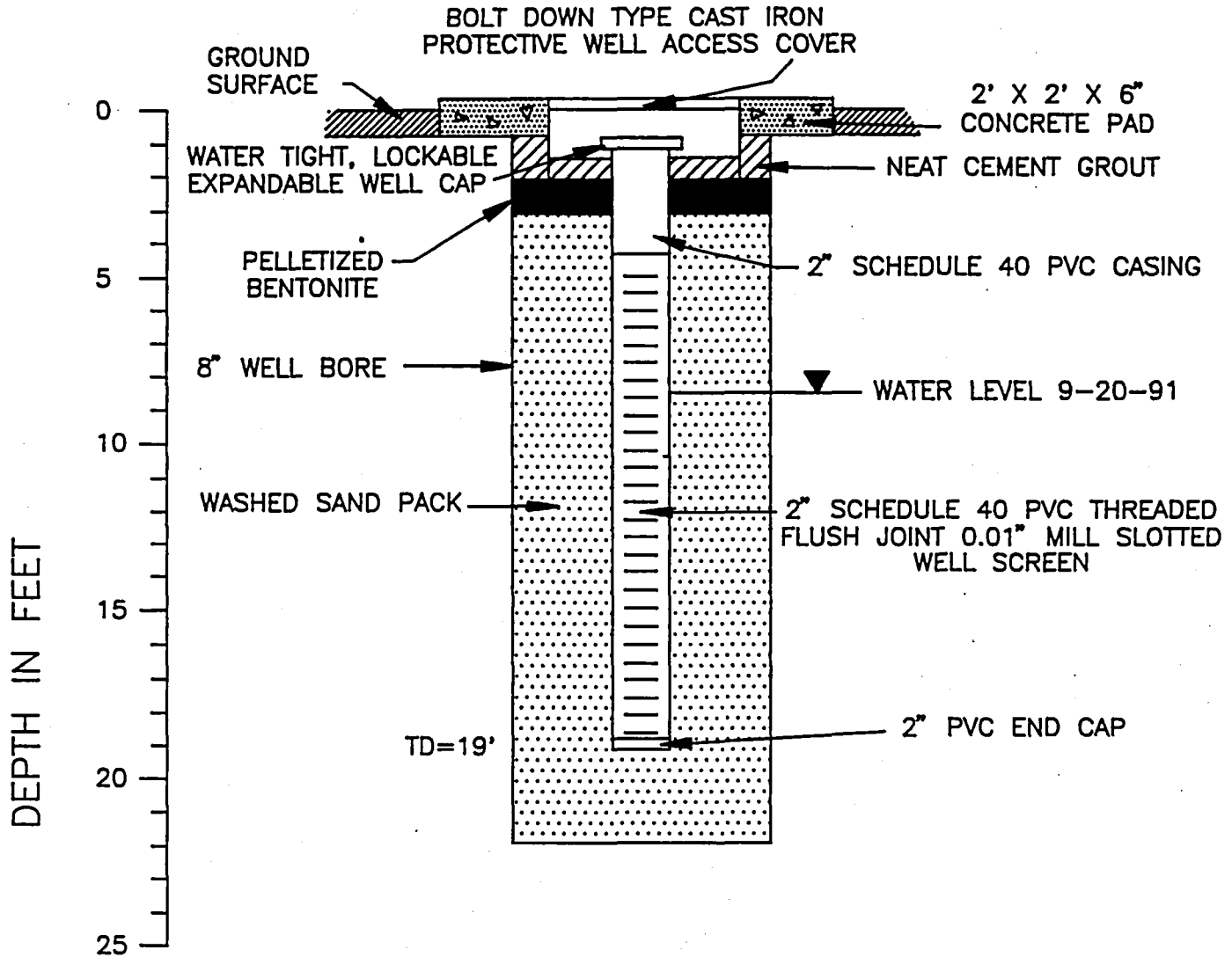
Driller: Pete Florea Log By: Don Hankins Date Drilled: 9-11-91

Comments: ____

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6-inches	Description/Soil Classification (Color, Texture, Structures)
1			SS	12,10	recovery = 1.8'; yellow-brown clayey silt
2			SB-3	8,7	0 - 6" contains < 10% 1/4" gravel PID = 3.4, pH = 6
3					
4					
5			A		yellow-brown silt
6					
7			SS	6,5	recovery = 1.8', gray-white silty clay with random specks of red (iron staining?)
8			SB-3	4,3	PID = 7, however, no ordor of volatile compounds
9					pH = 6
10					
11					
12			A		yellow-brown silt
13					
14					
15			SS	1,1	recovery = 2', 15'-16' = yellow brown to gray white silty clay
16				1,1	PID = 2.4
17					pH = 5 to 6 16'-17' - black clay, expanded to the degree opening the split spoon was difficult
18					
19					
20					
21			A		lead auger cuttings are a tan clayey silt
22					
23					



MONITOR WELL CONSTRUCTION DETAILS
MW-3, EVEREADY BATTERY FACILITY
100 WEST GREENVILLE BLVD.
GREENVILLE, NC

ERM ERM-SOUTHEAST, INC

Environmental Resources Management

Drilling Log

Project: Eveready Phase II Owner: Eveready Battery Co.

Location: Greenville, NC Sampling Methods: Split Spoon

Boring Number: MW-4' Total Depth: 20' Diameter: 8"

Surface Elevation: 74.10 Water Level: Initial: ____ 24-hrs.: 61.18'

Drilling Company: McCall Bros. Drilling Method: Hollow Stem

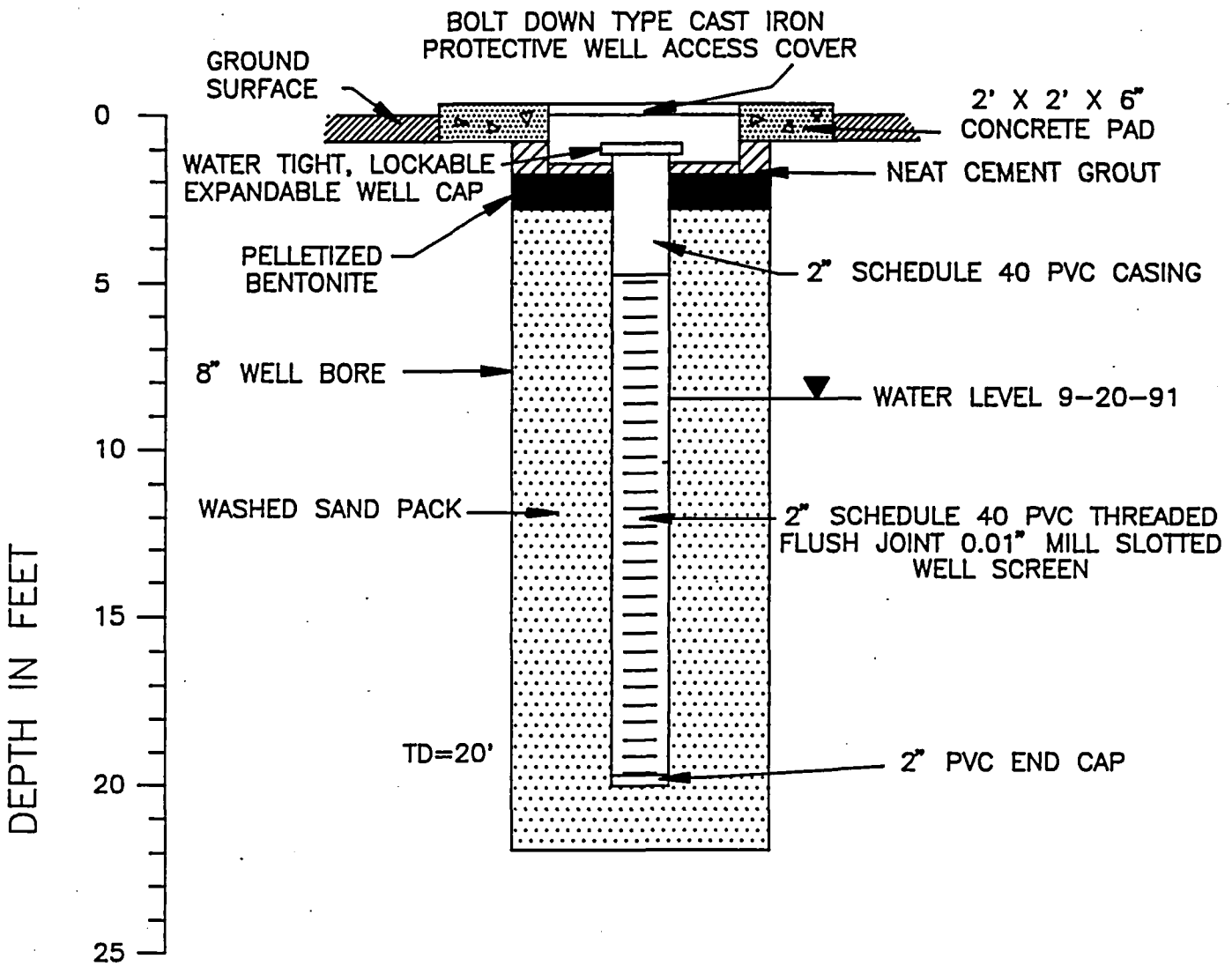
Driller: Pete Florea Log By: Don Hankins Date Drilled: 9-12-91

Comments: ____

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6 inches	Description/Soil Classification (Color, Texture, Structures)
1			SS	1,9	recovery = 1.8', yellow to light brown clayey silt
2			SB4	9,6	PID = BG; pH = 6; strong peculiar odor
3					
4					
5			A		light brown silt
6					
7					
8			SS SB4	4,5 10,10	recovery = 2', mottled gray-white, tan silty clay with random specks of red (iron staining?) PID = BG pH = 6 strong ordor, however, no volatiles detected with PID
9					
10					
11					
12					
13					
14			A		moist cuttings white to tan clayey sand
15					
16			SS	2,4 3,1	recovery = 1.9', 15'-16.5' light brown silty sand 16.5'-17' light brown sandy clay pH = 5 - 6 PID = malfunction - no reading
17					
18					
19					
20					
21					
22					
23					



MONITOR WELL CONSTRUCTION DETAILS
MW-4, EVEREADY BATTERY FACILITY
100 WEST GREENVILLE BLVD.
GREENVILLE, NC

ERM ERM-SOUTHEAST, INC

Environmental Resources Management

Drilling Log

Project Eveready Phase II Owner Eveready Battery Co.

Location Greenville, NC Sampling Methods Split Spoon

Boring Number MW-5 Total Depth 20' Diameter 8"

Surface Elevation 75.10' Water Level: Initial _____ 24-hrs. 60.83

Drilling Company McCall Bros. Drilling Method Hollow Stem

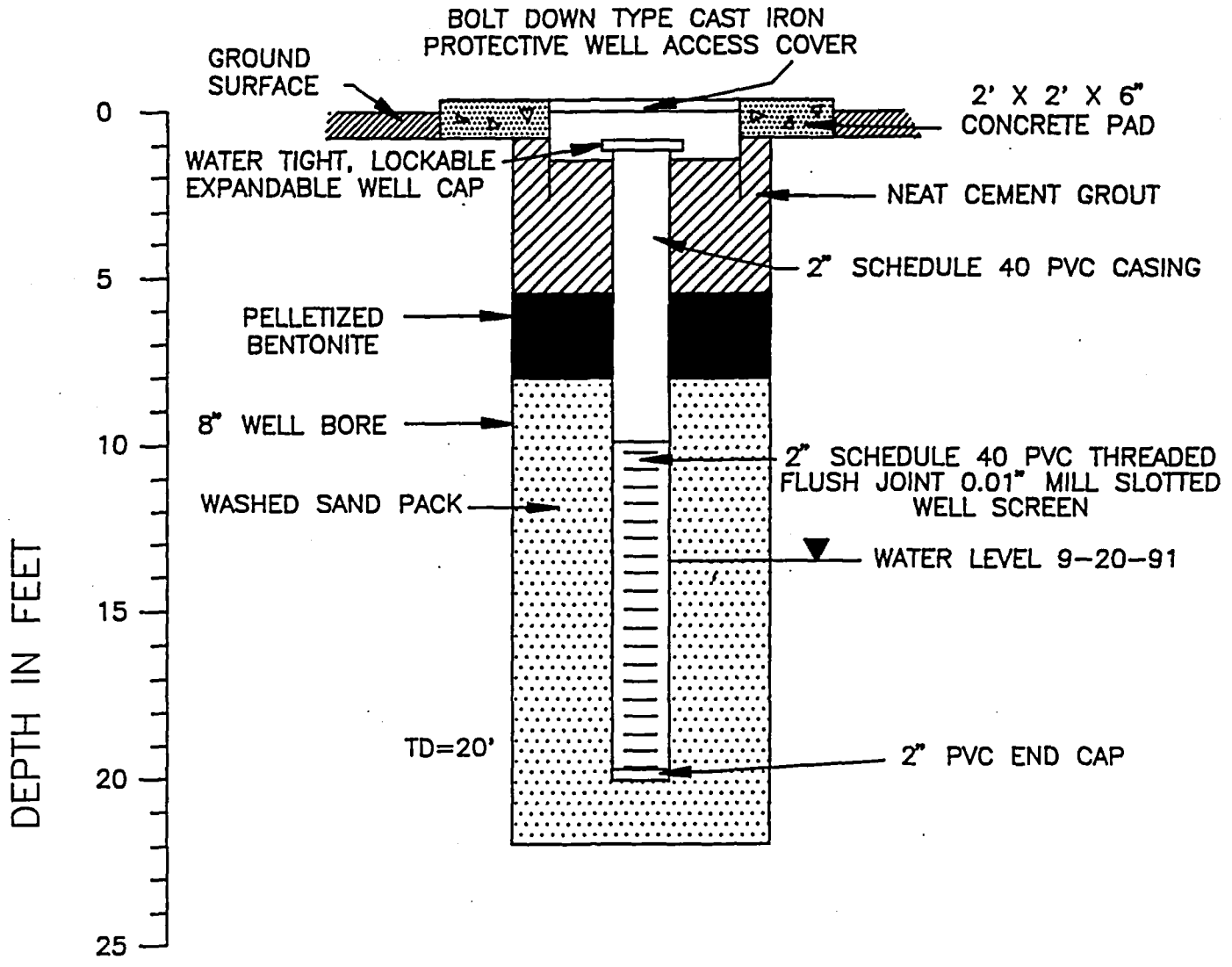
Driller Pete Florea Log By Don Hankins Date Drilled 9-10-91

Comments _____

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6 inches	Description/Soil Classification (Color, Texture, Structures)
1					compacted material for structure that was not completed - yellow-brown-tan silt
2					
3			SS SB5	15,10 18,13	recovery = 1.9', light brown silty sand PID = BG, ph = 6
4					
5					
6			SS	6,8 13,17	recovery = 1.9', brown clayey silt PID = BG
7					
8			SS SB5	6,8 10,8	recovery = 2', mottled gray, white, tan, red silty clay PID = 2.2 pH = 7
9					
10					
11					Light brown silty sand
12			A		
13					
14					
15					
16			SS	8,12 20,24	recovery = 1.8', tan to white silty sand saturated PID = BG clean sand lenses at 16'-17' pH = 5 to 6
17					
18					
19					tan silty sand
20			A		
21					
22					
23					



MONITOR WELL CONSTRUCTION DETAILS
MW-5, EVEREADY BATTERY FACILITY
100 WEST GREENVILLE BLVD.
GREENVILLE, NC

ERM ERM-SOUTHEAST, INC

Environmental Resources Management

Drilling Log

Project: Eveready Phase II Owner: Eveready Battery Co.

Location: Greenville, NC Sampling Methods: Split Spoon

Boring Number: HPSB4 Total Depth: 9' Diameter: 8"

Surface Elevation: ____ Water Level: Initial ____ 24-hrs. ____

Drilling Company: McCall Bros. Drilling Method: Hollow Stem

Driller: Pete Florea Log By: Don Hankins Date Drilled: 9-12-91

Comments: soil boring

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6-inches	Description, Soil Classification (Color, Texture, Structures)
1			SS	7	recovery = 1.6', upper 4" <10% 1/4" gravel
2			HPSB-	7	light brown clayey silt
3			4	7	PID = 300; strong chemical odor
4				10	pH = 6
5					
6			A		light brown silt
7					
8			SS		recovery = 1.7'
9			HPSB-		mottled gray white to tan silty clay with random red
			4		specks (<5%) PID = 40 pH = 6

Environmental Resources Management

Drilling Log

Project: Eveready Phase II Owner: Eveready Battery Co.

Location: Greenville, NC Sampling Methods: Split Spoon

Boring Number: HPSB5 Total Depth: 9' Diameter: 8"

Surface Elevation: ____ Water Level: Initial ____ 24-hrs. ____

Drilling Company: McCall Bros. Drilling Method: Hollow Stem

Driller: Pete Florea Log By: Don Hankins Date Drilled: 9-12-91

Comments: Soil boring

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6 inches	Description/Soil Classification (Color, Texture, Structures)
					asphalt & gravel
1			SS	3	recovery = 2', moist
2				4	1'-2' = dark brown silty clay
3			HPSB-	5	2'-3' = white-gray to tan silty clay with specks of
			5	5	red, petroleum order PID = 4.7 pH = 5
4					
5			A		yellow-brown silt
6					
7			SS	3	recovery = 2' moist
8				2	mottled gray white to tan silty clay with random
9			HPSB-	2	specks of red (<5%)
			5	3	PID = 7.4 pH = 5
					slight chemical ordor, not of petroleum products

Environmental Resources Management

Drilling Log

Project: Eveready Phase II Owner: Eveready Battery Co.

Location: Greenville, NC Sampling Methods: Split Spoon

Boring Number: HPSB6 Total Depth: 9' Diameter: 8"

Surface Elevation: ____ Water Level: Initial ____ 24-hrs. ____

Drilling Company: McCall Bros. Drilling Method: Hollow Stem

Driller: Pete Florea Log By: Don Hankins Date Drilled: 9-12-91

Comments: Soil boring

Sketch Map

Notes

Depth (Feet)	Graphic Log	Well Construction	Sample Type/No.	Blow Count per 6 inches	Description/Soil Classification (Color, Texture, Structures)
1			SS	9	recovery= 1.6' dark brown silty clay grading into a
2				9	light brown clayey silt at 1.5'
			HPSB-	7	PID = BG, pH = 6
3			6	5	
4					
5			A		light brown silt
6					
7			SS	3	recovery = 2' 7'-8' light tan to gray white silty
8				4	PID = BG clay
			HPSB-	5	pH = 6 8'-9' dark brown clayey silt with
9			6	5	yellow-orange lenses and specks
					of red staining

Appendix H

Slug Test Methods and Data Sheets

CALCULATION OF HYDRAULIC CONDUCTIVITY VALUES
BOUWER AND RICE METHOD

From Bouwer and Rice (1976) and Bouwer (1989):

$$K = \frac{r_c^2 \ln (R_e/r_w)}{2L} \quad 1/t \ln (Y_o/Y_t)$$

where:

K = hydraulic conductivity
r_c = casing radius
L = length of intake
r_w = well radius
Y_0 = initial drawdown
Y_t = vertical head at some time t
R_e = effective radius of well

Determination of variables:

Casing Radius (r_c)

For a well in which the water level is above the screen interval (i.e., MW-1) the casing radius is simply the casing diameter divided by two (i.e., 4" well, r_c = 2")

For wells in which the water level is across the screen (MW-2, MW-3, and MW-5), an effective casing radius must be determined using the following:

$$r_{ceff} = [(1-n)r_c^2 + nr_w^2]^{0.5}$$

where: r_c = casing radius
r_w = borehole radius
n = gravel pack porosity

Length of Intake (L)

The intake length (L) is simply equal to the vertical length of the saturated gravel pack around the well screen.

Radius of Well (r_w)

r_w is taken to be the radial distance between the undisturbed aquifer material and the well center (i.e., the borehole radius). For monitor wells MW-1, MW-2 and MW-3, the r_w is equal to 5". For well MW-5, the r_w is equal to 4".

Initial drawdown (Y_t)

The initial drawdown Y_o is determined graphically be plotting log head (Y_t) v. time (t), fitting a straight line through the data and determining the head at t=0. The plots of log Y_t v. t are presented for each well in the following pages and graphs. In many cases, a double straight line effect is noted in the plot of log Y_t v. t. In these cases, the initial steeper line is due to the effect of the gravel pack (Bouwer, 1989). Therefore, the second less steep straight line is more indicative of the flow from the undistrubed aquifer and is therefore utilized to determine Y_0.

t and Y_t

t and Y_t are determined from the straight line drawn through the log Y_t v. t plot. Any Y_t and corresponding value of t can be utilized to determine K.

ln (R_e/r_w)

The ln (R_e/r_w) is determined using the following equation:

$$\ln (R_e/r_w) = \left[\frac{1.1}{\ln (H/r_w)} + \frac{A + B \ln [(D-H / r_w)]}{L / r_w}\right]^{-1}$$

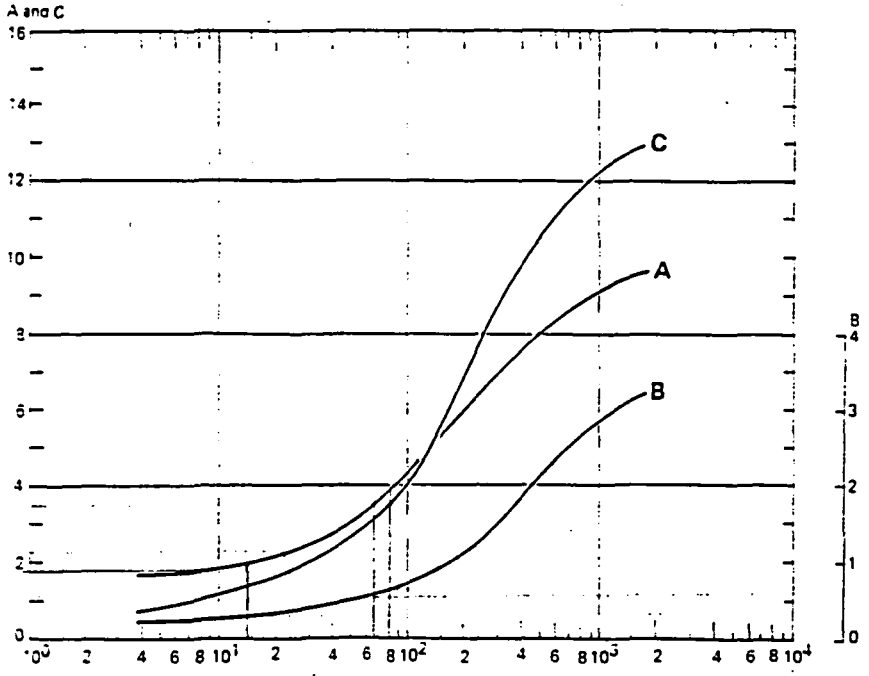
where: H = distance from water table to bottom of intake
D = saturated aquifer thickness (assumed to 30 ft)
A and B are dimensionless coefficients dependent upon the ratio L/r_w. A and B are determined from Figure D-1 based upon the value of L/r_w.

EXAMPLE CALCULATION: MW-1

r_w = 5 in. = 0.42 ft.
r_c = 2 in. = 0.17 ft.
L = length of screen plus saturated gravel pack above screen = 12.5 ft.
Y_0 = 0.78 ft (from plot of log Y_t v. t)
Y_t = 0.4 ft.
t = 5.4 min.
H = well total depth minus depth to water from surface = 17 ft.
D = assumed to be 30 ft. Although this value is not known, the value has little effect on the final K value.

FIGURE D-1

The Bouwer and Rice curves showing the relationship between the parameters A and B and L/r_w



L/r_w

$L/r_w = 30$
$A = 2.3$ (from Figure D-1).
$B = 0.4$ (from Figure D-1).

Calculation of $\ln (R_e/r_w)$

$$= \left[\frac{1.1}{\ln(17/0.42)} + \frac{2.3 + 0.4 \ln [(30-17) / 0.42]}{30} \right]^{-1}$$

$$= [0.3 + 0.12]^{-1}$$

$$= 2.4$$

Calculation of K:

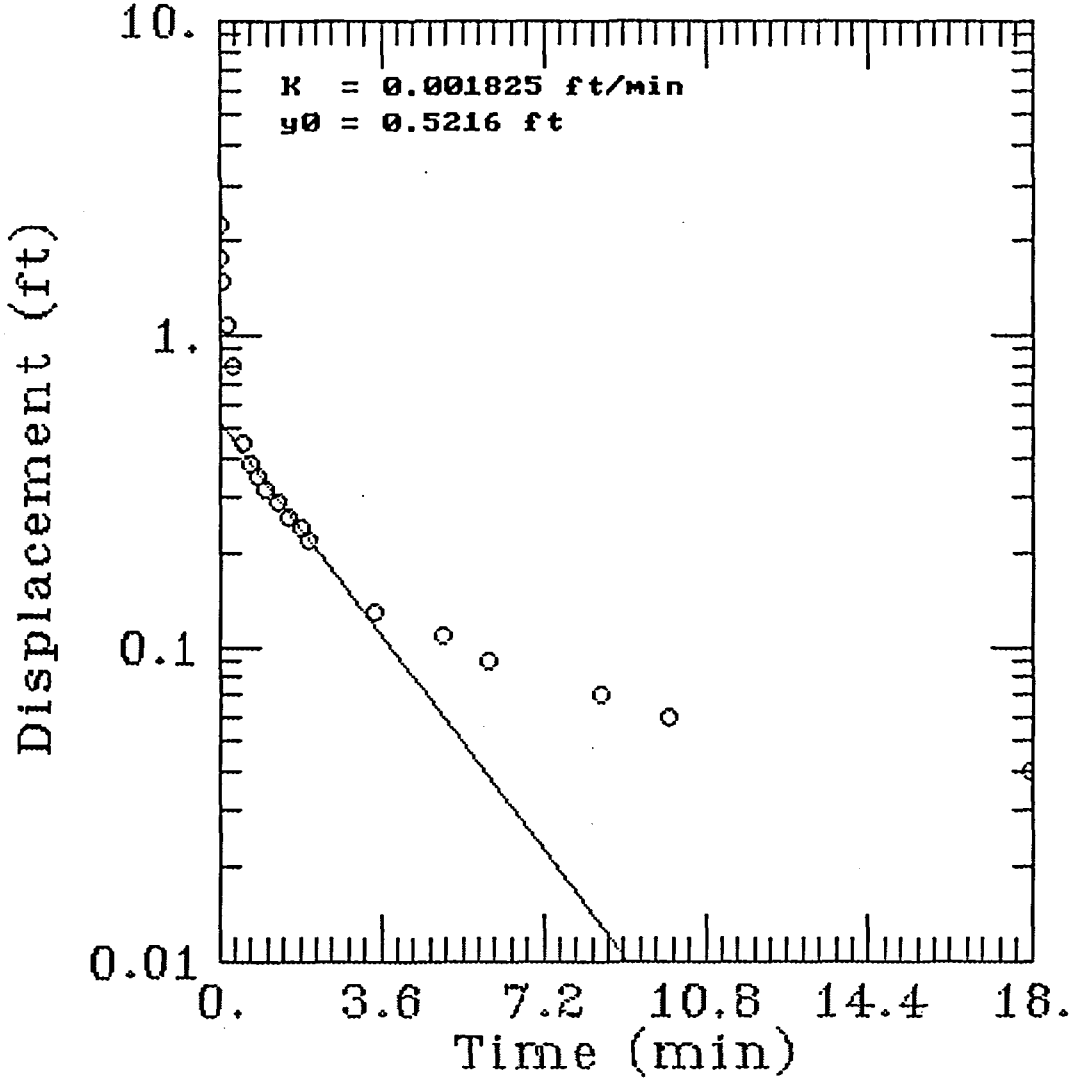
$$K = \frac{(0.17 \text{ ft})^2 (2.4)}{2 (12.5 \text{ ft})} \quad \frac{1}{5.4 \text{ min}} \quad \ln \frac{0.78 \text{ ft}}{0.4 \text{ ft}}$$

$$= 3.4 \times 10^{-4} \text{ ft/min}$$

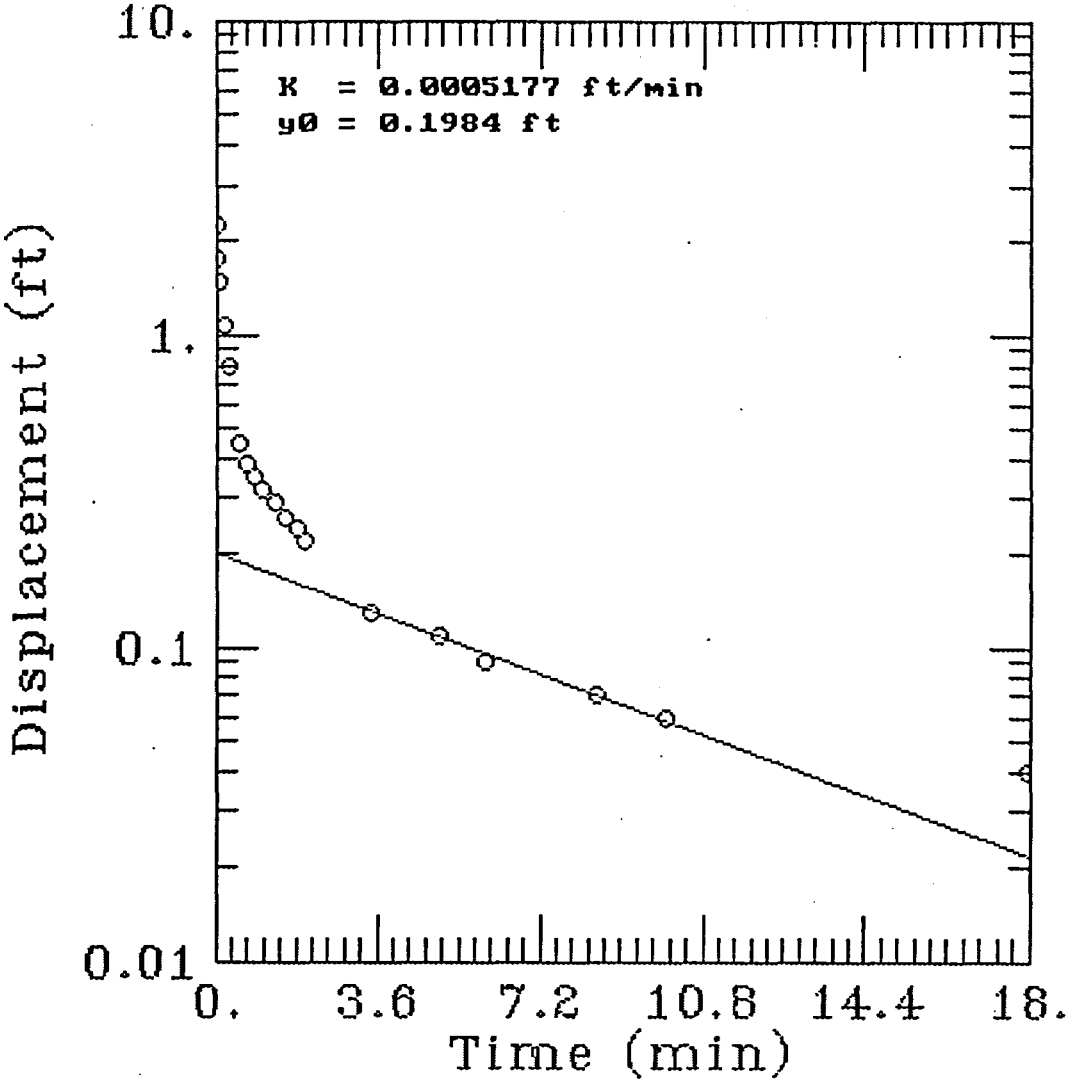
$$= 1.7 \times 10^{-4} \text{ cm/sec}$$

say 2×10^{-4} cm/sec

MW-1 EVEREADY GREENVILLE,NC



MW-1 EVEREADY GREENVILLE,NC



SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-1
BOREHOLE DIAM: d = 8.5" r = 4.25" = 0.35 ft
CASING DIAMETER OR EFF.
DIAMETER: r_{ceff} = 0.20 ft (see below calc.)
ASSUMED GRAVEL POROSITY: 30%
INITIAL WATER LEVEL 8.67' bTOC

DATE: 9/17/91
CLIENT: EVEREADY
LOCATION: GREENVILLE, NC
TYPE OF TEST: RISING HEAD
INTAKE LENGTH (L): 10.3 ft
19' - 8.67' = 10.33'
SATURATED AQ. THICKNESS (D): 31 ft.
40' - 8.67' = 31.3

ELAPSED TIME (min)	DEPTH TO WATER (ft.)	HEAD (ft.)
0	10.91	2.24
0.05	10.42	1.75
0.10	10.14	1.47
0.20	9.75	1.08
0.30	9.47	0.80
0.55	9.12	0.45
0.72	9.06	0.39
0.88	9.02	0.35
1.05	8.99	0.32
1.30	8.96	0.29
1.55	8.93	0.26
1.80	8.91	0.24
1.97	8.89	0.22
3.47	8.80	0.13
4.97	8.78	0.11
5.97	8.76	0.09
8.47	8.74	0.07

$$r_{ceff} = \left[(1-n)r_c^2 + n r_w^2\right]^{1/2}$$
$$= \left[(0.7)(1")^2 + 0.3\,(4.25")^2\right]^{1/2}$$
$$= \left[0.7 + 5.4\right]^{1/2}$$
$$= 2.\ ''$$

8608mwlea.dat

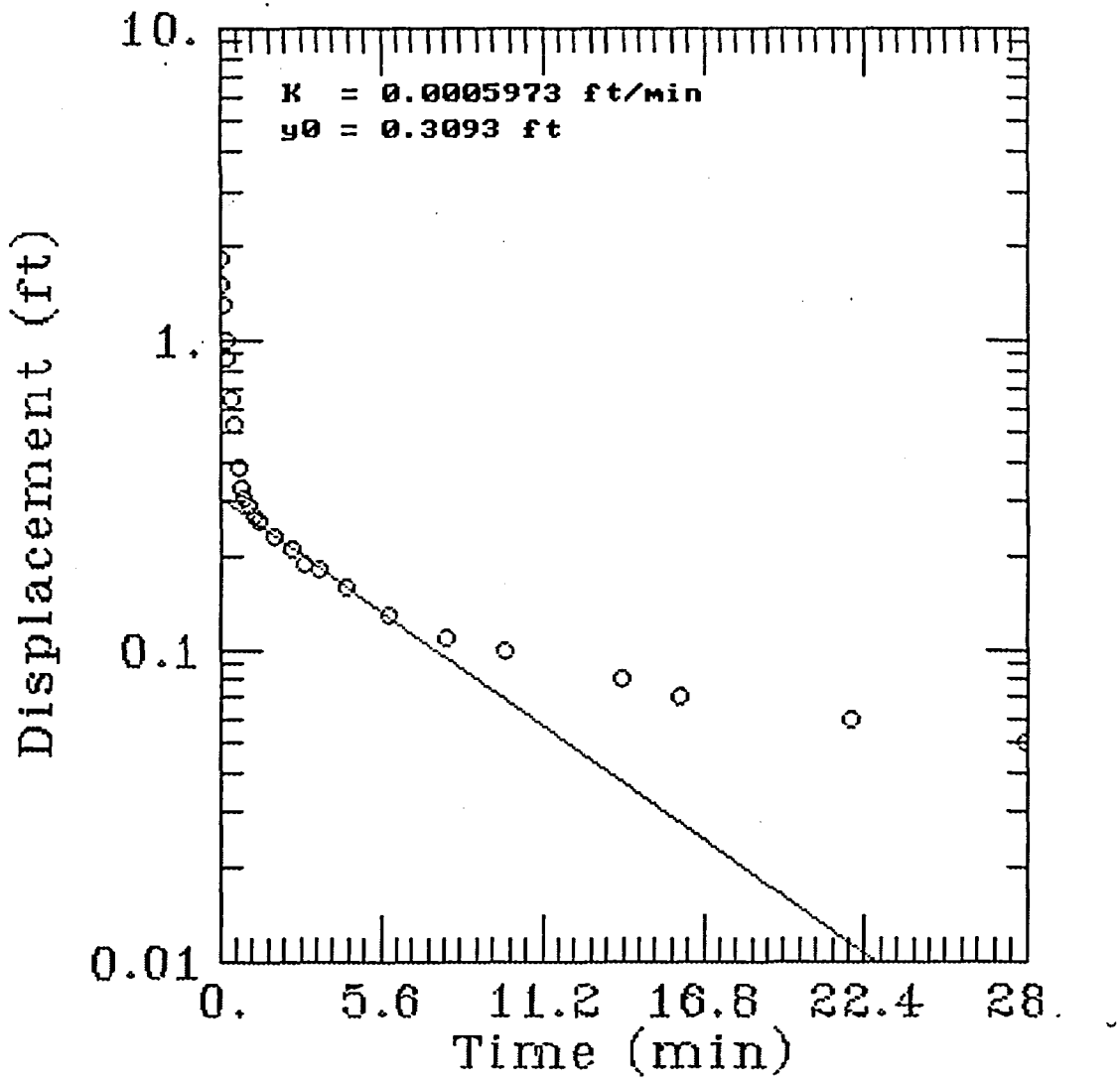
SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-1 (CONT.)
BOREHOLE DIAM: _____
CASING DIAMETER OR EFF. DIAMETER: _____
ASSUMED GRAVEL POROSITY: _____
INITIAL WATER LEVEL _____

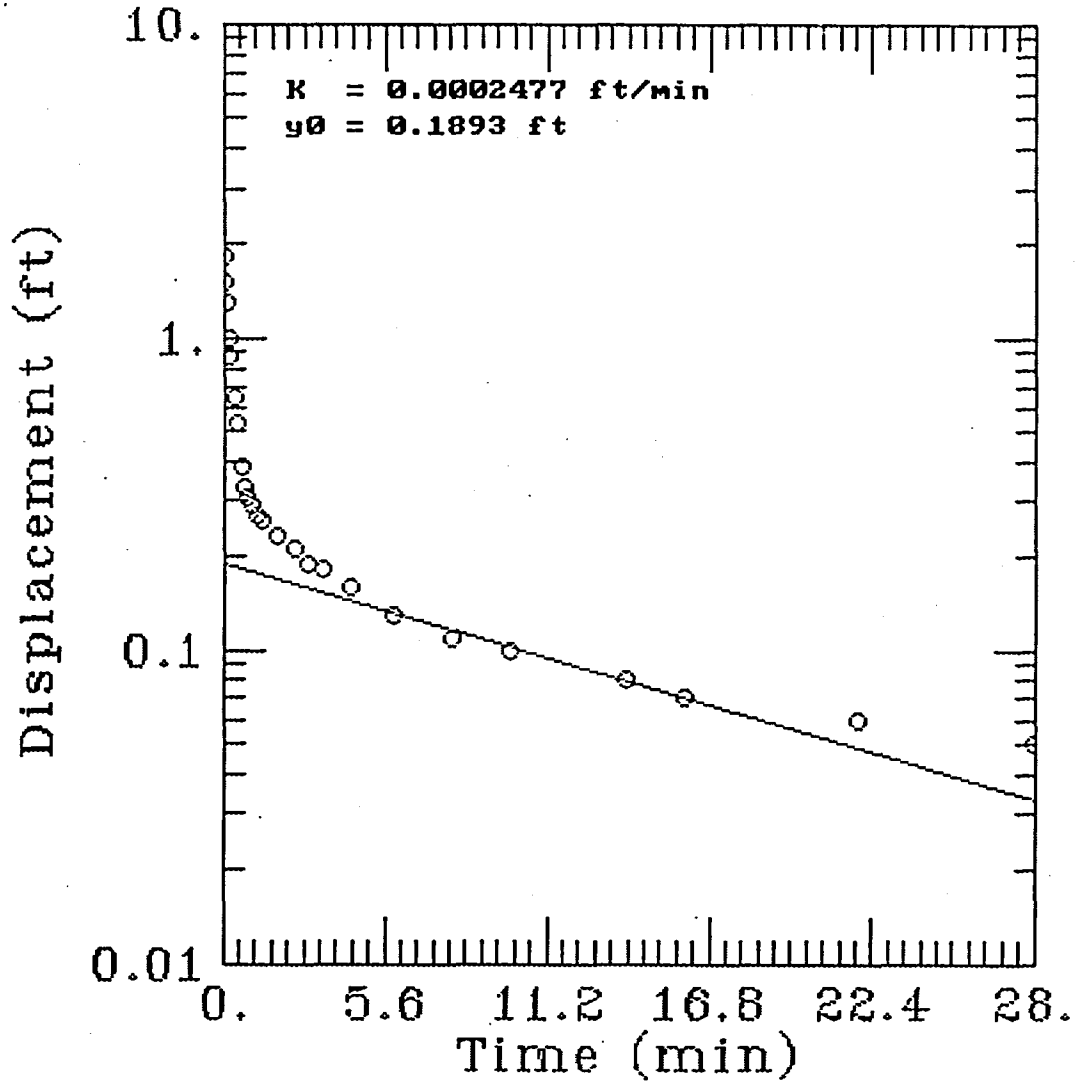
DATE: _____
CLIENT: _____
LOCATION: _____
TYPE OF TEST: _____
INTAKE LENGTH (L): _____

ELAPSED TIME (min)	DEPTH TO WATER (ft.)	HEAD (ft.)
9.97	8.73	0.06
17.97	8.71	0.04

MW-2 EVEREADY GREENVILLE,NC



MW-2 EVEREADY GREENVILLE,NC



SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-2
BOREHOLE DIAM: d = 8" r = 0.35 ft
CASING DIAMETER OR EFF.
DIAMETER: r_{eff} = 0.20 ft (see MW-1)
ASSUMED GRAVEL POROSITY: 30%
INITIAL WATER LEVEL 7.68 ft BTOC

DATE: 9/19/91
CLIENT: EVEREADY
LOCATION: GREENVILLE, NC
TYPE OF TEST: RISING HEAD
INTAKE LENGTH (L): 11.3 ft
19'-7.68' = 11.32'
SATURATED AQ. THICKNESS (D): 32 ft.
40'-7.68' = 32.3'

ELAPSED TIME (min)	DEPTH TO WATER (ft.)	HEAD (ft.)
0	9.51	1.83
0.05	9.20	1.52
0.10	8.98	1.30
0.20	8.67	0.99
0.25	8.55	0.87
0.37	8.32	0.64
0.45	8.21	0.53
0.62	8.07	0.39
0.78	8.01	0.33
0.87	7.99	0.31
1.05	7.97	0.29
1.20	7.95	0.27
1.37	7.94	0.26
1.87	7.91	0.23
2.45	7.89	0.21
2.95	7.87	0.19
3.45	7.86	0.18

8608mw2ea.dat

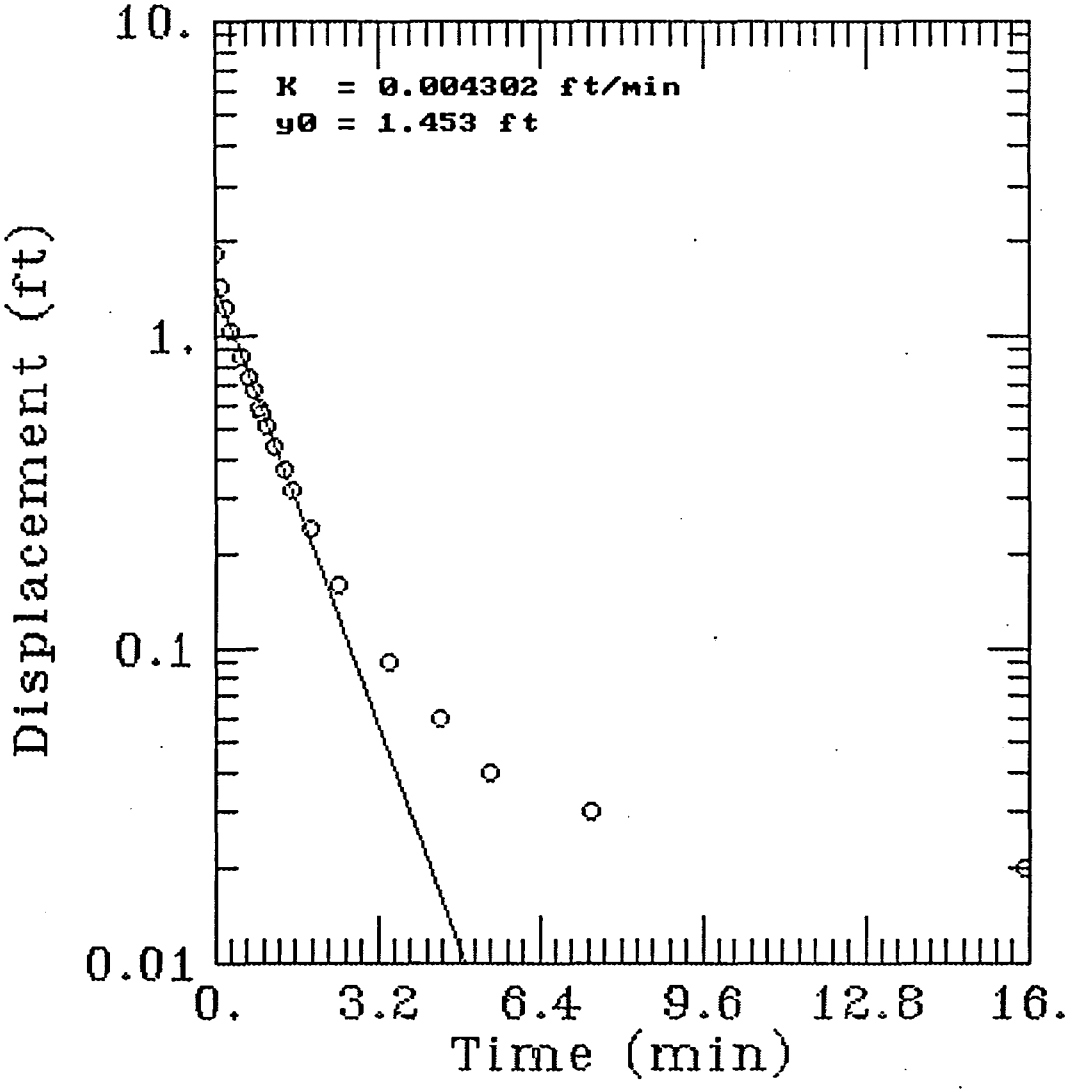
SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-2 (CONT.)
BOREHOLE DIAM: _____
CASING DIAMETER OR EFF. DIAMETER: _____
ASSUMED GRAVEL POROSITY: _____
INITIAL WATER LEVEL _____

DATE: _____
CLIENT: _____
LOCATION: _____
TYPE OF TEST: _____
INTAKE LENGTH (L): _____

ELAPSED TIME (min)	DEPTH TO WATER (ft.)	HEAD (ft.)
4.45	7.84	0.16
5.95	7.81	0.13
7.95	7.79	0.11
9.95	7.78	0.10
13.95	7.76	0.08
15.95	7.75	0.07
21.95	7.74	0.06
27.95	7.73	0.05

MW-3 EVEREADY GREENVILLE,NC



SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-3
BOREHOLE DIAM: d=8.25" r: 0.35 ft
CASING DIAMETER OR EFF. DIAMETER: r_{eff} = 0.20 ft (see MW-1)
ASSUMED GRAVEL POROSITY: 30%
INITIAL WATER LEVEL 8.89 ft BTOC

DATE: 9/19/91
CLIENT: EVEREADY
LOCATION: GREENVILLE NC
TYPE OF TEST: RISING HEAD
INTAKE LENGTH (L): 10.1 ft
19' - 8.89' = 10.11'
SATURATED AQ. THICKNESS (D) = 31 ft
40' - 8.89' = 31.1'

ELAPSED TIME (min)	DEPTH TO WATER (ft.)	HEAD (ft.)
0	10.71	1.82
0.10	10.30	1.41
0.20	10.12	1.23
0.35	9.92	1.03
0.52	9.75	0.86
0.68	9.62	0.73
0.77	9.56	0.67
0.85	9.48	0.59
0.93	9.45	0.56
1.02	9.40	0.51
1.18	9.33	0.44
1.35	9.26	0.37
1.52	9.21	0.32
1.85	9.13	0.24
2.43	9.05	0.16
3.43	8.98	0.09
4.43	8.95	0.06

8608mw3eq.dat

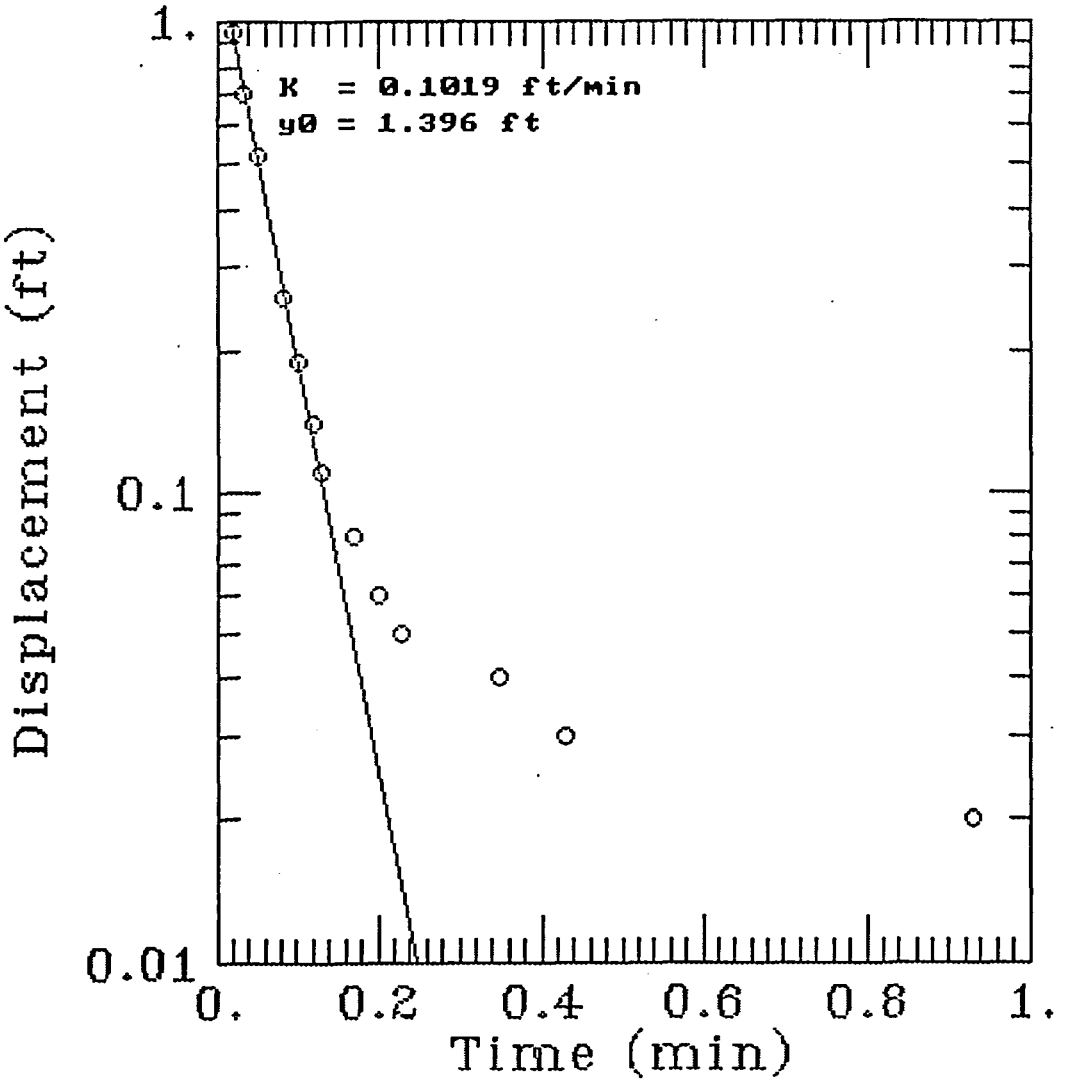
SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-3 (CONT.)
BOREHOLE DIAM: _____
CASING DIAMETER OR EFF. DIAMETER: _____
ASSUMED GRAVEL POROSITY: _____
INITIAL WATER LEVEL _____

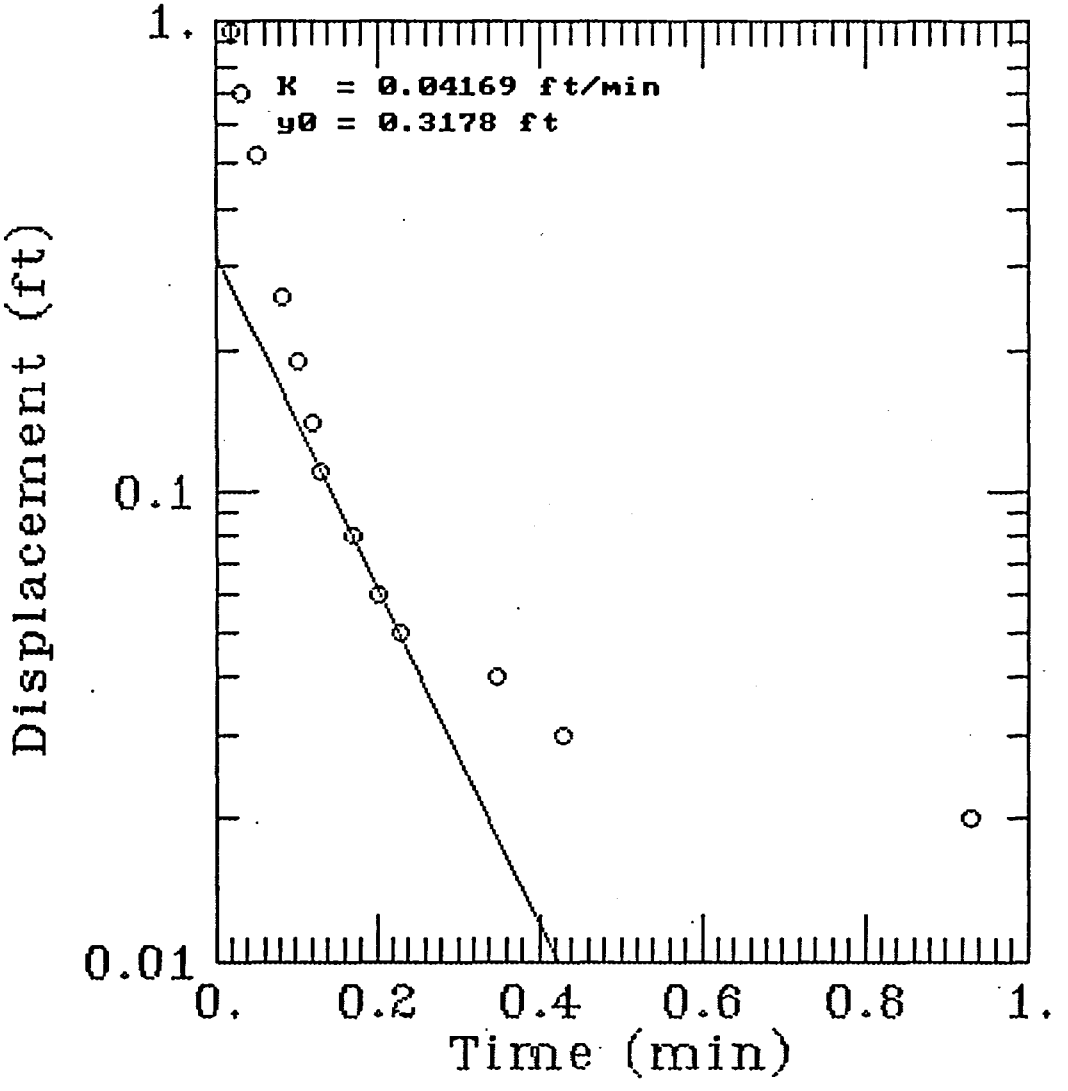
DATE: _____
CLIENT: _____
LOCATION: _____
TYPE OF TEST: _____
INTAKE LENGTH (L): _____

ELAPSED TIME (min.)	DEPTH TO WATER (ft.)	HEAD (ft.)
5.43	8.93	0.04
7.43	8.92	0.03
15.93	8.91	0.02

MW-4 EVEREADY GREENVILLE, NC



MW-4 EVEREADY GREENVILLE, NC



SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-4
BOREHOLE DIAM: d = 8.25" r = 0.35 ft
CASING DIAMETER OR EFF. DIAMETER: r_{eff} = 0.20 ft (see MW-1)
ASSUMED GRAVEL POROSITY: 30%
INITIAL WATER LEVEL 12.57' bTOC

DATE: 9/19/91
CLIENT: EVEREADY
LOCATION: GREENVILLE, NC
TYPE OF TEST: RISING HEAD
INTAKE LENGTH (L): 7.4 ft
20' - 12.57' = 7.43'
SATURATED AQ. THICKNESS (D): 27 ft
40' - 12.57' = 27.4'

ELAPSED TIME (min)	DEPTH TO WATER (ft.)	HEAD (ft.)
0	13.87	1.30
0.02	13.52	0.95
0.033	13.27	0.70
0.05	13.09	0.52
0.083	12.83	0.26
0.10	12.76	0.19
0.12	12.71	0.14
0.13	12.68	0.11
0.17	12.65	0.08
0.20	12.63	0.06
0.23	12.62	0.05
0.35	12.61	0.04
0.43	12.60	0.03
0.93	12.59	0.02

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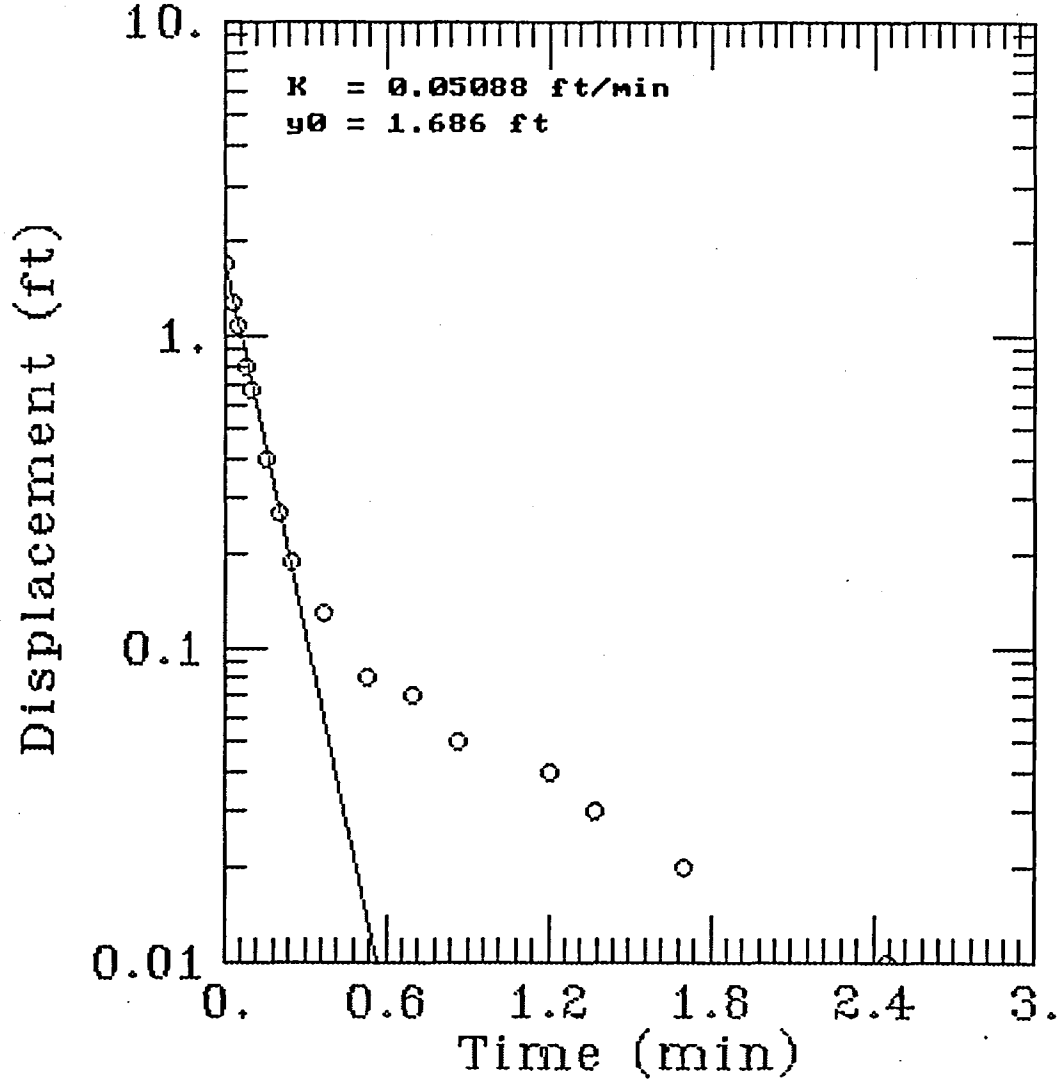
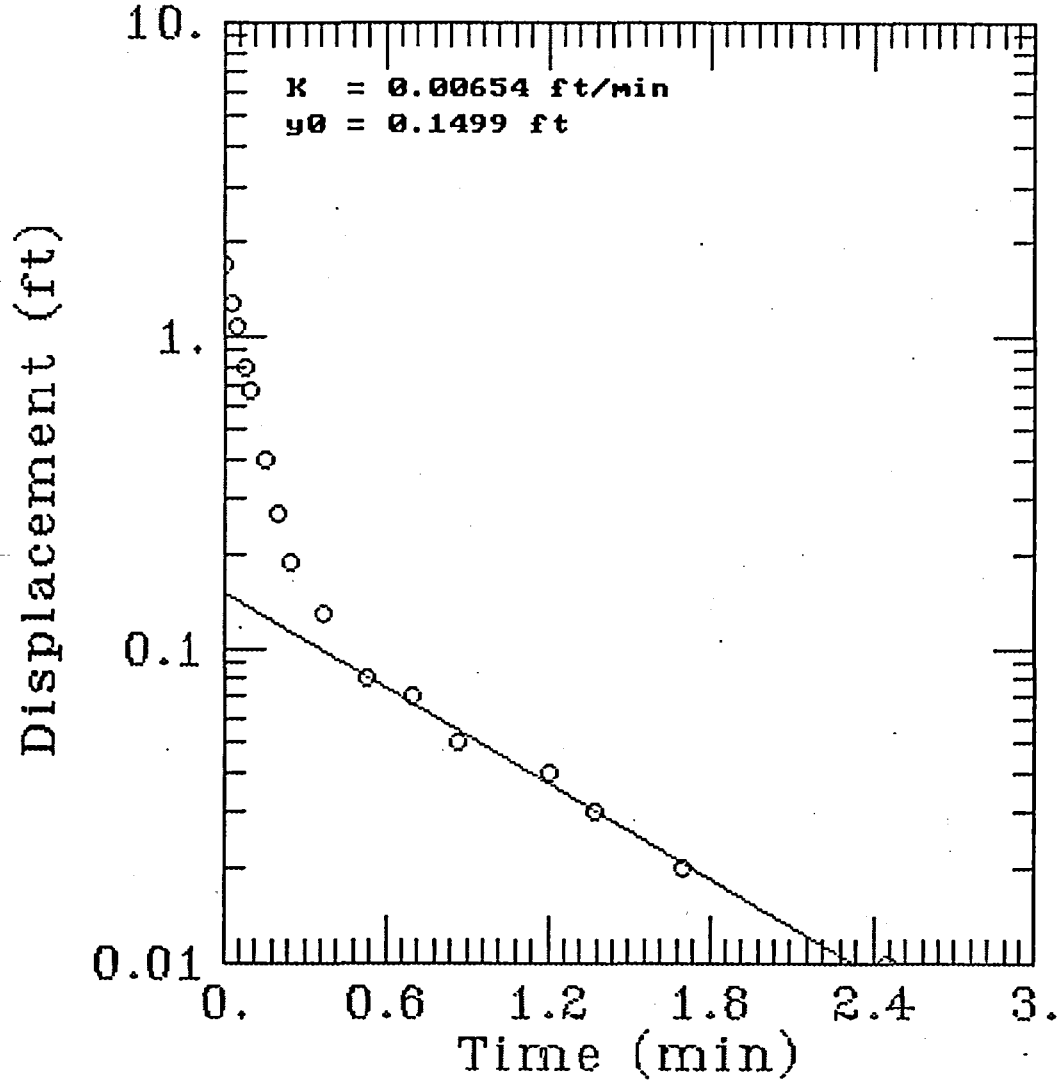
MW-5 EVEREADY GREENVILLE, NC



MW-5 EVEREADY GREENVILLE, NC



SLUG TEST DATA
BOUWER AND RICE METHOD

BOREHOLE NUMBER: MW-5
BOREHOLE DIAM: d= 8.25" r= 0.35 ft
CASING DIAMETER OR EFF.
DIAMETER: r_{eff} = 0.20 ft (see MW-1)
ASSUMED GRAVEL POROSITY: 30%
INITIAL WATER LEVEL 13.81 ft BTOC
INITIAL WATER LEVEL REFERENCE = 17.81

DATE: 9/19/91
CLIENT: EVEREADY
LOCATION: GREENVILLE, NC
TYPE OF TEST: RISING HEAD
INTAKE LENGTH (L): 6.2 ft
20'-13.81' = 6.19'
SATURATED AQUIFER THICKNESS (D): 26+
40'-13.81' = 26.19'

ELAPSED TIME (min)	REFERENCE DEPTH TO WATER (ft.)	HEAD (ft.)
0	19.50	1.69
0.033	19.07	1.26
0.050	18.89	1.08
0.083	18.60	0.79
0.10	18.48	0.67
0.15	18.21	0.40
0.20	18.08	0.27
0.25	18.00	0.19
0.37	17.94	0.13
0.53	17.89	0.08
0.70	17.88	0.07
0.87	17.86	0.05
1.20	17.85	0.04
1.37	17.84	0.03
1.70	17.83	0.02
2.45	17.82	0.01

Appendix I

Soil Gas Survey Data Sheet

SOIL GAS SURVEY RESULTS 7/91
EVEREADY FACILITY, GREENVILLE, N.C.

	GAS CHROMATOGRAPH RESULTS (ppb)												OVA	
Sample	VC	1,1-DCE	t-1,2 DCE	C-1,2 DCE	B	TCE	TOL	PCE	ETH	X	TOT Unk	Total PID	Peak	Stable
SG-1	100	-	30	90	-	-	-	3	-	-	110	330	100	15
SG-2	180	-	10	120	-	-	-	-	-	-	80	390	500	120
SG-3	55	-	-	40	-	-	-	-	-	-	260	360	40	15
SG-4	30	-	-	-	-	-	-	20	-	-	20	70	32	10
SG-5	30	-	-	-	-	-	-	120	-	-	60	210	210	40
SG-6	110	-	1	-	-	-	-	3	-	-	50	160	200	12
SG-7	1000	10	-	5	-	-	-	70	-	-	20	1100	>1000	40
SG-8	1440	-	<1	-	-	-	-	200	-	-	10	1650	>1000	>1000
SG-9	20	-	-	-	-	-	-	190	-	-	10	220	550	10
SG-10	50	10	-	-	5	-	-	60	-	-	30	160	42	2
SG-11	1480	-	<1	<1	-	-	-	5	-	100	-	1590	>1000	50
SG-12	220	-	<1	<1	-	2	-	6	-	100	-	330	40	10
SG-13	620	-	-	-	-	-	-	-	-	-	-	620	480	30
SG-14	20	4	-	-	<1	<1	-	5	-	20	60	110	120	12
SG-15	20	5	-	-	-	-	-	-	-	-	50	80	80	18
SG-1 DUP.	260	-	180	130	-	-	-	3	-	-	40	610	200	10
SG-16	50	10	-	-	-	-	<1	-	-	-	50	110	120	20
SG-17	50	20	-	-	3	<1	-	1	-	-	2080	2150	300	30
SG-18	20	2	-	-	-	30	-	-	-	-	10	60	50	10
SG-19	20	10	-	-	-	-	-	4	-	100	30	160	110	10
SG-20	180	20	<1	<1	3	<1	<1	3	-	100	3	310	320	12
SG-21	70	4	-	-	-	-	-	-	-	-	2	80	480	20
SG-22	40	5	-	10	6	5	-	40	-	-	20	130	90	10
SG-23	30	<1	-	-	-	-	-	40	-	-	5	80	80	10
SG-24	30	<1	<1	1070	1	760	<1	200	-	<1	60	2120	500	40
SG-25	60	10	3	150	2	410	10	210	-	10	40	900	510	20
SG-26	40	20	-	-	-	2	-	2	-	-	50	110	140	18
SG-27	80	50	-	-	40	4340	-	11000	-	-	780	16290	>1000	>1000
SG-28	70	40	-	-	10	10	-	830	-	10	90	1060	120	F.O.
SG-29	100	10	5	-	-	<1	-	120	-	20	100	360	280	10
SG-30	60	10	-	-	-	10	-	850	-	-	50	980	200	12
SG-31	70	10	-	-	-	20	-	380	-	20	30	530	110	28
SG-32	140	10	-	-	-	10	-	1370	-	10	100	1640	600	38
SG-33	20	5	<1	-	-	-	<1	1030	-	-	50	1100	70	16
SG-34	70	20	<1	-	-	-	-	140	-	-	50	280	160	16
SG-35	180	20	<1	-	<1	-	-	330	-	<1	80	610	180	28
SG-36	60	20	-	-	<1	-	<1	50	-	5	20	150	66	14
SG-37	50	10	<1	-	-	-	-	20	-	-	5	90	52	10
SG-38	40	5	<1	-	-	10	-	1100	-	-	-	1150	38	8
SG-39	20	<1	-	-	-	3	-	220	-	-	20	260	25	8
SG-40	30	-	-	-	-	-	-	3	-	-	5	40	240	100
SG-41	40	2	<1	<1	2	<1	<1	180	-	<1	40	260	100	30
SG-42	60	<1	-	-	-	<1	-	130	-	-	10	200	60	12
SG-43	310	70	10	15	5	2	2	860	-	-	-	1270	580	22
SG-44	40	<1	-	-	-	-	-	40	-	-	-	80	28	8
SG-45	40	4	-	-	-	-	<1	40	-	-	20	100	84	10
SG-46	50	20	1	-	6	1	2	240	-	-	60	380	120	22
SG-47	50	3	<1	-	-	-	-	7	-	-	-	60	30	8
SG-48	40	20	<1	-	5	1	2	600	-	10	50	730	140	24
SG-49	50	10	<1	-	-	-	-	600	-	-	27	690	30	10
SG-50	10	4	-	-	-	-	-	3	-	-	8	30	20	8
SG-51	10	2	-	-	-	-	-	20	-	-	5	40	28	8
SG-52	90	8	-	-	-	-	-	2	-	-	-	100	12	6
SG-53	30	4	<1	-	-	-	-	40	-	-	-	70	20	8
SG-54	30	10	1	-	-	-	-	30	3	3	14	90	60	28
Surface	5	-	-	-	1	-	6	-	-	-	-	10		
Water														
Sample														

Appendix J

Analytical Data Sheets
September 1991 Investigation

iea
an environmental testing company
P.O. Box 12846
Research Triangle Park, North Carolina 27709
(919) 677-0090
FAX (919) 677-0427

October 7, 1991

RECEIVED
OCT 9 1991
Ans'd.....

Don Hankins
ERM - Southeast, Inc.
7300 Carmel Executive Park, Suite 200
Charlotte, NC 28226

Reference IEA Report No.: 538325
Project ID: 8608

Dear Mr. Hankins,

Transmitted herewith are the results of analyses on ten samples submitted to our laboratory.

Please see the enclosed reports for your results.

Very truly yours,

IEA, Inc.

Linda F. Mitchell
Director, Technical Support Services

State Certification:

Alabama - #40210	Tennessee - #00296	South Carolina - #99021
Georgia - #816	Virginia - #00179	North Carolina - #37720
New Jersey - #67719		#84

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-1	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/10/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB1 0'-2'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-2	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/10/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB1 7'-9'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-4	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/11/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB2 7'-9'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-5	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/11/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB3 0'-2'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-6	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/11/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB3 7'-9'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-7	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/11/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB4 0'-2'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-8	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/11/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB4 7'-9'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-9	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/10/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB5 1.7'-3.7'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325-10	Date Received:	09/12/91
Client Name:	ERM - Southeast	Date Sampled:	09/10/91
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	SB5 7'-9'	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-325	Date Received:	N/A
Client Name:	ERM - Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	09/21/91
Sample Identification:	QC Blank	Analysis By:	Lewis
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Samples: 538-325-1, 538-325-2, 538-325-3, 538-325-4, 538-325-5, 538-325-6, 538-325-7, 538-325-8, 538-325-9, 538-325-10

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Client ID	Parameter	Results		Date Analyzed
	TOTAL METALS:			
QC Blank	Mercury	<0.25	mg/kg	09/16/91
QC Blank	Silver	<10	mg/kg	09/17/91
QC Blank	Aluminum	<40	mg/kg	09/17/91
QC Blank	Arsenic	<2.0	mg/kg	09/14/91
QC Blank	Barium	<40	mg/kg	09/17/91
QC Blank	Beryllium	<2.0	mg/kg	09/17/91
QC Blank	Calcium	<1,000	mg/kg	09/17/91
QC Blank	Cadmium	<2.0	mg/kg	09/17/91
QC Blank	Cobalt	<10	mg/kg	09/17/91
QC Blank	Chromium	<6.0	mg/kg	09/17/91
QC Blank	Copper	<4.0	mg/kg	09/17/91
QC Blank	Iron	<6.0	mg/kg	09/17/91
QC Blank	Potassium	<1,000	mg/kg	09/17/91
QC Blank	Magnesium	<1,000	mg/kg	09/17/91
QC Blank	Manganese	<2.0	mg/kg	09/17/91
QC Blank	Sodium	<1,000	mg/kg	09/17/91
QC Blank	Nickel	<8.0	mg/kg	09/17/91
QC Blank	Lead	<1.0	mg/kg	09/14/91
QC Blank	Antimony	<40	mg/kg	09/17/91
QC Blank	Selenium	<1.0	mg/kg	09/15/91
QC Blank	Thallium	<2.0	mg/kg	09/15/91
QC Blank	Vanadium	<10	mg/kg	09/17/91
QC Blank	Zinc	<4.0	mg/kg	09/17/91
QC Blank	Total Cyanide	<1.0	mg/kg	09/20/91

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
		TOTAL METALS:			
1	SB1 0'-2'	Mercury	<0.25	mg/kg	09/16/91
2	SB1 7'-9'	Mercury	<0.25	mg/kg	09/16/91
3	SB2 0'-2'	Mercury	<0.25	mg/kg	09/16/91
4	SB2 7'-9'	Mercury	<0.25	mg/kg	09/16/91
5	SB3 0'-2'	Mercury	<0.25	mg/kg	09/16/91
6	SB3 7'-9'	Mercury	<0.25	mg/kg	09/16/91
7	SB4 0'-2'	Mercury	<0.25	mg/kg	09/16/91
8	SB4 7'-9'	Mercury	<0.25	mg/kg	09/16/91
9	SB5 1.7'-3.7'	Mercury	<0.25	mg/kg	09/16/91
10	SB5 7'-9'	Mercury	<0.25	mg/kg	09/16/91
1	SB1 0'-2'	Silver	<10	mg/kg	09/17/91
2	SB1 7'-9'	Silver	<10	mg/kg	09/17/91
3	SB2 0'-2'	Silver	<10	mg/kg	09/17/91
4	SB2 7'-9'	Silver	<10	mg/kg	09/17/91
5	SB3 0'-2'	Silver	<10	mg/kg	09/17/91
6	SB3 7'-9'	Silver	<10	mg/kg	09/17/91
7	SB4 0'-2'	Silver	<10	mg/kg	09/17/91
8	SB4 7'-9'	Silver	<10	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Silver	<10	mg/kg	09/17/91
10	SB5 7'-9'	Silver	<10	mg/kg	09/17/91
1	SB1 0'-2'	Aluminum	4,000	mg/kg	09/17/91
2	SB1 7'-9'	Aluminum	6,400	mg/kg	09/17/91
3	SB2 0'-2'	Aluminum	4,800	mg/kg	09/17/91
4	SB2 7'-9'	Aluminum	7,100	mg/kg	09/17/91
5	SB3 0'-2'	Aluminum	3,000	mg/kg	09/17/91
6	SB3 7'-9'	Aluminum	5,100	mg/kg	09/17/91
7	SB4 0'-2'	Aluminum	9,500	mg/kg	09/17/91
8	SB4 7'-9'	Aluminum	9,000	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Aluminum	2,900	mg/kg	09/17/91
10	SB5 7'-9'	Aluminum	6,500	mg/kg	09/17/91
1	SB1 0'-2'	Arsenic	<2.0	mg/kg	09/14/91
2	SB1 7'-9'	Arsenic	<2.0	mg/kg	09/14/91
3	SB2 0'-2'	Arsenic	<2.0	mg/kg	09/14/91
4	SB2 7'-9'	Arsenic	<2.0	mg/kg	09/14/91
5	SB3 0'-2'	Arsenic	<2.0	mg/kg	09/14/91
6	SB3 7'-9'	Arsenic	<2.0	mg/kg	09/14/91
7	SB4 0'-2'	Arsenic	<2.0	mg/kg	09/14/91
8	SB4 7'-9'	Arsenic	<2.0	mg/kg	09/14/91
9	SB5 1.7'-3.7'	Arsenic	<2.0	mg/kg	09/14/91
10	SB5 7'-9'	Arsenic	<2.0	mg/kg	09/14/91
1	SB1 0'-2'	Barium	<40	mg/kg	09/17/91
2	SB1 7'-9'	Barium	<40	mg/kg	09/17/91
3	SB2 0'-2'	Barium	<40	mg/kg	09/17/91
4	SB2 7'-9'	Barium	<40	mg/kg	09/17/91

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
5	SB3 0'-2'	Barium	<40	mg/kg	09/17/91
6	SB3 7'-9'	Barium	<40	mg/kg	09/17/91
7	SB4 0'-2'	Barium	<40	mg/kg	09/17/91
8	SB4 7'-9'	Barium	<40	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Barium	<40	mg/kg	09/17/91
10	SB5 7'-9'	Barium	<40	mg/kg	09/17/91
1	SB1 0'-2'	Beryllium	<2.0	mg/kg	09/17/91
2	SB1 7'-9'	Beryllium	<2.0	mg/kg	09/17/91
3	SB2 0'-2'	Beryllium	<2.0	mg/kg	09/17/91
4	SB2 7'-9'	Beryllium	<2.0	mg/kg	09/17/91
5	SB3 0'-2'	Beryllium	<2.0	mg/kg	09/17/91
6	SB3 7'-9'	Beryllium	<2.0	mg/kg	09/17/91
7	SB4 0'-2'	Beryllium	<2.0	mg/kg	09/17/91
8	SB4 7'-9'	Beryllium	<2.0	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Beryllium	<2.0	mg/kg	09/17/91
10	SB5 7'-9'	Beryllium	<2.0	mg/kg	09/17/91
1	SB1 0'-2'	Calcium	<1,000	mg/kg	09/17/91
2	SB1 7'-9'	Calcium	<1,000	mg/kg	09/17/91
3	SB2 0'-2'	Calcium	<1,000	mg/kg	09/17/91
4	SB2 7'-9'	Calcium	<1,000	mg/kg	09/17/91
5	SB3 0'-2'	Calcium	84,000	mg/kg	09/17/91
6	SB3 7'-9'	Calcium	<1,000	mg/kg	09/17/91
7	SB4 0'-2'	Calcium	<1,000	mg/kg	09/17/91
8	SB4 7'-9'	Calcium	<1,000	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Calcium	<1,000	mg/kg	09/17/91
10	SB5 7'-9'	Calcium	<1,000	mg/kg	09/17/91
1	SB1 0'-2'	Cadmium	<2.0	mg/kg	09/17/91
2	SB1 7'-9'	Cadmium	<2.0	mg/kg	09/17/91
3	SB2 0'-2'	Cadmium	<2.0	mg/kg	09/17/91
4	SB2 7'-9'	Cadmium	<2.0	mg/kg	09/17/91
5	SB3 0'-2'	Cadmium	<2.0	mg/kg	09/17/91
6	SB3 7'-9'	Cadmium	<2.0	mg/kg	09/17/91
7	SB4 0'-2'	Cadmium	<2.0	mg/kg	09/17/91
8	SB4 7'-9'	Cadmium	<2.0	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Cadmium	<2.0	mg/kg	09/17/91
10	SB5 7'-9'	Cadmium	<2.0	mg/kg	09/17/91
1	SB1 0'-2'	Cobalt	<10	mg/kg	09/17/91
2	SB1 7'-9'	Cobalt	<10	mg/kg	09/17/91
3	SB2 0'-2'	Cobalt	<10	mg/kg	09/17/91
4	SB2 7'-9'	Cobalt	<10	mg/kg	09/17/91
5	SB3 0'-2'	Cobalt	<10	mg/kg	09/17/91
6	SB3 7'-9'	Cobalt	<10	mg/kg	09/17/91
7	SB4 0'-2'	Cobalt	<10	mg/kg	09/17/91
8	SB4 7'-9'	Cobalt	<10	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Cobalt	<10	mg/kg	09/17/91
10	SB5 7'-9'	Cobalt	<10	mg/kg	09/17/91

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
1	SB1 0'-2'	Chromium	<6.0	mg/kg	09/17/91
2	SB1 7'-9'	Chromium	7.4	mg/kg	09/17/91
3	SB2 0'-2'	Chromium	6.8	mg/kg	09/17/91
4	SB2 7'-9'	Chromium	6.8	mg/kg	09/17/91
5	SB3 0'-2'	Chromium	6.0	mg/kg	09/17/91
6	SB3 7'-9'	Chromium	<6.0	mg/kg	09/17/91
7	SB4 0'-2'	Chromium	12	mg/kg	09/17/91
8	SB4 7'-9'	Chromium	8.6	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Chromium	<6.0	mg/kg	09/17/91
10	SB5 7'-9'	Chromium	10	mg/kg	09/17/91
1	SB1 0'-2'	Copper	<4.0	mg/kg	09/17/91
2	SB1 7'-9'	Copper	<4.0	mg/kg	09/17/91
3	SB2 0'-2'	Copper	<4.0	mg/kg	09/17/91
4	SB2 7'-9'	Copper	<4.0	mg/kg	09/17/91
5	SB3 0'-2'	Copper	<4.0	mg/kg	09/17/91
6	SB3 7'-9'	Copper	<4.0	mg/kg	09/17/91
7	SB4 0'-2'	Copper	<4.0	mg/kg	09/17/91
8	SB4 7'-9'	Copper	<4.0	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Copper	<4.0	mg/kg	09/17/91
10	SB5 7'-9'	Copper	<4.0	mg/kg	09/17/91
1	SB1 0'-2'	Iron	2,300	mg/kg	09/17/91
2	SB1 7'-9'	Iron	5,900	mg/kg	09/17/91
3	SB2 0'-2'	Iron	3,600	mg/kg	09/17/91
4	SB2 7'-9'	Iron	1,500	mg/kg	09/17/91
5	SB3 0'-2'	Iron	3,900	mg/kg	09/17/91
6	SB3 7'-9'	Iron	980	mg/kg	09/17/91
7	SB4 0'-2'	Iron	8,000	mg/kg	09/17/91
8	SB4 7'-9'	Iron	2,900	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Iron	2,100	mg/kg	09/17/91
10	SB5 7'-9'	Iron	8,600	mg/kg	09/17/91
1	SB1 0'-2'	Potassium	<1,000	mg/kg	09/17/91
2	SB1 7'-9'	Potassium	<1,000	mg/kg	09/17/91
3	SB2 0'-2'	Potassium	<1,000	mg/kg	09/17/91
4	SB2 7'-9'	Potassium	<1,000	mg/kg	09/17/91
5	SB3 0'-2'	Potassium	<1,000	mg/kg	09/17/91
6	SB3 7'-9'	Potassium	<1,000	mg/kg	09/17/91
7	SB4 0'-2'	Potassium	<1,000	mg/kg	09/17/91
8	SB4 7'-9'	Potassium	<1,000	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Potassium	<1,000	mg/kg	09/17/91
10	SB5 7'-9'	Potassium	<1,000	mg/kg	09/17/91
1	SB1 0'-2'	Magnesium	<1,000	mg/kg	09/17/91
2	SB1 7'-9'	Magnesium	<1,000	mg/kg	09/17/91
3	SB2 0'-2'	Magnesium	<1,000	mg/kg	09/17/91
4	SB2 7'-9'	Magnesium	<1,000	mg/kg	09/17/91
5	SB3 0'-2'	Magnesium	1,100	mg/kg	09/17/91
6	SB3 7'-9'	Magnesium	<1,000	mg/kg	09/17/91

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
7	SB4 0'-2'	Magnesium	<1,000	mg/kg	09/17/91
8	SB4 7'-9'	Magnesium	<1,000	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Magnesium	<1,000	mg/kg	09/17/91
10	SB5 7'-9'	Magnesium	<1,000	mg/kg	09/17/91
1	SB1 0'-2'	Manganese	2.5	mg/kg	09/17/91
2	SB1 7'-9'	Manganese	<2.0	mg/kg	09/17/91
3	SB2 0'-2'	Manganese	21	mg/kg	09/17/91
4	SB2 7'-9'	Manganese	2.5	mg/kg	09/17/91
5	SB3 0'-2'	Manganese	11	mg/kg	09/17/91
6	SB3 7'-9'	Manganese	4.6	mg/kg	09/17/91
7	SB4 0'-2'	Manganese	9.7	mg/kg	09/17/91
8	SB4 7'-9'	Manganese	2.3	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Manganese	8.8	mg/kg	09/17/91
10	SB5 7'-9'	Manganese	<2.0	mg/kg	09/17/91
1	SB1 0'-2'	Sodium	<1,000	mg/kg	09/17/91
2	SB1 7'-9'	Sodium	<1,000	mg/kg	09/17/91
3	SB2 0'-2'	Sodium	<1,000	mg/kg	09/17/91
4	SB2 7'-9'	Sodium	<1,000	mg/kg	09/17/91
5	SB3 0'-2'	Sodium	<1,000	mg/kg	09/17/91
6	SB3 7'-9'	Sodium	<1,000	mg/kg	09/17/91
7	SB4 0'-2'	Sodium	<1,000	mg/kg	09/17/91
8	SB4 7'-9'	Sodium	<1,000	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Sodium	<1,000	mg/kg	09/17/91
10	SB5 7'-9'	Sodium	<1,000	mg/kg	09/17/91
1	SB1 0'-2'	Nickel	<8.0	mg/kg	09/17/91
2	SB1 7'-9'	Nickel	<8.0	mg/kg	09/17/91
3	SB2 0'-2'	Nickel	<8.0	mg/kg	09/17/91
4	SB2 7'-9'	Nickel	<8.0	mg/kg	09/17/91
5	SB3 0'-2'	Nickel	<8.0	mg/kg	09/17/91
6	SB3 7'-9'	Nickel	<8.0	mg/kg	09/17/91
7	SB4 0'-2'	Nickel	<8.0	mg/kg	09/17/91
8	SB4 7'-9'	Nickel	<8.0	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Nickel	<8.0	mg/kg	09/17/91
10	SB5 7'-9'	Nickel	<8.0	mg/kg	09/17/91
1	SB1 0'-2'	Lead	5.1	mg/kg	09/14/91
2	SB1 7'-9'	Lead	5.3	mg/kg	09/14/91
3	SB2 0'-2'	Lead	10	mg/kg	09/14/91
4	SB2 7'-9'	Lead	3.4	mg/kg	09/14/91
5	SB3 0'-2'	Lead	4.9	mg/kg	09/14/91
6	SB3 7'-9'	Lead	4.3	mg/kg	09/14/91
7	SB4 0'-2'	Lead	7.0	mg/kg	09/14/91
8	SB4 7'-9'	Lead	5.5	mg/kg	09/14/91
9	SB5 1.7'-3.7'	Lead	2.5	mg/kg	09/14/91
10	SB5 7'-9'	Lead	4.2	mg/kg	09/14/91
1	SB1 0'-2'	Antimony	<40	mg/kg	09/17/91
2	SB1 7'-9'	Antimony	<40	mg/kg	09/17/91

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
3	SB2 0'-2'	Antimony	<40	mg/kg	09/17/91
4	SB2 7'-9'	Antimony	<40	mg/kg	09/17/91
5	SB3 0'-2'	Antimony	<40	mg/kg	09/17/91
6	SB3 7'-9'	Antimony	<40	mg/kg	09/17/91
7	SB4 0'-2'	Antimony	<40	mg/kg	09/17/91
8	SB4 7'-9'	Antimony	<40	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Antimony	<40	mg/kg	09/17/91
10	SB5 7'-9'	Antimony	<40	mg/kg	09/17/91
1	SB1 0'-2'	Selenium	<1.0	mg/kg	09/15/91
2	SB1 7'-9'	Selenium	<1.0	mg/kg	09/15/91
3	SB2 0'-2'	Selenium	<1.0	mg/kg	09/15/91
4	SB2 7'-9'	Selenium	<1.0	mg/kg	09/15/91
5	SB3 0'-2'	Selenium	<1.0	mg/kg	09/15/91
6	SB3 7'-9'	Selenium	<1.0	mg/kg	09/15/91
7	SB4 0'-2'	Selenium	<1.0	mg/kg	09/15/91
8	SB4 7'-9'	Selenium	<1.0	mg/kg	09/15/91
9	SB5 1.7'-3.7'	Selenium	<1.0	mg/kg	09/15/91
10	SB5 7'-9'	Selenium	<1.0	mg/kg	09/15/91
1	SB1 0'-2'	Thallium	<2.0	mg/kg	09/15/91
2	SB1 7'-9'	Thallium	<2.0	mg/kg	09/15/91
3	SB2 0'-2'	Thallium	<2.0	mg/kg	09/15/91
4	SB2 7'-9'	Thallium	<2.0	mg/kg	09/15/91
5	SB3 0'-2'	Thallium	<2.0	mg/kg	09/15/91
6	SB3 7'-9'	Thallium	<2.0	mg/kg	09/15/91
7	SB4 0'-2'	Thallium	<2.0	mg/kg	09/15/91
8	SB4 7'-9'	Thallium	<2.0	mg/kg	09/15/91
9	SB5 1.7'-3.7'	Thallium	<2.0	mg/kg	09/15/91
10	SB5 7'-9'	Thallium	<2.0	mg/kg	09/15/91
1	SB1 0'-2'	Vanadium	<10	mg/kg	09/17/91
2	SB1 7'-9'	Vanadium	<10	mg/kg	09/17/91
3	SB2 0'-2'	Vanadium	<10	mg/kg	09/17/91
4	SB2 7'-9'	Vanadium	15	mg/kg	09/17/91
5	SB3 0'-2'	Vanadium	<10	mg/kg	09/17/91
6	SB3 7'-9'	Vanadium	12	mg/kg	09/17/91
7	SB4 0'-2'	Vanadium	18	mg/kg	09/17/91
8	SB4 7'-9'	Vanadium	21	mg/kg	09/17/91
9	SB5 1.7'-3.7'	Vanadium	<10	mg/kg	09/17/91
10	SB5 7'-9'	Vanadium	20	mg/kg	09/17/91
1	SB1 0'-2'	Zinc	<4.0	mg/kg	09/17/91
2	SB1 7'-9'	Zinc	<4.0	mg/kg	09/17/91
3	SB2 0'-2'	Zinc	9.0	mg/kg	09/17/91
4	SB2 7'-9'	Zinc	<4.0	mg/kg	09/17/91
5	SB3 0'-2'	Zinc	5.3	mg/kg	09/17/91
6	SB3 7'-9'	Zinc	<4.0	mg/kg	09/17/91
7	SB4 0'-2'	Zinc	12	mg/kg	09/17/91
8	SB4 7'-9'	Zinc	<4.0	mg/kg	09/17/91

IEA LABORATORY RESULTS

IEA Project #: 538-325
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
9	SB5 1.7'-3.7'	Zinc	4.7	mg/kg	09/17/91
10	SB5 7'-9'	Zinc	<4.0	mg/kg	09/17/91
1	SB1 0'-2'	Total Cyanide	<1.0	mg/kg	09/20/91
2	SB1 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91
3	SB2 0'-2'	Total Cyanide	<1.0	mg/kg	09/20/91
4	SB2 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91
5	SB3 0'-2'	Total Cyanide	<1.0	mg/kg	09/20/91
6	SB3 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91
7	SB4 0'-2'	Total Cyanide	<1.0	mg/kg	09/20/91
8	SB4 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91
9	SB5 1.7'-3.7'	Total Cyanide	<1.0	mg/kg	09/20/91
10	SB5 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91

an environmental testing company
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 26003

REGULATORY CLASSIFICATION - PLEASE SPECIFY
☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ OTHER _____

PROJECT # 8608
PROJECT NAME Lowenthal/Greenville, NC
SAMPLERS: (SIGNATURE) [illegible]

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	MATRIX SOIL	MATRIX WATER	[illegible]	[illegible]	[illegible]
SB1 0-2'	9-10	1335		X	Boring #1 (MW-1)	4			2	1	1
B1 7-9'	7-10	1408			"						
B2 0-1'	9-11	1017			Boring #2 (MW-2)						
B2 7-9'	9-11	1030			"						
SB3 0-2'	9-11	1218			Boring #3 (MW-3)						
SB3 7-9'	9-11	1230			"						
SB4 0-2'	9-11	1500			Boring #4 (MW-4)						
SB4 7-9'	9-11	1518			"						
SB5 10-30'	9-10	0905			Boring #5 (MW-5)						
SB5 7-9'	9-10	0730									

REQUESTED PARAMETERS

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[illegible]	9/11/11	1130	Tech Exp		
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY	DATE	TIME
			[illegible]	[illegible]	

IEA QUOTE NO.
IEA RUSH NO.
PROJECT MANAGER (PLEASE PRINT)
P.O. NO.

IEA REMARKS

FIELD REMARKS

an environmental testing company
P.O. Box 12846
Research Triangle Park, North Carolina 27709
(919) 677-0090
FAX (919) 677-0427

October 8, 1991

RECEIVED
OCT - 9 1991
Ans'd.....

Don Hankins
ERM - Southeast, Inc.
7300 Carmel Executive Park, Suite 200
Charlotte, NC 28226

Reference IEA Report No.: 538326
Project ID: 8608

Dear Mr. Hankins,

Transmitted herewith are the results of analyses on nine samples submitted to our laboratory.

Please see the enclosed reports for your results.

Very truly yours,

IEA, Inc.

Linda F. Mitchell
Director, Technical Support Services

State Certification:

Alabama - #40210
Georgia - #816
New Jersey - #67719
Tennessee - #00296
Virginia - #00179
South Carolina - #99021
North Carolina - #37720
#84

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326-1	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/12/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HPSB-4 1'-3'	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	250

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	13,000
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to high concentration of target compounds present.

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326-2	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/12/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HPSB-4 7'-9'	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	100

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	3,600
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to high concentration of target compounds present.

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326-3	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/12/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HPSB-5 1'-3'	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	1
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	16
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	20
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326-4	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/12/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HPSB-5 7'-9'	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	9
17	trans-1,2-Dichloroethene	1.0	1
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	4
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	180
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	240
27	Trichlorofluoromethane	1.0	50
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326-5	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/12/91
Client Project ID:	8608	Date Analyzed:	09/25/91
Sample Identification:	HPSB-6 1'-3'	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	20
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326-6	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/12/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HPSB-6 7'-9'	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326	Date Received:	N/A
Client Name:	ERM-Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Samples: 538-326-1
538-326-2

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326	Date Received:	N/A
Client Name:	ERM-Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Samples: 538-326-3
538-326-4

FORM 8010 REV. 092591

PURGEABLE HALOCARBONS
SW-846 METHOD 8010 COMPOUNDS

IEA Sample Number:	538-326	Date Received:	N/A
Client Name:	ERM-Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	09/25/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Soil	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/kg)	Results Concentration (ug/kg)
1	Bromodichloromethane	1.0	BQL
2	Bromoform	1.0	BQL
3	Bromomethane	1.0	BQL
4	Carbon tetrachloride	1.0	BQL
5	Chlorobenzene	1.0	BQL
6	Chloroethane	1.0	BQL
7	2-Chloroethylvinyl ether	1.0	BQL
8	Chloroform	1.0	BQL
9	Chloromethane	1.0	BQL
10	Dibromochloromethane	1.0	BQL
11	1,2-Dichlorobenzene	1.0	BQL
12	1,3-Dichlorobenzene	1.0	BQL
13	1,4-Dichlorobenzene	1.0	BQL
14	1,1-Dichloroethane	1.0	BQL
15	1,2-Dichloroethane	1.0	BQL
16	1,1-Dichloroethene	1.0	BQL
17	trans-1,2-Dichloroethene	1.0	BQL
18	1,2-Dichloropropane	1.0	BQL
19	cis-1,3-Dichloropropene	1.0	BQL
20	trans-1,3-Dichloropropene	1.0	BQL
21	Methylene chloride	1.0	BQL
22	1,1,2,2-Tetrachloroethane	1.0	BQL
23	Tetrachloroethene	1.0	BQL
24	1,1,1-Trichloroethane	1.0	BQL
25	1,1,2-Trichloroethane	1.0	BQL
26	Trichloroethene	1.0	BQL
27	Trichlorofluoromethane	1.0	BQL
28	Vinyl Chloride	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Samples: 538-326-5
538-326-6

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-326-7	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/13/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HP-8	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	10
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-326-8	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/13/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HP-7	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	4
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

FORM 601 REV. 100391

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-326-9	Date Received:	09/16/91
Client Name:	ERM-Southeast	Date Sampled:	09/13/91
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	HP-6	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	9
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-326	Date Received:	N/A
Client Name:	ERM-Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	09/25/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Sample: 538-326-7

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-326	Date Received:	N/A
Client Name:	ERM-Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	09/26/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Sample: 538-326-8
538-326-9

FORM 601 REV. 100391

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Sample #	Client ID	Parameter	Results		Date Analyzed
		TAL METALS:			
1	HPSB-4 1'-3'	Mercury	<0.25	mg/kg	09/22/91
2	HPSB-4 7'-9'	Mercury	<0.25	mg/kg	09/22/91
3	HPSB-5 1'-3'	Mercury	<0.25	mg/kg	09/22/91
4	HPSB-5 7'-9'	Mercury	<0.25	mg/kg	09/22/91
5	HPSB-6 1'-3'	Mercury	<0.25	mg/kg	09/22/91
6	HPSB-6 7'-9'	Mercury	<0.25	mg/kg	09/22/91
7	HP-8	Mercury	0.52	ug/L	09/22/91
8	HP-7	Mercury	<0.50	ug/L	09/19/91
9	HP-6	Mercury	<0.50	ug/L	09/19/91
1	HPSB-4 1'-3'	Silver	<10	mg/kg	09/18/91
2	HPSB-4 7'-9'	Silver	<10	mg/kg	09/18/91
3	HPSB-5 1'-3'	Silver	<10	mg/kg	09/18/91
4	HPSB-5 7'-9'	Silver	<10	mg/kg	09/18/91
5	HPSB-6 1'-3'	Silver	<10	mg/kg	09/18/91
6	HPSB-6 7'-9'	Silver	<10	mg/kg	09/18/91
7	HP-8	Silver	<50	ug/L	09/18/91
8	HP-7	Silver	<50	ug/L	09/18/91
9	HP-6	Silver	<50	ug/L	09/18/91
1	HPSB-4 1'-3'	Aluminum	11,000	mg/kg	09/18/91
2	HPSB-4 7'-9'	Aluminum	5,500	mg/kg	09/18/91
3	HPSB-5 1'-3'	Aluminum	6,500	mg/kg	09/18/91
4	HPSB-5 7'-9'	Aluminum	7,500	mg/kg	09/18/91
5	HPSB-6 1'-3'	Aluminum	2,900	mg/kg	09/18/91
6	HPSB-6 7'-9'	Aluminum	3,600	mg/kg	09/18/91
7	HP-8	Aluminum	200,000	ug/L	09/18/91
8	HP-7	Aluminum	48,000	ug/L	09/18/91
9	HP-6	Aluminum	7,000	ug/L	09/18/91
1	HPSB-4 1'-3'	Arsenic	2.3	mg/kg	09/18/91
2	HPSB-4 7'-9'	Arsenic	<2.0	mg/kg	09/18/91
3	HPSB-5 1'-3'	Arsenic	<2.0	mg/kg	09/18/91
4	HPSB-5 7'-9'	Arsenic	<2.0	mg/kg	09/18/91
5	HPSB-6 1'-3'	Arsenic	<2.0	mg/kg	09/18/91
6	HPSB-6 7'-9'	Arsenic	<2.0	mg/kg	09/18/91
7	HP-8	Arsenic	360	ug/L	09/18/91
8	HP-7	Arsenic	<10	ug/L	09/18/91
9	HP-6	Arsenic	<10	ug/L	09/18/91
1	HPSB-4 1'-3'	Barium	<40	mg/kg	09/18/91
2	HPSB-4 7'-9'	Barium	<40	mg/kg	09/18/91
3	HPSB-5 1'-3'	Barium	<40	mg/kg	09/18/91
4	HPSB-5 7'-9'	Barium	<40	mg/kg	09/18/91
5	HPSB-6 1'-3'	Barium	<40	mg/kg	09/18/91
6	HPSB-6 7'-9'	Barium	<40	mg/kg	09/18/91
7	HP-8	Barium	900	ug/L	09/18/91
8	HP-7	Barium	240	ug/L	09/18/91

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Sample #	Client ID	Parameter	Results		Date Analyzed
9	HP-6	Barium	<200	ug/L	09/18/91
1	HPSB-4 1'-3'	Beryllium	<2.0	mg/kg	09/23/91
2	HPSB-4 7'-9'	Beryllium	<2.0	mg/kg	09/23/91
3	HPSB-5 1'-3'	Beryllium	<2.0	mg/kg	09/23/91
4	HPSB-5 7'-9'	Beryllium	<2.0	mg/kg	09/23/91
5	HPSB-6 1'-3'	Beryllium	<2.0	mg/kg	09/23/91
6	HPSB-6 7'-9'	Beryllium	<2.0	mg/kg	09/23/91
7	HP-8	Beryllium	<10	ug/L	09/23/91
8	HP-7	Beryllium	<10	ug/L	09/23/91
9	HP-6	Beryllium	<10	ug/L	09/23/91
1	HPSB-4 1'-3'	Calcium	<1,000	mg/kg	09/25/91
2	HPSB-4 7'-9'	Calcium	<1,000	mg/kg	09/25/91
3	HPSB-5 1'-3'	Calcium	<1,000	mg/kg	09/25/91
4	HPSB-5 7'-9'	Calcium	<1,000	mg/kg	09/25/91
5	HPSB-6 1'-3'	Calcium	<1,000	mg/kg	09/25/91
6	HPSB-6 7'-9'	Calcium	<1,000	mg/kg	09/25/91
7	HP-8	Calcium	5,500	ug/L	09/25/91
8	HP-7	Calcium	29,000	ug/L	09/25/91
9	HP-6	Calcium	<5,000	ug/L	09/25/91
1	HPSB-4 1'-3'	Cadmium	<2.0	mg/kg	09/18/91
2	HPSB-4 7'-9'	Cadmium	<2.0	mg/kg	09/18/91
3	HPSB-5 1'-3'	Cadmium	<2.0	mg/kg	09/18/91
4	HPSB-5 7'-9'	Cadmium	<2.0	mg/kg	09/18/91
5	HPSB-6 1'-3'	Cadmium	<2.0	mg/kg	09/18/91
6	HPSB-6 7'-9'	Cadmium	<2.0	mg/kg	09/18/91
7	HP-8	Cadmium	<10	ug/L	09/18/91
8	HP-7	Cadmium	<10	ug/L	09/18/91
9	HP-6	Cadmium	<10	ug/L	09/18/91
1	HPSB-4 1'-3'	Cobalt	<10	mg/kg	09/23/91
2	HPSB-4 7'-9'	Cobalt	<10	mg/kg	09/23/91
3	HPSB-5 1'-3'	Cobalt	<10	mg/kg	09/23/91
4	HPSB-5 7'-9'	Cobalt	<10	mg/kg	09/23/91
5	HPSB-6 1'-3'	Cobalt	<10	mg/kg	09/23/91
6	HPSB-6 7'-9'	Cobalt	<10	mg/kg	09/23/91
7	HP-8	Cobalt	2,500	ug/L	09/18/91
8	HP-7	Cobalt	<50	ug/L	09/18/91
9	HP-6	Cobalt	<50	ug/L	09/18/91
1	HPSB-4 1'-3'	Chromium	11	mg/kg	09/18/91
2	HPSB-4 7'-9'	Chromium	13	mg/kg	09/18/91
3	HPSB-5 1'-3'	Chromium	9.9	mg/kg	09/18/91
4	HPSB-5 7'-9'	Chromium	<6.0	mg/kg	09/18/91
5	HPSB-6 1'-3'	Chromium	<6.0	mg/kg	09/18/91
6	HPSB-6 7'-9'	Chromium	<6.0	mg/kg	09/18/91
7	HP-8	Chromium	520	ug/L	09/18/91
8	HP-7	Chromium	41	ug/L	09/18/91
9	HP-6	Chromium	170	ug/L	09/18/91

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Sample #	Client ID	Parameter	Results		Date Analyzed
1	HPSB-4 1'-3'	Copper	<4.0	mg/kg	09/18/91
2	HPSB-4 7'-9'	Copper	<4.0	mg/kg	09/18/91
3	HPSB-5 1'-3'	Copper	<4.0	mg/kg	09/18/91
4	HPSB-5 7'-9'	Copper	<4.0	mg/kg	09/18/91
5	HPSB-6 1'-3'	Copper	<4.0	mg/kg	09/18/91
6	HPSB-6 7'-9'	Copper	<4.0	mg/kg	09/18/91
7	HP-8	Copper	180	ug/L	09/18/91
8	HP-7	Copper	<20	ug/L	09/18/91
9	HP-6	Copper	42	ug/L	09/18/91
1	HPSB-4 1'-3'	Iron	8,000	mg/kg	09/24/91
2	HPSB-4 7'-9'	Iron	17,000	mg/kg	09/24/91
3	HPSB-5 1'-3'	Iron	13,000	mg/kg	09/24/91
4	HPSB-5 7'-9'	Iron	2,000	mg/kg	09/24/91
5	HPSB-6 1'-3'	Iron	2,700	mg/kg	09/24/91
6	HPSB-6 7'-9'	Iron	380	mg/kg	09/24/91
7	HP-8	Iron	550,000	ug/L	09/25/91
8	HP-7	Iron	20,000	ug/L	09/18/91
9	HP-6	Iron	32,000	ug/L	09/18/91
1	HPSB-4 1'-3'	Potassium	<1,000	mg/kg	09/18/91
2	HPSB-4 7'-9'	Potassium	<1,000	mg/kg	09/18/91
3	HPSB-5 1'-3'	Potassium	<1,000	mg/kg	09/18/91
4	HPSB-5 7'-9'	Potassium	<1,000	mg/kg	09/18/91
5	HPSB-6 1'-3'	Potassium	<1,000	mg/kg	09/18/91
6	HPSB-6 7'-9'	Potassium	<1,000	mg/kg	09/18/91
7	HP-8	Potassium	12,000	ug/L	09/18/91
8	HP-7	Potassium	<5,000	ug/L	09/18/91
9	HP-6	Potassium	<5,000	ug/L	09/18/91
1	HPSB-4 1'-3'	Magnesium	<1,000	mg/kg	09/18/91
2	HPSB-4 7'-9'	Magnesium	<1,000	mg/kg	09/18/91
3	HPSB-5 1'-3'	Magnesium	<1,000	mg/kg	09/18/91
4	HPSB-5 7'-9'	Magnesium	<1,000	mg/kg	09/18/91
5	HPSB-6 1'-3'	Magnesium	<1,000	mg/kg	09/18/91
6	HPSB-6 7'-9'	Magnesium	<1,000	mg/kg	09/18/91
7	HP-8	Magnesium	7,700	ug/L	09/18/91
8	HP-7	Magnesium	<5,000	ug/L	09/18/91
9	HP-6	Magnesium	<5,000	ug/L	09/18/91
1	HPSB-4 1'-3'	Manganese	6.1	mg/kg	09/18/91
2	HPSB-4 7'-9'	Manganese	2.6	mg/kg	09/18/91
3	HPSB-5 1'-3'	Manganese	5.0	mg/kg	09/18/91
4	HPSB-5 7'-9'	Manganese	4.4	mg/kg	09/18/91
5	HPSB-6 1'-3'	Manganese	4.6	mg/kg	09/18/91
6	HPSB-6 7'-9'	Manganese	<2.0	mg/kg	09/18/91
7	HP-8	Manganese	570	ug/L	09/18/91
8	HP-7	Manganese	160	ug/L	09/18/91
9	HP-6	Manganese	230	ug/L	09/18/91
1	HPSB-4 1'-3'	Sodium	<1,000	mg/kg	09/18/91

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Sample #	Client ID	Parameter	Results		Date Analyzed
2	HPSB-4 7'-9'	Sodium	<1,000	mg/kg	09/18/91
3	HPSB-5 1'-3'	Sodium	<1,000	mg/kg	09/18/91
4	HPSB-5 7'-9'	Sodium	<1,000	mg/kg	09/18/91
5	HPSB-6 1'-3'	Sodium	<1,000	mg/kg	09/18/91
6	HPSB-6 7'-9'	Sodium	<1,000	mg/kg	09/18/91
7	HP-8	Sodium	6,200	ug/L	09/18/91
8	HP-7	Sodium	6,200	ug/L	09/18/91
9	HP-6	Sodium	7,800	ug/L	09/18/91
1	HPSB-4 1'-3'	Nickel	<8.0	mg/kg	09/23/91
2	HPSB-4 7'-9'	Nickel	<8.0	mg/kg	09/23/91
3	HPSB-5 1'-3'	Nickel	<8.0	mg/kg	09/23/91
4	HPSB-5 7'-9'	Nickel	<8.0	mg/kg	09/23/91
5	HPSB-6 1'-3'	Nickel	<8.0	mg/kg	09/23/91
6	HPSB-6 7'-9'	Nickel	<8.0	mg/kg	09/23/91
7	HP-8	Nickel	1,700	ug/L	09/18/91
8	HP-7	Nickel	50	ug/L	09/18/91
9	HP-6	Nickel	50	ug/L	09/18/91
1	HPSB-4 1'-3'	Lead	4.7	mg/kg	09/22/91
2	HPSB-4 7'-9'	Lead	3.4	mg/kg	09/18/91
3	HPSB-5 1'-3'	Lead	5.1	mg/kg	09/18/91
4	HPSB-5 7'-9'	Lead	3.6	mg/kg	09/18/91
5	HPSB-6 1'-3'	Lead	3.4	mg/kg	09/22/91
6	HPSB-6 7'-9'	Lead	4.5	mg/kg	09/18/91
7	HP-8	Lead	200	ug/L	09/18/91
8	HP-7	Lead	<5.0	ug/L	09/18/91
9	HP-6	Lead	18	ug/L	09/18/91
1	HPSB-4 1'-3'	Antimony	<40	mg/kg	09/18/91
2	HPSB-4 7'-9'	Antimony	<40	mg/kg	09/18/91
3	HPSB-5 1'-3'	Antimony	<40	mg/kg	09/18/91
4	HPSB-5 7'-9'	Antimony	<40	mg/kg	09/18/91
5	HPSB-6 1'-3'	Antimony	<40	mg/kg	09/18/91
6	HPSB-6 7'-9'	Antimony	<40	mg/kg	09/18/91
7	HP-8	Antimony	<200	ug/L	09/18/91
8	HP-7	Antimony	<200	ug/L	09/18/91
9	HP-6	Antimony	<200	ug/L	09/18/91
1	HPSB-4 1'-3'	Selenium	<1.0	mg/kg	09/19/91
2	HPSB-4 7'-9'	Selenium	<1.0	mg/kg	09/18/91
3	HPSB-5 1'-3'	Selenium	<1.0	mg/kg	09/18/91
4	HPSB-5 7'-9'	Selenium	<1.0	mg/kg	09/18/91
5	HPSB-6 1'-3'	Selenium	<1.0	mg/kg	09/18/91
6	HPSB-6 7'-9'	Selenium	<1.0	mg/kg	09/18/91
7	HP-8	Selenium	19	ug/L	09/19/91
8	HP-7	Selenium	<5.0	ug/L	09/18/91
9	HP-6	Selenium	<5.0	ug/L	09/18/91
1	HPSB-4 1'-3'	Thallium	<2.0	mg/kg	09/19/91
2	HPSB-4 7'-9'	Thallium	<2.0	mg/kg	09/19/91

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Sample #	Client ID	Parameter	Results		Date Analyzed
3	HPSB-5 1'-3'	Thallium	<2.0	mg/kg	09/19/91
4	HPSB-5 7'-9'	Thallium	<2.0	mg/kg	09/19/91
5	HPSB-6 1'-3'	Thallium	<2.0	mg/kg	09/19/91
6	HPSB-6 7'-9'	Thallium	<2.0	mg/kg	09/19/91
7	HP-8	Thallium	<10	ug/L	09/19/91
8	HP-7	Thallium	<10	ug/L	09/19/91
9	HP-6	Thallium	<10	ug/L	09/19/91
1	HPSB-4 1'-3'	Vanadium	20	mg/kg	09/18/91
2	HPSB-4 7'-9'	Vanadium	15	mg/kg	09/18/91
3	HPSB-5 1'-3'	Vanadium	18	mg/kg	09/18/91
4	HPSB-5 7'-9'	Vanadium	<10	mg/kg	09/18/91
5	HPSB-6 1'-3'	Vanadium	<10	mg/kg	09/18/91
6	HPSB-6 7'-9'	Vanadium	13	mg/kg	09/18/91
7	HP-8	Vanadium	440	ug/L	09/18/91
8	HP-7	Vanadium	65	ug/L	09/18/91
9	HP-6	Vanadium	<50	ug/L	09/18/91
1	HPSB-4 1'-3'	Zinc	170	mg/kg	09/18/91
2	HPSB-4 7'-9'	Zinc	110	mg/kg	09/18/91
3	HPSB-5 1'-3'	Zinc	550	mg/kg	09/18/91
4	HPSB-5 7'-9'	Zinc	290	mg/kg	09/18/91
5	HPSB-6 1'-3'	Zinc	<4.0	mg/kg	09/18/91
6	HPSB-6 7'-9'	Zinc	<4.0	mg/kg	09/18/91
7	HP-8	Zinc	180	ug/L	09/18/91
8	HP-7	Zinc	51,000	ug/L	09/18/91
9	HP-6	Zinc	120	ug/L	09/18/91
1	HPSB-4 1'-3'	Total Cyanide	<1.0	mg/kg	09/20/91
2	HPSB-4 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91
3	HPSB-5 1'-3'	Total Cyanide	<1.0	mg/kg	09/20/91
4	HPSB-5 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91
5	HPSB-6 1'-3'	Total Cyanide	<1.0	mg/kg	09/20/91
6	HPSB-6 7'-9'	Total Cyanide	<1.0	mg/kg	09/20/91

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Client ID	Parameter	Results		Date Analyzed
	TAL METALS:			
QC Blank	Mercury	<0.25	mg/kg	09/22/91
QC Blank	Mercury	<0.50	ug/L	09/22/91
QC Blank	Silver	<10	mg/kg	09/18/91
QC Blank	Silver	<50	ug/L	09/18/91
QC Blank	Aluminum	<40	mg/kg	09/18/91
QC Blank	Aluminum	<200	ug/L	09/18/91
QC Blank	Arsenic	<2.0	mg/kg	09/18/91
QC Blank	Arsenic	<10	ug/L	09/18/91
QC Blank	Barium	<40	mg/kg	09/18/91
QC Blank	Barium	<200	ug/L	09/18/91
QC Blank	Beryllium	<2.0	mg/kg	09/23/91
QC Blank	Beryllium	<10	ug/L	09/23/91
QC Blank	Calcium	<1,000	mg/kg	09/25/91
QC Blank	Calcium	<5,000	ug/L	09/25/91
QC Blank	Cadmium	<2.0	mg/kg	09/18/91
QC Blank	Cadmium	<10	ug/L	09/18/91
QC Blank	Cobalt	<10	mg/kg	09/23/91
QC Blank	Cobalt	<50	ug/L	09/18/91
QC Blank	Chromium	<6.0	mg/kg	09/18/91
QC Blank	Chromium	<30	ug/L	09/18/91
QC Blank	Copper	<4.0	mg/kg	09/18/91
QC Blank	Copper	<20	ug/L	09/18/91
QC Blank	Iron	<20	mg/kg	09/24/91
QC Blank	Iron	<100	ug/L	09/25/91
QC Blank	Potassium	<1,000	mg/kg	09/18/91
QC Blank	Potassium	<5,000	ug/L	09/18/91
QC Blank	Magnesium	<1,000	mg/kg	09/18/91
QC Blank	Magnesium	<5,000	ug/L	09/18/91
QC Blank	Manganese	<2.0	mg/kg	09/18/91
QC Blank	Manganese	<10	ug/L	09/18/91
QC Blank	Sodium	<1,000	mg/kg	09/18/91
QC Blank	Sodium	<5,000	ug/L	09/18/91
QC Blank	Nickel	<8.0	mg/kg	09/23/91
QC Blank	Nickel	<40	ug/L	09/18/91
QC Blank	Lead	<1.0	mg/kg	09/22/91
QC Blank	Lead	<5.0	ug/L	09/18/91
QC Blank	Antimony	<40	mg/kg	09/18/91
QC Blank	Antimony	<200	ug/L	09/18/91
QC Blank	Selenium	<1.0	mg/kg	09/19/91
QC Blank	Selenium	<5.0	ug/L	09/19/91
QC Blank	Thallium	<2.0	mg/kg	09/19/91
QC Blank	Thallium	<10	ug/L	09/19/91
QC Blank	Vanadium	<10	mg/kg	09/18/91
QC Blank	Vanadium	<50	ug/L	09/18/91

IEA LABORATORY RESULTS

IEA Project #: 538-326
Client Name: ERM-Southeast

Client ID	Parameter	Results		Date Analyzed
QC Blank	Zinc	<4.0	mg/kg	09/18/91
QC Blank	Zinc	<20	ug/L	09/23/91
QC Blank	Total Cyanide	<1.0	mg/kg	09/20/91

iea

[redacted]vird[redacted]ntal[redacted]
testing company
3000 WESTON PKWY.
CARY, N.C. 27513

[redacted]HAIN OF CUST[redacted]Y RECORD[redacted]

NO: 26058

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ OTHER _____

PROJECT #	PROJECT NAME
8608	Eveready, Greenville NC

SAMPLERS (SIGNATURE): [signature]

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	MATRIX SOIL	MATRIX WATER	REQUESTED PARAMETERS: SW-846 8010	TAL metals + CN
HPSB-4 1'-3'	9-12	1813			Hydropunch boring 4	4 5			2	3
HPSB-4 7'-9'		1831			" 4	5			2	3
HPSB-5 1'-3'		1740			" 5	4			2	2
HPSB-5 7'-9'		1756			" 5	5			2	3
HPSB-6 1'-3'		1712			" 6	4			2	2
HPSB-6 7'-9'		1732			" 6	4			2	2

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9-13-91	1730	Fed Express		
RELINQUISHED BY (SIGNATURE)	**DATE**	**TIME**	**RECEIVED FOR LAB BY**	**DATE**	**TIME**
			Christine DeKleb	9/16/91	1200

IEA QUOTE NO.	IEA RUSH NO.
PROJECT MANAGER (PLEASE PRINT)	**P.O. NO.**

IEA REMARKS

TEA # 538-326

FIELD REMARKS

an environmental testing company
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 26001

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ OTHER _____

PROJECT #: 8608

PROJECT NAME: Eveready, Greenville, NC

SAMPLERS: (SIGNATURE) [signature]

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	MATRIX SOIL	MATRIX WATER	601	TAL metals	
HP-8	9-13	1345		✓	hydropunch boring #8	4		X	3	1	
HP-7	9-13	1524		✓	" #7	4		X	3	1	— one vial received with lid broken CQ 9/16/91
HP-6	9-13	1623		✓	" #6	4		X	3	1	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9-13-91	1730	Fed Express		

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY	DATE	TIME
			Christine A Kicher	9/16/91	1200

IEA QUOTE NO.	IEA RUSH NO.
PROJECT MANAGER (PLEASE PRINT)	**P.O. NO.**

IEA REMARKS

IEA # 538-326

FIELD REMARKS

an environmental testing company
P.O. Box 12846
Research Triangle Park, North Carolina 27709
(919) 677-0090
FAX (919) 677-0427

October 15, 1991

RECEIVED
OCT 17 1991
Ans'd.

Don Hankins
ERM - Southeast, Inc.
7300 Carmel Executive Park, Suite 200
Charlotte, NC 28226

Reference IEA Report No.: 538328
Project ID: 8608

Dear Mr. Hankins,

Transmitted herewith are the results of analyses on 14 samples submitted to our laboratory.

Please see the enclosed reports for your results.

Very truly yours,

IEA, Inc.

Linda F. Mitchell
Director, Technical Support Services

State Certification:

Alabama - #40210
Georgia - #816
New Jersey - #67719
Tennessee - #00296
Virginia - #00179
South Carolina - #99021
North Carolina - #37720
#84

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
		TOTAL METALS:				
1	HP-2	Mercury	<0.50	ug/L		09/26/91
2	HP-1	Mercury	<0.50	ug/L		09/26/91
3	MW-5	Mercury	<0.50	ug/L		09/26/91
4	HP-10	Mercury	0.63	ug/L		09/26/91
5	MW-1	Mercury	<0.50	ug/L		09/26/91
6	HP-9	Mercury	<0.50	ug/L		09/26/91
7	HP-3	Mercury	<0.50	ug/L		09/26/91
8	MW-2	Mercury	<0.50	ug/L		09/26/91
9	MW-4	Mercury	<0.50	ug/L		09/26/91
10	MW-3	Mercury	<0.50	ug/L		09/26/91
11	HP-5	Mercury	<0.50	ug/L		09/26/91
12	SW1	Mercury	<0.50	ug/L		09/26/91
13	SW2	Mercury	<0.50	ug/L		09/26/91
14	HP4	Mercury	0.50	ug/L		09/26/91
1	HP-2	Silver	<50	ug/L		09/26/91
2	HP-1	Silver	<50	ug/L		09/26/91
3	MW-5	Silver	<50	ug/L		09/26/91
4	HP-10	Silver	<1,000	ug/L	*	10/03/91
5	MW-1	Silver	<50	ug/L		09/26/91
6	HP-9	Silver	<1,000	ug/L	*	10/03/91
7	HP-3	Silver	<50	ug/L		09/26/91
8	MW-2	Silver	<50	ug/L		09/26/91
9	MW-4	Silver	<50	ug/L		09/26/91
10	MW-3	Silver	<50	ug/L		09/26/91
11	HP-5	Silver	<50	ug/L		09/26/91
12	SW1	Silver	<50	ug/L		09/26/91
13	SW2	Silver	<50	ug/L		09/26/91
14	HP4	Silver	<250	ug/L	*	10/02/91
1	HP-2	Aluminum	131,000	ug/L		09/26/91
2	HP-1	Aluminum	33,000	ug/L		09/26/91
3	MW-5	Aluminum	41,000	ug/L		09/26/91
4	HP-10	Aluminum	380,000	ug/L		10/03/91
5	MW-1	Aluminum	45,000	ug/L		09/26/91
6	HP-9	Aluminum	190,000	ug/L		10/03/91
7	HP-3	Aluminum	109,000	ug/L		09/26/91
8	MW-2	Aluminum	91,000	ug/L		09/26/91
9	MW-4	Aluminum	70,000	ug/L		09/26/91
10	MW-3	Aluminum	7,600	ug/L		09/26/91
11	HP-5	Aluminum	12,000	ug/L		09/26/91
12	SW1	Aluminum	240	ug/L		09/26/91
13	SW2	Aluminum	250	ug/L		09/26/91
14	HP4	Aluminum	120,000	ug/L		09/26/91
1	HP-2	Arsenic	<10	ug/L		09/27/91
2	HP-1	Arsenic	<10	ug/L		09/29/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
3	MW-5	Arsenic	<10	ug/L		09/27/91
4	HP-10	Arsenic	<10	ug/L		09/27/91
5	MW-1	Arsenic	<10	ug/L		09/27/91
6	HP-9	Arsenic	<10	ug/L		10/02/91
7	HP-3	Arsenic	88	ug/L		09/29/91
8	MW-2	Arsenic	13	ug/L		09/29/91
9	MW-4	Arsenic	<10	ug/L		09/29/91
10	MW-3	Arsenic	15	ug/L		09/29/91
11	HP-5	Arsenic	<10	ug/L		09/29/91
12	SW1	Arsenic	<10	ug/L		10/01/91
13	SW2	Arsenic	<10	ug/L		09/29/91
14	HP4	Arsenic	23	ug/L		09/30/91
1	HP-2	Barium	460	ug/L		09/26/91
2	HP-1	Barium	250	ug/L		09/26/91
3	MW-5	Barium	200	ug/L		09/26/91
4	HP-10	Barium	<4,000	ug/L	*	10/03/91
5	MW-1	Barium	320	ug/L		09/26/91
6	HP-9	Barium	<4,000	ug/L	*	10/03/91
7	HP-3	Barium	940	ug/L		09/26/91
8	MW-2	Barium	370	ug/L		09/26/91
9	MW-4	Barium	220	ug/L		09/26/91
10	MW-3	Barium	350	ug/L		09/26/91
11	HP-5	Barium	260	ug/L		09/26/91
12	SW1	Barium	<200	ug/L		09/26/91
13	SW2	Barium	<200	ug/L		09/26/91
14	HP4	Barium	1,400	ug/L		09/26/91
1	HP-2	Beryllium	<10	ug/L		09/26/91
2	HP-1	Beryllium	<10	ug/L		09/26/91
3	MW-5	Beryllium	<10	ug/L		09/26/91
4	HP-10	Beryllium	<200	ug/L	*	10/03/91
5	MW-1	Beryllium	<10	ug/L		09/26/91
6	HP-9	Beryllium	<200	ug/L	*	10/03/91
7	HP-3	Beryllium	12	ug/L		09/26/91
8	MW-2	Beryllium	<10	ug/L		09/26/91
9	MW-4	Beryllium	<10	ug/L		09/26/91
10	MW-3	Beryllium	<10	ug/L		09/26/91
11	HP-5	Beryllium	<10	ug/L		09/26/91
12	SW1	Beryllium	<10	ug/L		09/26/91
13	SW2	Beryllium	<10	ug/L		09/26/91
14	HP4	Beryllium	22	ug/L		09/26/91
1	HP-2	Calcium	<5,000	ug/L		10/03/91
2	HP-1	Calcium	<5,000	ug/L		10/03/91
3	MW-5	Calcium	<5,000	ug/L		10/03/91
4	HP-10	Calcium	<100,000	ug/L	*	10/03/91
5	MW-1	Calcium	<5,000	ug/L		10/03/91
6	HP-9	Calcium	<100,000	ug/L	*	10/03/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
7	HP-3	Calcium	20,000	ug/L		10/03/91
8	MW-2	Calcium	<5,000	ug/L		10/03/91
9	MW-4	Calcium	<5,000	ug/L		10/03/91
10	MW-3	Calcium	36,000	ug/L		10/03/91
11	HP-5	Calcium	21,000	ug/L		10/03/91
12	SW1	Calcium	5,300	ug/L		10/03/91
13	SW2	Calcium	<5000	ug/L		10/03/91
14	HP4	Calcium	31,000	ug/L		10/03/91
1	HP-2	Cadmium	<10	ug/L		09/26/91
2	HP-1	Cadmium	<10	ug/L		09/26/91
3	MW-5	Cadmium	<10	ug/L		09/26/91
4	HP-10	Cadmium	<200	ug/L	*	10/03/91
5	MW-1	Cadmium	<10	ug/L		09/26/91
6	HP-9	Cadmium	<200	ug/L	*	10/03/91
7	HP-3	Cadmium	<10	ug/L		09/26/91
8	MW-2	Cadmium	<10	ug/L		09/26/91
9	MW-4	Cadmium	<10	ug/L		09/26/91
10	MW-3	Cadmium	<10	ug/L		09/26/91
11	HP-5	Cadmium	<10	ug/L		09/26/91
12	SW1	Cadmium	<10	ug/L		09/26/91
13	SW2	Cadmium	<10	ug/L		09/26/91
14	HP4	Cadmium	<10	ug/L		09/26/91
1	HP-2	Cobalt	<50	ug/L		09/26/91
2	HP-1	Cobalt	<50	ug/L		09/26/91
3	MW-5	Cobalt	<50	ug/L		09/26/91
4	HP-10	Cobalt	<1,000	ug/L	*	10/03/91
5	MW-1	Cobalt	<50	ug/L		09/26/91
6	HP-9	Cobalt	<1,000	ug/L	*	10/03/91
7	HP-3	Cobalt	110	ug/L		09/26/91
8	MW-2	Cobalt	88	ug/L		09/26/91
9	MW-4	Cobalt	<50	ug/L		09/26/91
10	MW-3	Cobalt	<50	ug/L		09/26/91
11	HP-5	Cobalt	<50	ug/L		09/26/91
12	SW1	Cobalt	<50	ug/L		09/26/91
13	SW2	Cobalt	<50	ug/L		09/26/91
14	HP4	Cobalt	150	ug/L		09/26/91
1	HP-2	Chromium	950	ug/L		09/26/91
2	HP-1	Chromium	420	ug/L		09/26/91
3	MW-5	Chromium	<30	ug/L		09/26/91
4	HP-10	Chromium	7,400	ug/L		10/03/91
5	MW-1	Chromium	65	ug/L		09/26/91
6	HP-9	Chromium	2,500	ug/L		10/03/91
7	HP-3	Chromium	1,400	ug/L		09/26/91
8	MW-2	Chromium	110	ug/L		09/26/91
9	MW-4	Chromium	60	ug/L		09/26/91
10	MW-3	Chromium	<30	ug/L		09/26/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
11	HP-5	Chromium	110	ug/L		09/26/91
12	SW1	Chromium	<30	ug/L		09/26/91
13	SW2	Chromium	<30	ug/L		09/26/91
14	HP4	Chromium	900	ug/L		09/26/91
1	HP-2	Copper	170	ug/L		09/26/91
2	HP-1	Copper	65	ug/L		09/26/91
3	MW-5	Copper	<20	ug/L		09/26/91
4	HP-10	Copper	1,300	ug/L		10/03/91
5	MW-1	Copper	<20	ug/L		09/26/91
6	HP-9	Copper	400	ug/L		10/03/91
7	HP-3	Copper	270	ug/L		09/26/91
8	MW-2	Copper	21	ug/L		09/26/91
9	MW-4	Copper	21	ug/L		09/26/91
10	MW-3	Copper	<20	ug/L		09/26/91
11	HP-5	Copper	36	ug/L		09/26/91
12	SW1	Copper	<20	ug/L		09/26/91
13	SW2	Copper	<20	ug/L		09/26/91
14	HP4	Copper	170	ug/L		09/26/91
1	HP-2	Iron	78,000	ug/L		09/26/91
2	HP-1	Iron	33,000	ug/L		09/26/91
3	MW-5	Iron	26,000	ug/L		09/26/91
4	HP-10	Iron	1,300,000	ug/L		10/03/91
5	MW-1	Iron	68,000	ug/L		09/26/91
6	HP-9	Iron	870,000	ug/L		10/03/91
7	HP-3	Iron	450,000	ug/L		10/03/91
8	MW-2	Iron	82,000	ug/L		09/26/91
9	MW-4	Iron	68,000	ug/L		09/26/91
10	MW-3	Iron	11,000	ug/L		09/26/91
11	HP-5	Iron	35,000	ug/L		09/26/91
12	SW1	Iron	260	ug/L		09/26/91
13	SW2	Iron	190	ug/L		09/26/91
14	HP4	Iron	660,000	ug/L		10/02/91
1	HP-2	Potassium	<5,000	ug/L		09/26/91
2	HP-1	Potassium	<5,000	ug/L		09/26/91
3	MW-5	Potassium	<5,000	ug/L		09/26/91
4	HP-10	Potassium	<100,000	ug/L	*	10/03/91
5	MW-1	Potassium	<5,000	ug/L		09/26/91
6	HP-9	Potassium	<100,000	ug/L	*	10/03/91
7	HP-3	Potassium	13,000	ug/L		09/26/91
8	MW-2	Potassium	6,600	ug/L		09/26/91
9	MW-4	Potassium	<5,000	ug/L		09/26/91
10	MW-3	Potassium	<5,000	ug/L		09/26/91
11	HP-5	Potassium	<5,000	ug/L		09/26/91
12	SW1	Potassium	<5,000	ug/L		09/26/91
13	SW2	Potassium	<5,000	ug/L		09/26/91
14	HP4	Potassium	20,000	ug/L		09/26/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
1	HP-2	Magnesium	<5,000	ug/L		09/26/91
2	HP-1	Magnesium	<5,000	ug/L		09/26/91
3	MW-5	Magnesium	<5,000	ug/L		09/26/91
4	HP-10	Magnesium	<100,000	ug/L	*	10/03/91
5	MW-1	Magnesium	<5,000	ug/L		09/26/91
6	HP-9	Magnesium	<100,000	ug/L	*	10/03/91
7	HP-3	Magnesium	14,000	ug/L		09/26/91
8	MW-2	Magnesium	6,600	ug/L		09/26/91
9	MW-4	Magnesium	<5,000	ug/L		09/26/91
10	MW-3	Magnesium	8,100	ug/L		09/26/91
11	HP-5	Magnesium	<5,000	ug/L		09/26/91
12	SW1	Magnesium	<5,000	ug/L		09/26/91
13	SW2	Magnesium	<5,000	ug/L		09/26/91
14	HP4	Magnesium	23,000	ug/L		09/26/91
1	HP-2	Manganese	760	ug/L		09/26/91
2	HP-1	Manganese	400	ug/L		09/26/91
3	MW-5	Manganese	25	ug/L		10/07/91
4	HP-10	Manganese	9,400	ug/L		10/03/91
5	MW-1	Manganese	200	ug/L		09/26/91
6	HP-9	Manganese	10,000	ug/L		10/03/91
7	HP-3	Manganese	2,500	ug/L		09/26/91
8	MW-2	Manganese	480	ug/L		09/26/91
9	MW-4	Manganese	75	ug/L		10/07/91
10	MW-3	Manganese	150	ug/L		09/26/91
11	HP-5	Manganese	1,200	ug/L		09/26/91
12	SW1	Manganese	14	ug/L		09/26/91
13	SW2	Manganese	17	ug/L		09/26/91
14	HP4	Manganese	1,600	ug/L		09/26/91
1	HP-2	Sodium	8,900	ug/L		09/26/91
2	HP-1	Sodium	8,800	ug/L		09/26/91
3	MW-5	Sodium	13,000	ug/L		09/26/91
4	HP-10	Sodium	<100,000	ug/L	*	10/03/91
5	MW-1	Sodium	5,800	ug/L		09/26/91
6	HP-9	Sodium	<100,000	ug/L	*	10/03/91
7	HP-3	Sodium	13,000	ug/L		09/26/91
8	MW-2	Sodium	12,000	ug/L		09/26/91
9	MW-4	Sodium	9,700	ug/L		09/26/91
10	MW-3	Sodium	10,000	ug/L		09/26/91
11	HP-5	Sodium	8,600	ug/L		09/26/91
12	SW1	Sodium	<5,000	ug/L		09/26/91
13	SW2	Sodium	<5,000	ug/L		09/26/91
14	HP4	Sodium	8,900	ug/L		09/26/91
1	HP-2	Nickel	450	ug/L		09/26/91
2	HP-1	Nickel	200	ug/L		09/26/91
3	MW-5	Nickel	<40	ug/L		09/26/91
4	HP-10	Nickel	2,700	ug/L		10/03/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
5	MW-1	Nickel	<40	ug/L		09/26/91
6	HP-9	Nickel	1,000	ug/L		10/03/91
7	HP-3	Nickel	510	ug/L		09/26/91
8	MW-2	Nickel	100	ug/L		09/26/91
9	MW-4	Nickel	<40	ug/L		09/26/91
10	MW-3	Nickel	<40	ug/L		09/26/91
11	HP-5	Nickel	86	ug/L		09/26/91
12	SW1	Nickel	<40	ug/L		09/26/91
13	SW2	Nickel	<40	ug/L		09/26/91
14	HP4	Nickel	420	ug/L		09/26/91
1	HP-2	Lead	170	ug/L		09/26/91
2	HP-1	Lead	64	ug/L		09/25/91
3	MW-5	Lead	20	ug/L		09/28/91
4	HP-10	Lead	450	ug/L		09/25/91
5	MW-1	Lead	29	ug/L		09/28/91
6	HP-9	Lead	160	ug/L		09/25/91
7	HP-3	Lead	170	ug/L		09/25/91
8	MW-2	Lead	27	ug/L		09/25/91
9	MW-4	Lead	25	ug/L		09/25/91
10	MW-3	Lead	6.0	ug/L		09/28/91
11	HP-5	Lead	10	ug/L		09/28/91
12	SW1	Lead	<5.0	ug/L		09/28/91
13	SW2	Lead	<5.0	ug/L		09/28/91
14	HP4	Lead	130	ug/L		09/26/91
1	HP-2	Antimony	<200	ug/L		09/26/91
2	HP-1	Antimony	<200	ug/L		09/26/91
3	MW-5	Antimony	<200	ug/L		09/26/91
4	HP-10	Antimony	<4,000	ug/L	*	10/03/91
5	MW-1	Antimony	<200	ug/L		09/26/91
6	HP-9	Antimony	<4,000	ug/L	*	10/03/91
7	HP-3	Antimony	<200	ug/L		09/26/91
8	MW-2	Antimony	<200	ug/L		09/26/91
9	MW-4	Antimony	<200	ug/L		09/26/91
10	MW-3	Antimony	<200	ug/L		09/26/91
11	HP-5	Antimony	<200	ug/L		09/26/91
12	SW1	Antimony	<200	ug/L		09/26/91
13	SW2	Antimony	<200	ug/L		09/26/91
14	HP4	Antimony	<200	ug/L		09/26/91
1	HP-2	Selenium	<5.0	ug/L		09/26/91
2	HP-1	Selenium	<5.0	ug/L		09/26/91
3	MW-5	Selenium	<5.0	ug/L		09/26/91
4	HP-10	Selenium	<5.0	ug/L		09/26/91
5	MW-1	Selenium	<5.0	ug/L		09/26/91
6	HP-9	Selenium	<5.0	ug/L		09/26/91
7	HP-3	Selenium	<5.0	ug/L		09/26/91
8	MW-2	Selenium	<5.0	ug/L		09/26/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results			Date Analyzed
9	MW-4	Selenium	<5.0	ug/L		09/26/91
10	MW-3	Selenium	<5.0	ug/L		09/26/91
11	HP-5	Selenium	<5.0	ug/L		09/26/91
12	SW1	Selenium	<5.0	ug/L		09/26/91
13	SW2	Selenium	<5.0	ug/L		09/26/91
14	HP4	Selenium	<5.0	ug/L		09/26/91
1	HP-2	Thallium	<10	ug/L		09/27/91
2	HP-1	Thallium	<10	ug/L		09/27/91
3	MW-5	Thallium	<10	ug/L		09/27/91
4	HP-10	Thallium	<10	ug/L		09/27/91
5	MW-1	Thallium	<10	ug/L		09/27/91
6	HP-9	Thallium	<10	ug/L		09/27/91
7	HP-3	Thallium	<10	ug/L		09/27/91
8	MW-2	Thallium	<10	ug/L		09/27/91
9	MW-4	Thallium	<10	ug/L		09/27/91
10	MW-3	Thallium	<10	ug/L		09/27/91
11	HP-5	Thallium	<10	ug/L		09/27/91
12	SW1	Thallium	<10	ug/L		09/27/91
13	SW2	Thallium	<10	ug/L		09/27/91
14	HP4	Thallium	<10	ug/L		09/27/91
1	HP-2	Vanadium	77	ug/L		09/26/91
2	HP-1	Vanadium	<50	ug/L		09/26/91
3	MW-5	Vanadium	66	ug/L		09/26/91
4	HP-10	Vanadium	1,100	ug/L		10/03/91
5	MW-1	Vanadium	86	ug/L		09/26/91
6	HP-9	Vanadium	<1,000	ug/L	*	10/03/91
7	HP-3	Vanadium	350	ug/L		09/26/91
8	MW-2	Vanadium	160	ug/L		09/26/91
9	MW-4	Vanadium	130	ug/L		09/26/91
10	MW-3	Vanadium	<50	ug/L		09/26/91
11	HP-5	Vanadium	<50	ug/L		09/26/91
12	SW1	Vanadium	<50	ug/L		09/26/91
13	SW2	Vanadium	<50	ug/L		09/26/91
14	HP4	Vanadium	420	ug/L		09/26/91
1	HP-2	Zinc	130	ug/L		09/26/91
2	HP-1	Zinc	50	ug/L		09/26/91
3	MW-5	Zinc	35	ug/L		09/26/91
4	HP-10	Zinc	1,200	ug/L		10/03/91
5	MW-1	Zinc	110	ug/L		09/26/91
6	HP-9	Zinc	1,400	ug/L		10/03/91
7	HP-3	Zinc	1,100	ug/L		09/26/91
8	MW-2	Zinc	210	ug/L		09/26/91
9	MW-4	Zinc	41	ug/L		09/26/91
10	MW-3	Zinc	43	ug/L		09/26/91
11	HP-5	Zinc	24,000	ug/L		09/26/91
12	SW1	Zinc	110	ug/L		09/26/91

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Sample #	Client ID	Parameter	Results		Date Analyzed
13	SW2	Zinc	59	ug/L	09/26/91
14	HP4	Zinc	2,600	ug/L	09/26/91

Comments:

*Sample diluted prior to analysis due to matrix interference.

IEA LABORATORY RESULTS

IEA Project #: 538-328
Client Name: ERM - Southeast, Inc.

Client ID	Parameter	Results		Date Analyzed
	TOTAL METALS:			
QC Blank	Mercury	<0.50	ug/L	09/26/91
QC Blank	Silver	<50	ug/L	09/26/91
QC Blank	Aluminum	<200	ug/L	09/26/91
QC Blank	Arsenic	<10	ug/L	09/27/91
QC Blank	Barium	<200	ug/L	09/26/91
QC Blank	Beryllium	<10	ug/L	09/26/91
QC Blank	Calcium	<5,000	ug/L	10/03/91
QC Blank	Cadmium	<10	ug/L	09/26/91
QC Blank	Cobalt	<50	ug/L	09/26/91
QC Blank	Chromium	<30	ug/L	09/26/91
QC Blank	Copper	<20	ug/L	09/26/91
QC Blank	Iron	<100	ug/L	09/26/91
QC Blank	Potassium	<5,000	ug/L	09/26/91
QC Blank	Magnesium	<5,000	ug/L	09/26/91
QC Blank	Manganese	<10	ug/L	09/26/91
QC Blank	Sodium	<5,000	ug/L	09/26/91
QC Blank	Nickel	<40	ug/L	09/26/91
QC Blank	Lead	<5.0	ug/L	09/26/91
QC Blank	Antimony	<200	ug/L	09/26/91
QC Blank	Selenium	<5.0	ug/L	09/26/91
QC Blank	Thallium	<10	ug/L	09/27/91
QC Blank	Vanadium	<50	ug/L	09/26/91
QC Blank	Zinc	<20	ug/L	09/26/91

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-1	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	HP-2	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	3
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-2	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	HP-1	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	10

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	12
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	410
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to high concentration of target compounds present.
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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-3	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	MW-5	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-4	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	HP-10	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	5
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	1
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-5	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	MW-1	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-6	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	HP-9	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-7	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	HP-3	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	50

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	990
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-8	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	MW-2	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-9	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	MW-4	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	25

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	40
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	740
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to high concentration of target compounds present.
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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-10	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/20/91
Client Project ID:	8608	Date Analyzed:	10/04/91
Sample Identification:	MW-3	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-11	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/19/91
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	HP-5	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	100

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	1,300
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	11,000
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-12	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/20/91
Client Project ID:	8608	Date Analyzed:	10/04/91
Sample Identification:	SW1	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-13	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/20/91
Client Project ID:	8608	Date Analyzed:	10/04/91
Sample Identification:	SW2	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit

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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328-14	Date Received:	09/23/91
Client Name:	ERM - Southeast	Date Sampled:	09/20/91
Client Project ID:	8608	Date Analyzed:	10/04/91
Sample Identification:	HP4	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	50

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	2,800
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
Quantitation limit elevated due to sample dilution prior to analysis.
Sample diluted due to high concentration of target compounds present.
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PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328	Date Received:	N/A
Client Name:	ERM - Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	10/03/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Samples: 538-328-1, 538-328-2, 538-328-3, 538-328-4, 538-328-5, 538-328-6, 538-328-7, 538-328-8, 538-328-9, 538-328-11

PURGEABLE HALOCARBONS
EPA 601 COMPOUND LIST

IEA Sample Number:	538-328	Date Received:	N/A
Client Name:	ERM - Southeast	Date Sampled:	N/A
Client Project ID:	8608	Date Analyzed:	10/04/91
Sample Identification:	QC Blank	Analysis By:	Averill
Matrix:	Water	Dilution Factor:	1

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:
Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit
N/A = Not Applicable
Corresponding Samples: 538-328-10 538-328-14
538-328-12
538-328-13

iea

an environmental testing company
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 26002

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ OTHER _____

PROJECT #: 8608

PROJECT NAME: Eveready Greenville

SAMPLERS: (SIGNATURE) [signature]

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	MATRIX SOIL	MATRIX WATER	601	THL Metals + CN										
HP-2	9-19	1030		✓	Hydropunch Boring #2	4		X	3	1										
HP-1	9-19	1230		✓	" #1	4		X	3	1										
MW-5	"	1410		✓	Monitor Well #5	4		X	3	1										
HP-10	"	1330		✓	Hydropunch Boring #10	4		X	3	1										
MW-1	"	1530		✓	Monitor Well #1	4		X	3	1										
HP-9	"	1610		✓	Hydropunch #9	4		X	3	1										
HP-3	"	1650		✓	" #3	4		X	3	1										
MW-2	"	1700		✓	Monitor Well #2	4		X	3	1										
MW-4	"	1830		✓	" #4	4		X	3	1										
MW-3	9-20	0850		✓	Monitor Well #3	4		X	3	1										
HP-5	9-19	1910		✓	Hydropunch #5	4		X	3	1										

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9.20.91	1200	FedExpress		
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY	DATE	TIME
			Christine Oakes	9/21/91	1100

IEA QUOTE NO.	IEA RUSH NO.
PROJECT MANAGER (PLEASE PRINT)	**P.O. NO.**

IEA REMARKS

IFA # 538-328

FIELD REMARKS

an environmental testing company
3000 WESTON PKWY.
CARY, N.C. 27513

CHAIN OF CUSTODY RECORD

NO: 19392

REGULATORY CLASSIFICATION - PLEASE SPECIFY

☐ NPDES ☐ DRINKING WATER ☐ RCRA ☐ OTHER _____

PROJECT # 8608

PROJECT NAME: Eveready Greenville, NC

SAMPLERS: (SIGNATURE) [signature]

SAMPLE I.D.	DATE	TIME	COMP	GRAB	STATION LOCATION	# OF CONTAINERS	MATRIX SOIL	MATRIX WATER	VOC	TAL metals
SW1	9.20	1000		✓	Surface Water #1	4		X	3	1
SW2	9.20	1030		✓	" #2	4		X	3	1
HP4	9.20	1100		✓	Hydropunch Boring #4	4		X	3	1

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	9.20.91	1200	Fed Express		
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY	DATE	TIME
			[signature]	9/21/91	1000

IEA QUOTE NO.

IEA RUSH NO.

PROJECT MANAGER (PLEASE PRINT)

P.O. NO.

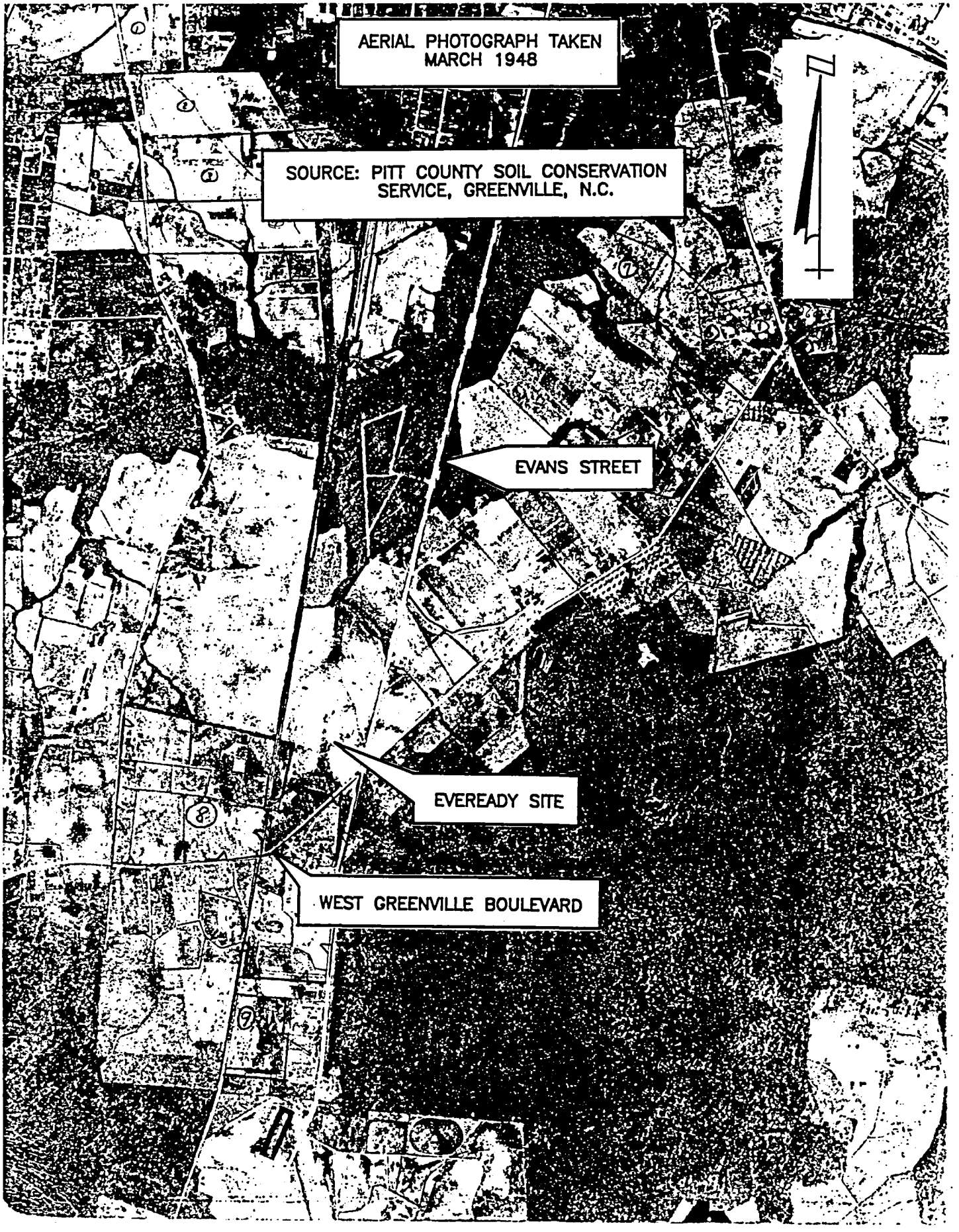
IEA REMARKS

IEA #538-328

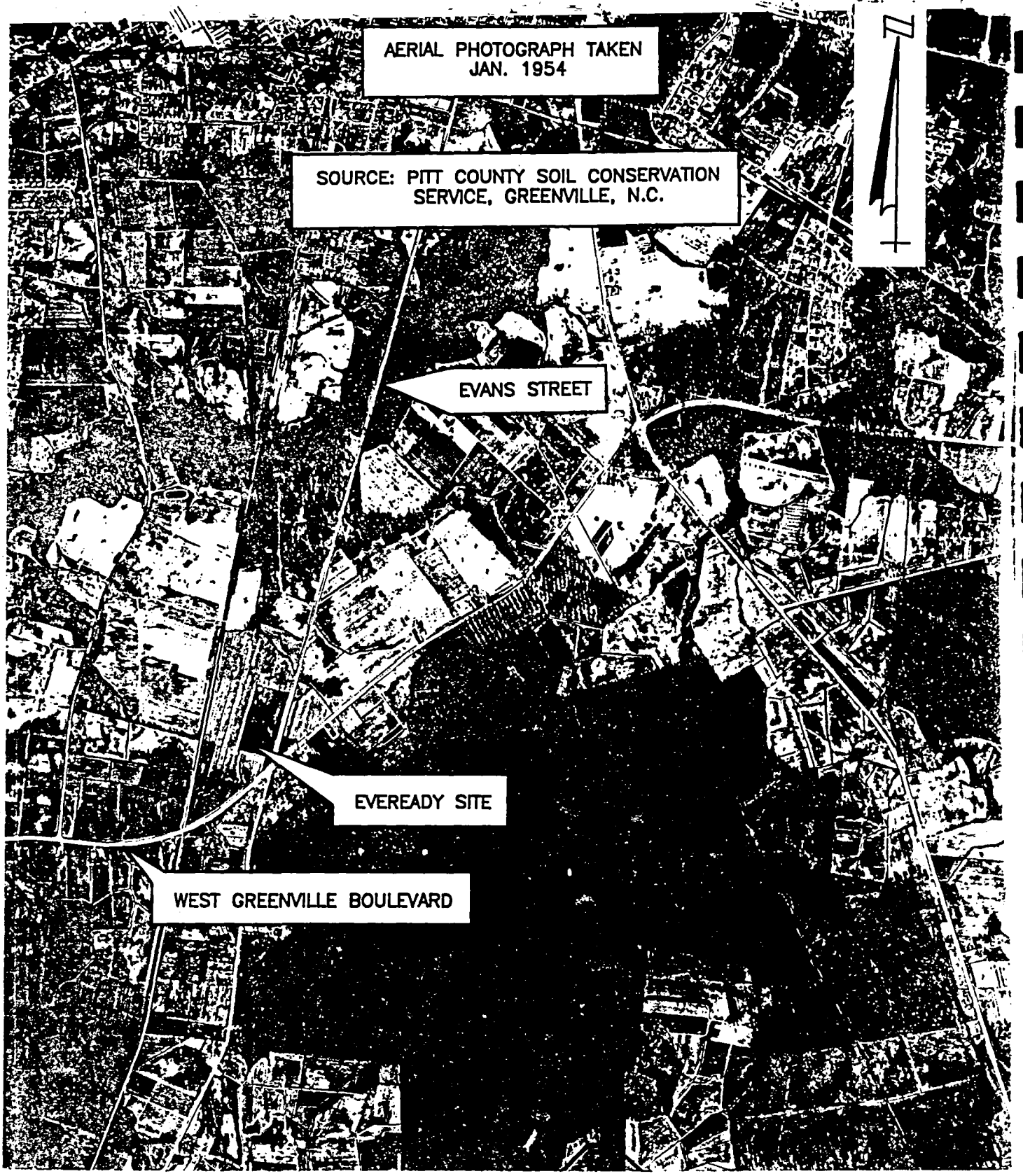
FIELD REMARKS

Appendix A

Aerial Photographs of Eveready Site



SCALE: NOT DETERMINED



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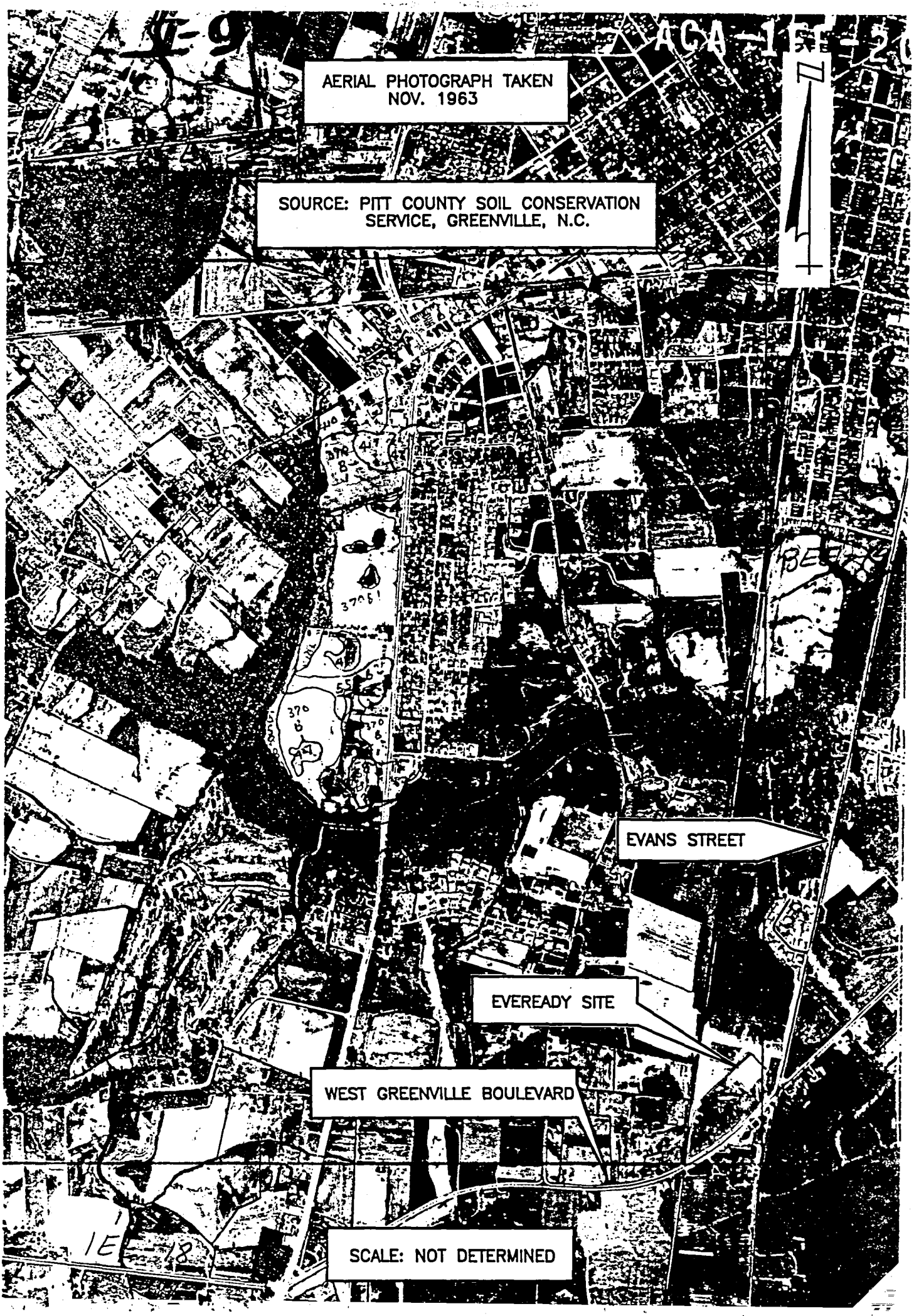
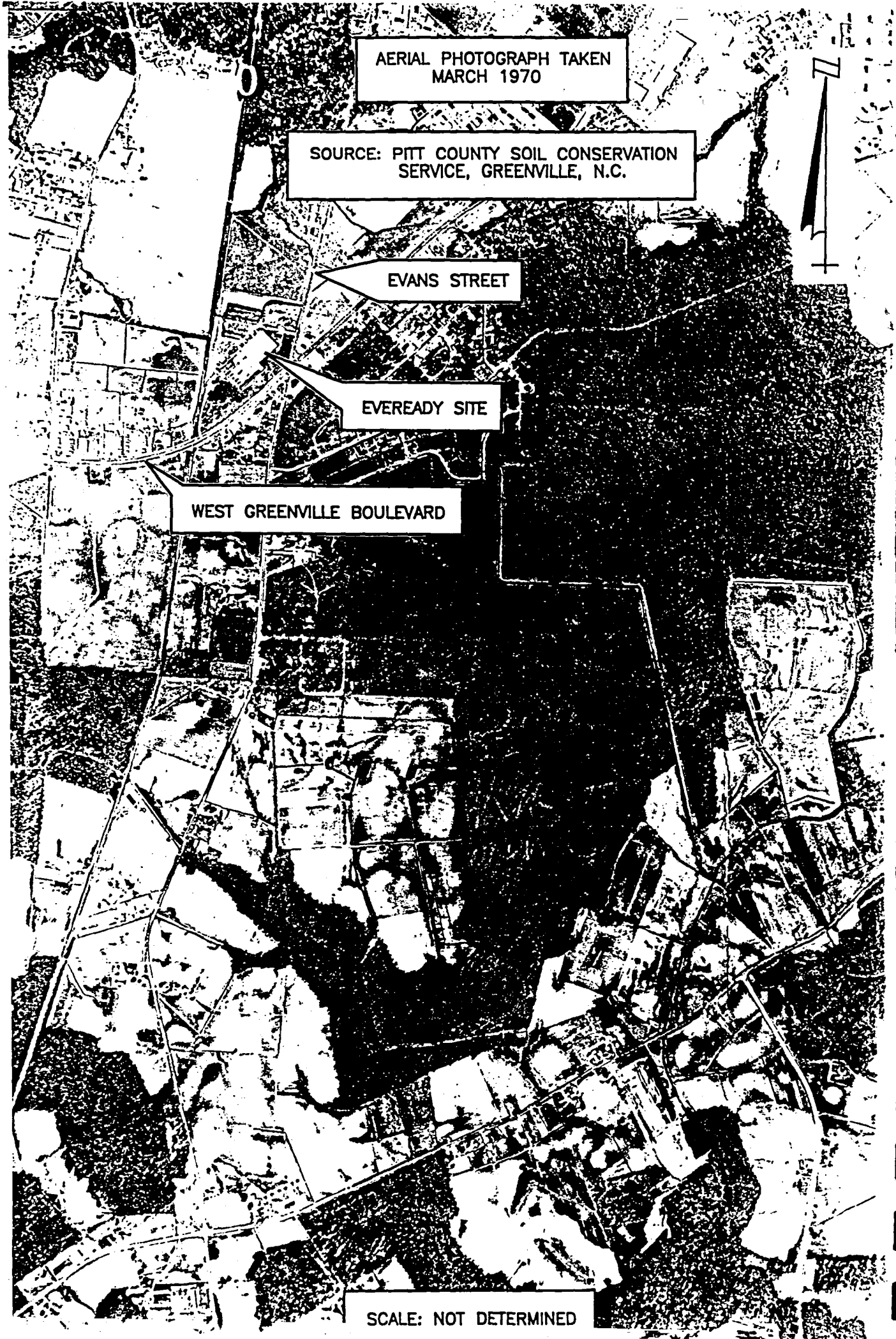

AERIAL PHOTOGRAPH TAKEN
NOV. 1963
SOURCE: PITT COUNTY SOIL CONSERVATION
SERVICE, GREENVILLE, N.C.
N
EVANS STREET
EVEREADY SITE
WEST GREENVILLE BOULEVARD
SCALE: NOT DETERMINED


AERIAL PHOTOGRAPH TAKEN
MARCH 1970
SOURCE: PITT COUNTY SOIL CONSERVATION
SERVICE, GREENVILLE, N.C.
EVANS STREET
EVEREADY SITE
WEST GREENVILLE BOULEVARD
SCALE: NOT DETERMINED

Appendix B

Correspondence Concerning Excavation of Concrete Pit

UNION CARBIDE

INTERNAL CORRESPONDENCE

RECEIVED

APR 10 1986

UNION CARBIDE CORPORATION

P.O. BOX 1547 GREENVILLE, N.C. 27834

BATTERY PRODUCTS DIVISION

To (Name) J. T. Houser

Division

Location Rocky River, Ohio

Area

Date April 7, 1986

Originating Dept. Plant Engineering

Area

Copy to E. D. Sawicki
J. M. Maxon
T. K. Cagle
H. R. Reece

Subject Pit Closure - Front Lawn
Greenville Plant

Dear Tom:

Please find attached a modified version of the UNDERGROUND TANK REMOVAL REPORT. I changed the report attached to your letter dated March 21, 1986 to suit the situation at Greenville since our structure was not strictly an underground tank.

Hope this meets with your approval and if you have questions please advise.

Very truly yours,

Russell W. Gibbs

Russell W. Gibbs

RWG/wjb

Attachment

32-149-2A

7A1-149-2B

INTERNAL CORRESPONDENCE

UNION CARBIDE CORPORATION P.O. BOX 16000, ROCKY RIVER, OHIO 44116
BATTERY PRODUCTS DIVISION

To (Name) Mr. R. W. Gibbs
Division Battery Products
Location Greenville

Date May 21, 1986
Originating Dept. General Engineering
Answering letter date

Copy to T. K. Cagle-Greenv.
R. V. Maier/A. M. Nash
J. M. Maxon-Greenv.
E. D. Sawicki

Subject Underground Tank (Pit) Removal Report - Greenville, N.C.

Dear Russ,

Attached is your subject report with Rocky River EA acknowledgement. Please put this form, pictures, and other information collected during the pit closure in the plant's LEI.

A copy of your closure report has been inserted in our Rocky River LEI for Greenville.

Thanks again for your help and cooperation.

Very truly yours,

J. T. Houser

J. T. Houser

JTH:ps
Attach.

BATTERY PRODUCTS DIVISION

BELOW GROUND LEVEL PIT CLOSURE REPORT

PLANT/LOCATION: Greenville, N. C. DATE: April 7, 1986

PIT BEING CLOSED: Abandoned pit used for housing spent chromic acid tank from Magnesium Can Manufacturing Operation. CLOSURE DATE: April 5, 1986

UNUSED SLUDGE/SPENT SOLUTION DISPOSAL:
BY None remaining. Does not apply.
DESTINATION Does not apply.

PIT INSPECTION:
VISUAL (INTERNAL - GENERAL CONDITION) No obvious deficiencies. No cracks in side walls that would suggest leaking to the surrounding soil in case of a spill from the fiberglass storage tank.

LEAKS NOTED—None apparent

ANY WATER IN PIT? - Yes--Approximately 4 feet deep or 7800 gallons. Since the top of the pit was covered by metal grating we are confident that the water was rainwater and water from the lawn sprinklers. Rainwater has been pumped from this pit to the lawn several times.

EXCAVATION INSPECTION:
VISUAL/SMELL (SIGNS OF LEAK) No obvious problems or unusual odors.

SOIL SAMPLE(S) TAKEN/LOCATION - No

GROUNDWATER IN BOTTOM OF PIT - Suspected rainwater and lawn sprinkler water only. IF SO, SAMPLE TAKEN? Yes, by Environment I Lab, Greenville, N.C.. Sample was tested for barium and chromium. Results as follows: barium - 0.277 mg/l, chromium 0.027 mg/l. Sample retained at plant.

IF PIT LEAK SUSPECTED:
SOIL SAMPLE SENT TO TECHNOLOGY? No soil samples taken. No leak suspected.

SOIL SAMPLE RETAINED AT PLANT? No soil samples taken.

OTHER COMMENTS: I was a part of the original Magnesium Can Manufacturing Project. I am not aware of any leaks from the fiberglass storage tank that was positioned in the pit. During tank removal in the mid '70s there was no evidence of spent chromic acid or any other residue on the pit bottom. Therefore, based on my knowledge of the system, extended observations and acceptable barium and chromium levels from water sampling it is my opinion that closure of this pit was accomplished in a responsible and professional manner.

DATE PIT CLOSED: April 5, 1986 by Roberts Welding Contractors. R. W. Gibbs, UCC, Coordinating.

SIGNED BY: R. W. Gibbs — PLANT REPRESENTATIVE; ENVIRONMENTAL COORDINATOR — TITLE; 4/7/86 — DATE

DIVISION ACKNOWLEDGEMENT: J. Thomas Houser — EA REPRESENTATIVE; 5/20/86 — DATE

Environment 1, Incorporated

BOX 7085
GREENVILLE, N.C. 27835-7085

114 OAKMONT DRIVE
PHONE (919) 756-6208

RECEIVED
APR 07 1986
Union Carbide Corp.
Consumer Products Div.
Greenville, N. C.

1089

UNION CARBIDE CORPORATION
MR. RUSSELL GIBBS
P.O. BOX 1547
GREENVILLE, NC 27834

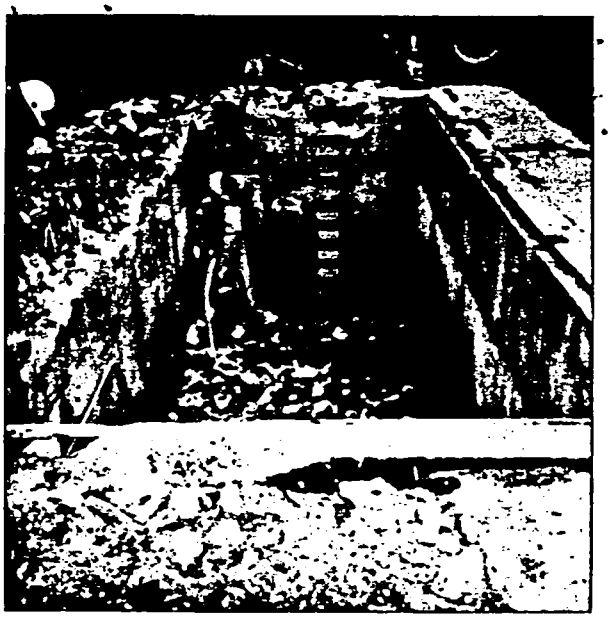
RESULTS OF ANALYSES FOR:
UNION CARBIDE CORPORATION

DATE: 03/26/86

CERTIFIED BY:

ABANDONED PIT ON FRONT CANAL

PARAMETERS	DISCHARGE				
BARIUM, ug/l	277				
TOTAL CHROMIUM, ug/l	27				



Appendix C

Pitt County Ground Water Incidents

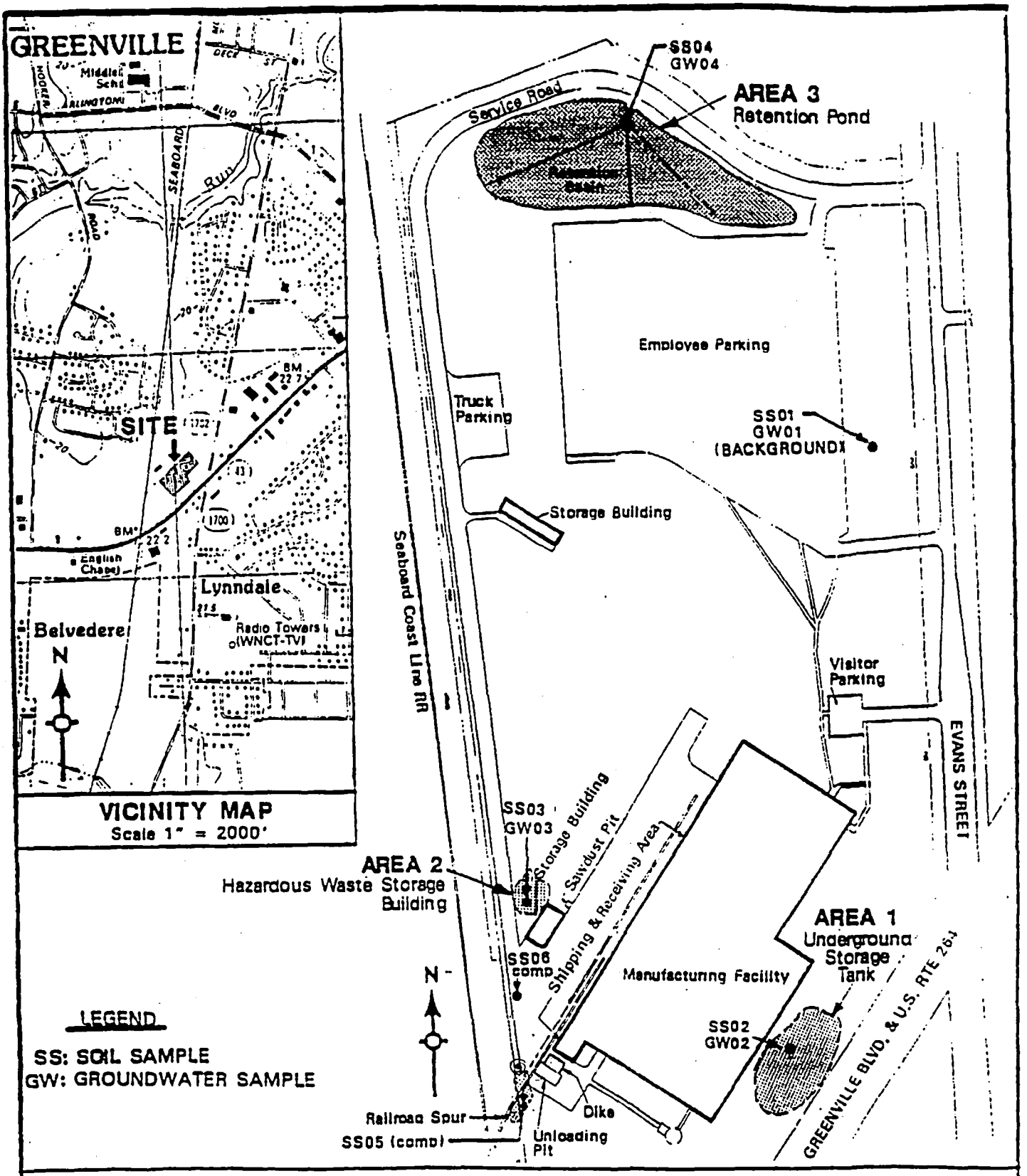
PRIMARY SOURCE OF POTENTIAL POLLUTION (Select one)		PRIMARY POLLUTANT TYPE (Select one)
1. Intentional dump	13. Well	1. Pesticide/herbicide
2. Pit, pond, lagoon	14. Dredge spoil	2. Radioactive waste
3. Leak-underground	15. Nonpoint source	3. Gasoline/diesel
4. Spray irrigation		4. Heating oil
5. Land application		5. Other petroleum prod.
6. Animal feedlot		6. Sewage/septage
7. Source unknown		7. Fertilizers
8. Septic tank		8. Sludge
9. Sewer line		9. Solid waste leachate
10. Stockpile		10. Metals
11. Landfill		11. Other inorganics
12. Spill-surface		12. Other organics

Incident Name	Incident Address	City	County	Source	Type
Brown's Minute Market	U.S. 117 & Fremont Ave.	Burgaw	Pende	3	3
Carver Boat Corp.	350 Carver Rd.	Rocky Point	Pende	12	12
Chemical Leaman Tank Lines	120 Cowpen Landing	Wilmington	Pende	2	12
Fast Fare #216	100 N. Walker St.	Burgaw	Pende	3	3
Jim MaReady Residence	Rt 2 Box 2095	Burgaw	Pende	3	3
Schoonmakers	Rt. 1	Watha	Pende	8	11
Woodtreaters, Inc.	Hwy 117	Rocky Point	Pende	12	10
Amoco Food Shop	126 N. Madison Blvd.	Roxboro	Perso	3	3
Clayton's Quickstop	Rt 5, Box 440	Roxboro	Perso	3	3
County Line Grill	Hwy 49 N.	Roxboro	Perso	3	3
Eaton Corporation	Rt 501 S.	Roxboro	Perso	7	12
Eva's Grocery	NC 57 North	Roxboro	Perso	7	3
Fiberboard Inc.	1000 Arrowhead Dr.	Roxboro	Perso	12	3
GMH Electronics Corp.	N.C. 49N	Roxboro	Perso	3	3
James R. Morris Residence Morristown	Rt. 3 Box 189	Roxboro	Perso	7	5
Little Huff-Roxboro Maint.	1037 N. Main St.	Roxboro	Perso	3	3
M. S. Solomon Property	Rt. 4 Box 331 J 3	Roxboro	Perso	1	5
Mountain Rd. Mini Mart	Rt 6, Box 693	Roxboro	Perso	3	3
Mt. Harmony Grocery	SR 1721	Roxboro	Perso	3	3
Oscar Holloway Residence	Hicks Heights	Roxboro	Perso	12	4
Otha Day Residence	PO Box 325-K	Roxboro	Perso	7	3
Person Co. Sch Bus Garage	420 Leasburg Rd.	Roxboro	Perso	3	3
Piedmont Elec. Membership Corp	US 1581	Roxboro	Perso	3	3
Roxboro Concrete Service, Inc.	121 Burch Ave.	Roxboro	Perso	3	3
Thomas Adcock Residence	1340 Oxford Rd.	Roxboro	Perso	12	3
AAA Ready Mix Concrete	SR 1120	Ayden	Pitt	12	5
Ann-Carr, Inc.	210 W. Greenville Blvd.	Greenville	Pitt	3	3
Blount Petroleum Corp.	1110 N. Memorial Dr.	Greenville	Pitt	3	3
Buck James Store	Rt. 1 Box 438	Macclesfield	Pitt	3	3
Burroughs Wellcome	P. O. Box 1887	Greenville	Pitt	3	3
C. B. Service Center	309 West Queen St.	Grifton	Pitt	3	3
Carolina Telephone Co.	401 West 5th St.	Greenville	Pitt	3	4
Clara Jones Grocery	Rt 1 Box 136	Greenville	Pitt	3	3
Colonial Gulf Station	2704 E. 10 St.	Greenville	Pitt	3	3
Corbitt Residence	608 Oak St.	Greenville	Pitt	3	4
Cox Armature-Patel Conv. Store	Hwy 264 & Evans St.	Greenville	Pitt	3	3
Curleys Exxon-Carawan Oil Co.	2800 Memorial Dr.	Greenville	Pitt	3	3
Daughtridge Oil Co.	500 S. Memorail Dr.	Greenville	Pitt	3	3
EIW Equipment, Inc. Hertz Corp.	Hwy 264	Greenville	Pitt	3	3
Electrical Utilities	309 Anderson Ave.	Farmville	Pitt	3	12
Elizabeth Buchanan Property	Memorial Dr.	Greenville	Pitt	3	3
Fast Fare #282	1919 S. Evans St.	Greenville	Pitt	3	3
Fast Fare-Greenville	2010 E. 10th St.	Greenville	Pitt	3	3
Grady White Boats	SR 1725	Ayden	Pitt	1	12
Haddock's Store	SR 1725 & SR 1700	Ayden	Pitt	12	3
Import Service	2204 Dickinson Ave.	Greenville	Pitt	3	3
Junior Food Mart	Hwy 102	Ayden	Pitt	3	3
Kash & Karry	SR 1760 & NC 33	Grimesland	Pitt	3	3
Ken Carr Property	212 Churchill St.	Greenville	Pitt	12	4
N.C. DOT-Greenville Facility	104 W. Belvoir Hwy	Greenville	Pitt	3	3
NC Equipment Co.	Memiorial Dr.	Greenville	Pitt	3	3
Niagra Pesticide Site	Old St. Hwy 11 North	Ayden	Pitt	1	1

Incident Name	Incident Address	City	County	Source	Type
Norman Gardner-Corbett Farm	Hwy 43 N	Falkland	Pitt	12	3
Old Greenville Water Plant	PO Box 1847	Greenville	Pitt	3	11
Pirates Pit Stop-Green. Oil Co	2910 E. 10th St.	Greenville	Pitt	3	3
Pitt Co. Schools Maint. Annex	Contentnea St.	Greenville	Pitt	12	4
Pitt County Schools-Maint.Dept	P. O. Box 1296	Winterville	Pitt	1	12
Ray's Self Service	SR 1200 & Hwy 121	Farmville	Pitt	3	3
Scotchman Store #93	Hwy 33 E.	Greenville	Pitt	3	3
Servco	502 W. Greenville Blvd.	Greenville	Pitt	3	3
Shady Knoll Trailer Park	DR 1530	Greenville	Pitt	3	3
Speight Property	Memorial Blvd.	Greenville	Pitt	3	3
Stallings Oil Co. Property	1531 E. Greenville Blvd.	Greenville	Pitt	3	3
Sutton Serv.Cntr.-Azalea MHP	750 Greenville Blvd.	Greenville	Pitt	3	3
Sutton's Service Center Buck's Amoco	10th St & Evans St.	Greenville	Pitt	3	3
Town Creek Incident	1st & Reade St.	Greenville	Pitt	7	3
Triton, Inc-Happy Store #348	612 W. Greenville Blvd.	Greenville	Pitt	3	3
USA Oil Retail Station	703 Greenville Blvd.	Greenville	Pitt	3	3
Watson Electric Co.	3121 Bismark St.	Greenville	Pitt	3	3
Wooten-BB&T	Pitt & W. 3rd St.	Greenville	Pitt	3	4
Alltel Carolina Inc.	Hwy 108	Columbus	Polk	3	3
Roy Eargle Property	Box E. Main St.	Saluda	Polk	3	3
Sandy Plains Texaco	Rt 1	Tryon	Polk	3	3
Arthur Privette Residence	Rt. 1 Box 323	Ramseur	Rando	3	3
Asheboro Hosiery Mills, Inc.	139 S. Church St.	Asheboro	Rando	3	5
Bill's Exxon	Hwy 64 E.	Asheboro	Rando	3	3
Brown Brothers - Privette	Rt 1 Box 323	Ramseur	Rando	13	5
Burlington Industries, Inc.	1259 Foushee Rd.	Ramseur	Rando	12	5
Eveready Battery Co. Union Carbide	Old Albemarle Rd.	Asheboro	Rando	3	12
Hancock Country Ham	Rt 1 Box 285	Franklinville	Rando	3	3
Jackson Creek Grocery & Serv.	SR 1311 & 1314	Jackson Creek	Rando	3	3
Midway Citgo	Hwy 311	Sophia	Rando	3	3
Paul Barker Residence	Rt. 7 Box 2	Asheboro	Rando	3	3
Quik Chek	1123 Albemarl Rd.	Asheboro	Rando	3	3
Quik Chek	Interc.Hwy 64 & Hwy 49	Ramseur	Rando	3	3
Rampon Products Facility	718 Industrial Park Ave.	Asheboro	Rando	1	12
Randolph EMC	P. O. Box 40	Asheboro	Rando	3	3
Routh's Gulf	Worthville Rd.	Randleman	Rando	3	3
Seagrove Quik Chek	220 West Spring	Seagrove	Rando	3	3
Arlo's Texaco	Downtown	Hamlet	Richm	3	3
Bee Line 76 Station	Biltmore Drive	Rockingham	Richm	3	3
CSX-Percolation Ponds	500 Water St.	Hamlet	Richm	2	5
Carolina Standard Co.	Airport Rd.	Rockingham	Richm	3	3
East Hamlet Grocery	701 East Hamlet Ave.	Hamlet	Richm	3	3
Fast Fare	302 Hamlet Ave.	Hamlet	Richm	3	3
Fast Way Food Mart	217 W. Broad Ave.	Rockingham	Richm	3	3
Margaret T. Smith Residence	633 Mill Rd.	Rockingham	Richm	3	3
McRae Industries	Hwy 109 & SR 1168	Mount Gilead	Richm	3	3
Morrison Youth Institute	P. o. Box 169	Hoffman	Richm	3	4
Morrow's Westside Texaco	Hwy 74	Rockingham	Richm	3	3
Old Bulldog Trucking		Rockingham	Richm	12	3
Richmond Co. School	Church St.	Ellerbe	Richm	3	3
Robinson's Texaco	713 West Hamlet Ave.	Hamlet	Richm	3	3
Texaco Sandwich Hut	2005 Fayetteville Rd.	Rockingham	Richm	3	3

Appendix D

EPA November 1990 Phase II Soil and Soil and Ground Water Sampling Data



UNION CARBIDE CORPORATION NCD003184249

Scale in feet
0' 120' 240'

FIGURE 2

ENGINEERS • ARCHITECTS • PLANNERS • SCIENTISTS • SURVEYORS • PHOTOGRAMMETRISTS
GREENHORNE & O'MARA, INC.
9001 EDMONSTON ROAD, GREENBELT, MARYLAND 20770
(301) 982-2800

SAMPLE LOCATION MAP

TABLE 1
TOTAL DEPTH OF BORINGS
EVEREADY BATTERY COMPANY, INC.
GREENVILLE, NORTH CAROLINA
FEBRUARY 1991

BORING NUMBER	TOTAL DEPTH BELOW GROUND LEVEL (FEET)
GW01	15
GW02	14
GW03	13
GW04	10

TABLE 2
EVEREADY BATTERY COMPANY INC.
SOIL SAMPLING ANALYTICAL RESULTS
TAL METALS AND CYANIDE
FEBRUARY 1991

SAMPLE ID:	UCB-SS01	UCB-SS02	UCB-SS03	UCB-SS04	UCB-SS05	UCB-SS06
LAB NUMBER:	379678	379686	379688	379689	379691	379692
CONSTITUENT						
ALUMINUM	8200	6120	11800	2700	3670	3250
ANTIMONY						
ARSENIC	1.9B	1.3B	1.1B		5.4	1.1B
BARIUM	7.7B	13.4B	12.8B	2.5B	65.4	21.7B
BERYLLIUM		.42B			.24B	
CADMIUM						
CALCIUM	117B	723B	216B	31.5B	2610	2210
CHROMIUM	11	6.8	11.9	1.9B	260	6.2
COBALT						
COPPER	5.5B	1.5B	1.9B		5.5	3.5B
IRON	10700	6430	9980	420	4170	2820
LEAD	5.4	16.2	7	3.1	12.3	14.2
MAGNESIUM	132B	215B	192B	27B	152B	806B
MANGANESE	5.2	17.9	5.9	1.3B	62.8	117
MERCURY						
NICKEL	1.4B		1.9B		1.5B	
POTASSIUM	222B	226B	124B	48.6B	120B	82.8B
SELENIUM						
SILVER						
SODIUM	18.4B	44.6B	48.9	23.1B	41.5B	31.1B
THALLIUM			.42B			
VANADIUM	16.9	10.5B	19.5	2.1B	8.7B	5.6B
ZINC	3.5B	35.4	5	2.8B	3090	223
CYANIDE		6.4	3.4			9

NOTES:

RESULTS REPORTED IN MILLIGRAMS PER KILOGRAM (mg/kg or parts per million)

B = DETECTED IN BLANK

BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR DETECTION LIMITS.

ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK, NORTH CAROLINA.

TABLE 3
EVEREADY BATTERY COMPANY INC.
SOIL SAMPLING ANALYTICAL RESULTS
TCL SEMI-VOLATILE COMPOUNDS
FEBRUARY 1991

SAMPLE ID:	UCB-SS01	UCB-SS01MS	UCB-SS01MSD	UCB-SS02	UCB-SS03	UCB-SS04	UCB-SS05	UCB-SS06
LAB NUMBER:	379661	379665	379666	379670	379671	379672	379674	379676
CONSTITUENT								
PHENOL								
BIS(2-CHLOROETHYL)ETHER								
2-CHLOROPHENOL								
1,3-DICHLOROBENZENE								
1,4-DICHLOROBENZENE								
BENZYL ALCOHOL								
1,2-DICHLOROBENZENE								
2-METHYLPHENOL								
BIS(2-CHLOROISOPROPYL)ETHER								
4-METHYLPHENOL								
N-NITROSO-DI-N-PROPYLAMINE								
HEXACHLOROETHANE								
NITROBENZENE								
ISOPHORONE								
2-NITROPHENOL								
2,4-DIMETHYLPHENOL								
BENZOIC ACID								53J
BIS(2-CHLOROETHOXY)METHANE								
2,4-DICHLOROPHENOL								
1,2,4-TRICHLOROBENZENE								
NAPHTHALENE								
4-CHLOROANILINE								
HEXACHLOROBUTADIENE								
4-CHLORO-3-METHYLPHENOL								
2-METHYLNAPHTHALENE								
HEXACHLOROCYCLOPENTADIENE								
2,4,6-TRICHLOROPHENOL								
2,4,5-TRICHLOROPHENOL								
2-CHLORONAPHTHALENE								
2-NITROANILINE								
DIMETHYLPHTHALATE								

NOTES:

RESULTS REPORTED IN MICROGRAMS PER KILOGRAM (ug/kg or parts per billion)

J = PRESUMPTIVE ESTIMATE OF COMPOUND ESTIMATED AT A VALUES LESS THAN DETECTION LIMIT

X = OTHER FOOTNOTES MAY BE REQUIRED TO PROPERLY DEFINE THE RESULTS - SEE DATA REPORTING QUALIFIERS

BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR DETECTION LIMITS.

ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK, NORTH CAROLINA.

TABLE 3 (con't)
EVEREADY BATTERY COMPANY INC.
SOIL SAMPLING ANALYTICAL RESULTS
TCL SEMI-VOLATILE COMPOUNDS
FEBRUARY 1991

SAMPLE ID:	UCB-SS01	UCB-SS01MS	UCB-SS01MSD	UCB-SS02	UCB-SS03	UCB-SS04	UCB-SS05	UCB-SSO6
LAB NUMBER:	379661	379665	379666	379670	379671	379672	379674	379676
CONSTITUENT								
ACENAPHTHYLENE								
2,6-DINITROTOLUENE								
3-NITROANILINE								
ACENAPHTHENE								
2,4-DINITROPHENOL								
4-NITROPHENOL								
DIBENZOFURAN								
2,4-DINITROTOLUENE								
DIETHYLPHTHALATE								
4-CHLOROPHENYL-PHENYLETHER								
FLUORENE								
4-NITROANILINE								
4,6-DINITRO-2-METHYLPHENOL								
N-NITROSODIPHENYLAMINE (1)								
4-BROMOPHENYL-PHENYLETHER								
HEXACHLOROBENZENE								
PENTACHLOROPHENOL								
PHENANTHRENE				82J			94J	330J
ANTHRACENE								48J
DI-N-BUTYLPHTHALATE								
FLUORANTHENE				100J			250J	830
PYRENE				100J			180J	660
BUTYLBENZYLPHTHALATE								130J
3,3'-DICHLOROBENZIDINE								
BENZO(A)ANTHRACENE				40J			94J	360
CHRYSENE				47J			150J	500
BIS(2-ETHYLNHEXYL)PHTHALATE	45J			230J	100J	210J	110J	45J
DI-N-OCTYLPHTHALATE								
BENZO(B)FLUORANTHENE				59J			220JX	950X
BENZO(K)FLUORANTHENE				59J			220JX	950X
BENZO(A)PYRENE							78J	400
INDENO(1,2,3-CD)PYRENE							60J	270J
DIBENZ(A,H)ANTHRACENE								
BENZO(G,H,I)PERYLENE							69J	300J

NOTES:

RESULTS REPORTED IN MICROGRAMS PER KILOGRAM (ug/kg or parts per billion)

J = PRESUMPTIVE ESTIMATE OF COMPOUND ESTIMATED AT A VALUES LESS THAN DETECTION LIMIT

X = OTHER FOOTNOTES MAY BE REQUIRED TO PROPERLY DEFINE THE RESULTS – SEE DATA REPORTING QUALIFIERS

BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR DETECTION LIMITS.

ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK, NORTH CAROLINA.

TABLE 4
EVEREADY BATTERY COMPANY INC.
SOIL SAMPLING ANALYTICAL RESULTS
TCL VOLATILE COMPOUNDS
FEBRUARY 1991

SAMPLE ID:	UCB-SS01	UCB-SS01MS	UCB-SS01MSD	UCB-SS02	UCB-SS03	UCB-SS04	UCB-SS05	UCB-SS06
LAB NUMBER:	379661	379662	379663	379670	379671	379672	379674	379676
CONSTITUENT								
CHLOROMETHANE								
BROMOMETHANE								
VINYL CHLORIDE								
CHLOROETHANE								
METHYLENE CHLORIDE	65B	35B	35B	21B	21B	20B	21B	18B
ACETONE	23B	28B	29B	15B		14B		16B
CARBON DISULFIDE								
1,1-DICHLOROETHENE								
1,1-DICHLOROETHANE								
1,2-DICHLOROETHENE(TOTAL)								
CHLOROFORM								
1,2-DICHLOROETHANE								
2-BUTANONE								
1,1,1-TRICHLOROETHANE								
CARBON TETRACHLORIDE								
VINYL ACETATE								
BROMODICHLORMETHANE								
1,2 DICHLOROPROPANE								
CIS-1,3-DICHLOROPROPENE								
TRICHLOROETHENE								
DIBROMOCHLOROMETHANE								
1,1,2-TRICHLOROETHANE								
BENZENE								
TRANS-1,3-DICHLOROPROPENE								
BROMOFORM								
4-METHYL-2-PENTANONE								
2-HEXANONE								
TETRACHLOROETHENE								
1,1,2,2-TETRACHLOROETHANE								
TOLUENE								
CHLOROBENZENE								
ETHYLBENZENE								
STYRENE								
XYLENE (TOTAL)								

NOTES:
RESULTS REPORTED IN MICROGRAMS PER KILOGRAM (ug/kg or parts per billion)
B = DETECTED IN BLANK
RESULTS REPORTED ARE FOR DETECTED COMPOUNDS. SEE LAB REPORTS FOR OTHER NON-DETECTED COMPOUNDS AND DETECTION LIMITS
ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK
NORTH CAROLINA.

TABLE 5
EVEREADY BATTERY COMPANY INC.
GROUNDWATER ANALYTICAL RESULTS
TAL METALS AND CYANIDE
FEBRUARY 1991

SAMPLE ID:	UCB-GW01	UCB-GW02	UCB-GW03	UCB-GW04
LAB NUMBER:	379636	379644	379645	379646
CONSTITUENT				
ALUMINUM	381000	38800	24200	162000
ANTIMONY				
ARSENIC	2B			
BARIUM	410	128B	382	85.4B
BERYLLIUM	3.5B	2.4B	2.4B	1.6B
CADMIUM	13.9			4B
CALCIUM	4510B	50900	4000B	2970B
CHROMIUM	243	51.5	264	180
COBALT	16B		11.2B	
COPPER	44.1	14.8B	47.6	32.1
IRON	209000	34400	162000	6670
LEAD	112	32.2	77	36.9
MAGNESIUM	6670	6220	6890	1610B
MANGANESE	173	552	156	42.1
MERCURY				
NICKEL	65.7	40.9	63.2	50.3
POTASSIUM	7760	8270	6610	3340B
SELENIUM				
SILVER				
SODIUM	5470	24600	10500	2910B
THALLIUM	2.2B			
VANADIUM	238	63.4	364	41B
ZINC	160	273	183	88.5
CYANIDE				

NOTES:
RESULTS REPORTED IN MICROGRAMS PER LITER (ug/l or parts per billion)
B = DETECTED IN BLANK
BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR
DETECTION LIMITS.
ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC..
RESEARCH TRIANGLE PARK. NORTH CAROLINA.

TABLE 6
EVEREADY BATTERY COMPANY INC.
GROUNDWATER ANALYTICAL RESULTS
TCL SEMI-VOLATILE COMPOUNDS
FEBRUARY 1991

SAMPLE ID:	UCB-GW01	UCB-GW02	UCB-GW03	UCB-GW04	BS-1	BS-2
LAB NUMBER:	379625	379627	379631	379635	379632	379633
CONSTITUENT						
PHENOL						
BIS(2-CHLOROETHYL)ETHER						
2-CHLOROPHENOL						
1,3-DICHLOROBENZENE						
1,4-DICHLOROBENZENE						
BENZYL ALCOHOL						
1,2-DICHLOROBENZENE						
2-METHYLPHENOL						
BIS(2-CHLOROISOPROPYL)ETHER						
4-METHYLPHENOL						
N-NITROSO-DI-N-PROPYLAMINE						
HEXACHLOROETHANE						
NITROBENZENE						
ISOPHORONE						
2-NITROPHENOL						
2,4-DIMETHYLPHENOL						
BENZOIC ACID						
BIS(2-CHLOROETHOXY)METHANE						
2,4-DICHLOROPHENOL						
1,2,4-TRICHLOROBENZENE						
NAPHTHALENE						
4-CHLOROANILINE						
HEXACHLOROBUTADIENE						
4-CHLORO-3-METHYLPHENOL						
2-METHYLNAPHTHALENE						
HEXACHLOROCYCLOPENTADIENE						
2,4,6-TRICHLOROPHENOL						
2,4,5-TRICHLOROPHENOL						
2-CHLORONAPHTHALENE						
2-NITROANILINE						
DIMETHYLPHTHALATE						
ACENAPHTHYLENE						
2,6-DINITROTOLUENE						
3-NITROANILINE						

NOTES:

RESULTS REPORTED IN MICROGRAMS PER LITER (ug/l or parts per billion)

B = DETECTED IN BLANK

J = PRESUMPTIVE ESTIMATE OF COMPOUND ESTIMATED AT VALUE LESS THAN DETECTION LIMIT

X = OTHER FOOTNOTES MAY BE REQUIRED TO PROPERLY DEFINE THE RESULTS - SEE DATA REPORTING QUALIFERS

BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR DETECTION LIMITS.

ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK, NORTH CAROLINA.

TABLE 6(cont.)
EVEREADY BATTERY COMPANY INC.
GROUNDWATER ANALYTICAL RESULTS
TCL SEMI-VOLATILE COMPOUNDS
FEBRUARY 1991

SAMPLE ID:	UCB-GW01	UCB-GW02	UCB-GW03	UCB-GW04	BS-1	BS-2
LAB NUMBER:	379625	379627	379631	379635	379632	379633
CONSTITUENT						
ACENAPHTHENE						
2,4-DINITROPHENOL						
4-NITROPHENOL						
DIBENZOFURAN						
2,4-DINITROTOLUENE						
DIETHYLPHTHALATE						
4-CHLOROPHENYL-PHENYLETHER						
FLUORENE						
4-NITROANILINE						
4,6-DINITRO-2-METHYLPHENOL						
N-NITROSODIPHENYLAMINE (1)						
4-BROMOPHENYL-PHENYLETHER						
HEXACHLOROBENZENE						
PENTACHLOROPHENOL						
PHENANTHRENE						
ANTHRACENE						
DI-N-BUTYLPHTHALATE						
FLUORANTHENE						
PYRENE						
BUTYLBENZYLPHTHALATE						
3,3'-DICHLOROBENZIDINE						
BENZO(A)ANTHRACENE						
CHRYSENE						
BIS(2-ETHYLHEXYL)PHTHALATE	3J	24	22	13		
DI-N-OCTYLPHTHALATE		5J				
BENZO(B)FLUORANTHENE						
BENZO(K)FLUORANTHENE						
BENZO(A)PYRENE						
INDENO(1,2,3-CD)PYRENE						
DIBENZ(A,H)ANTHRACENE						
BENZO(G,H,I)PERYLENE						

NOTES:

RESULTS REPORTED IN MICROGRAMS PER LITER (ug/l or parts per billion)

B = DETECTED IN BLANK

J = PRESUMPTIVE ESTIMATE OF COMPOUND ESTIMATED AT VALUE LESS THAN DETECTION LIMIT

X = OTHER FOOTNOTES MAY BE REQUIRED TO PROPERLY DEFINE THE RESULTS - SEE DATA REPORTING QUALIFERS

BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR DETECTION LIMITS.

ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK, NORTH CAROLINA.

TABLE 7
EVEREADY BATTERY COMPANY INC.
GROUNDWATER ANALYTICAL RESULTS
TCL VOLATILE COMPOUNDS
FEBRUARY 1991

SAMPLE ID:	UCB-GW01	UCB-GW02	UCB-GW02MS	UCB-GW02MSD	UCB-GW03	UCB-GW04
LAB NUMBER:	379625	379627	379628	379629	379631	379635
CONSTITUENT						
CHLOROMETHANE						
BROMOMETHANE						
VINYL CHLORIDE						
CHLOROETHANE						
METHYLENE CHLORIDE	21B	3BJ	7B	12B	54B	1BJ
ACETONE						
CARBON DISULFIDE						
1,1-DICHLOROETHENE						
1,1-DICHLOROETHANE						
1,2-DICHLOROETHENE(TOTAL)					42	
CHLOROFORM						
1,2-DICHLOROETHANE						
2-BUTANONE						
1,1,1-TRICHLOROETHANE						
CARBON TETRACHLORIDE						
VINYL ACETATE						
BROMODICHLORMETHANE						
1,2 DICHLOROPROPANE						
CIS-1,3-DICHLOROPROPENE						
TRICHLOROETHENE					44	
DIBROMOCHLOROMETHANE						
1,1,2-TRICHLOROETHANE						
BENZENE	5					
TRANS-1,3-DICHLOROPROPENE						
BROMOFORM						
4-METHYL-2-PENTANONE						
2-HEXANONE						
TETRACHLOROETHENE					930	
1,1,2,2-TETRACHLOROETHANE						
TOLUENE		1J				
CHLOROBENZENE						
ETHYLBENZENE	15					
STYRENE	3J					
XYLENE (TOTAL)						

NOTES:

RESULTS REPORTED IN MICROGRAMS PER LITER (ug/l or parts per billion)
UG/L = MICROGRAMS PER LITER
B = DETECTED IN BLANK
J = PRESUMPTIVE ESTIMATE OF COMPOUND ESTIMATED AT VALUE LESS THAN DETECTION LIMIT
BLANK SPACE INDICATES NOT DETECTED. SEE LAB REPORTS FOR
DETECTION LIMITS.
ANALYSIS PREFORMED BY COMPUCHEM LABORATORIES INC., RESEARCH TRIANGLE PARK
NORTH CAROLINA.

Laboratory Results of Ground Water Analyses
City of Greenville Supply Well #4
Collected by DEHNR on November 9, 1990

STATE LABORATORY OF PUBLIC HEALTH
DIVISION OF HEALTH SERVICES, N.C. DEPARTMENT OF HUMAN RESOURCES
P.O. BOX 28047 - 306 N. WILMINGTON, ST., RALEIGH, N.C. 27611

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES	LAB NO	907195					
	FIELD #	12332					
COMPOUND	TYPE	(1)	( )	( )	( )	( )	( )
	UNITS	µg/l ~~µg/kg~~	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
N-nitrosodimethylamine	10/330	U					
bis(2-chloroethyl)ether	↓	↓					
-chlorophenol							
phenol							
1,3-dichlorobenzene							
,4-dichlorobenzene							
,2-dichlorobenzene							
bis(2-chloroisopropyl)ether							
exachloroethane							
-nitroso-di-n-propylamine							
nitrobenzene							
isophorone							
-nitrophenol							
2,4-dimethylphenol							
bis(2-chloroethoxy)methane							
,4-dichlorophenol							
,2,4-trichlorobenzene							
naphthalene							
exachlorobutadiene							
-chloro-m-cresol							
hexachlorocyclopentadiene							
,4,6-trichlorophenol							
-chloronaphthalene							
acenaphthylene							
dimethyl phthalate							
,6-dinitrotoluene							
acenaphthene	↓						
2,4-dinitrophenol	50/1650						
,4-dinitrotoluene	10/330						
-nitrophenol	50/1650						
fluorene	10/330						
-chlorophenylphenylether	↓						
iethyl phthalate	↓						
4,6-dinitro-o-cresol	50/1650						
diphenylamine	↓						
zobenzene	↓						
4-bromophenylphenylether	10/330						
hexachlorobenzene	10/330						
entachlorophenol	50/1650						
henanthrene	10/330						
anthracene	↓						
ibutyl phthalate	↓						
luoranthene	↓	↓					

MDL
H_2O/SOIL

RECEIVED
NOV 30 1990
SUPERFUND SECTION

- Estimated value.
- Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. MDL
A - Not analyzed.
/ - Tentative identification.
/ - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
HS 3068-0 (4/86 Laboratory)

STATE LABORATORY OF PUBLIC HEALTH
DIVISION OF HEALTH SERVICES, N.C. DEPARTMENT OF HUMAN RESOURCES
P.O. BOX 28047 - 306 N. WILMINGTON, ST., RALEIGH, N.C. 27611

ORGANIC CHEMICAL ANALYSIS

BASE/NEUTRAL AND ACID EXTRACTABLES	LAB NO	907195					
	FIELD #	12332					
COMPOUND	TYPE	(/)	( )	( )	( )	( )	( )
	UNITS	µg/l ~~µg/kg~~	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
pyrene	10/330	U					
benzidine	50/1650						
butyl benzyl phthalate	10/330						
benz(a)anthracene							
chrysene							
3,3-dichlorobenzidine	50/1650						
bis(2-ethylhexyl)phthalate	10/330						
di-n-octyl phthalate	10/330						
benzo(b)fluoranthene	50/1650						
benzo(k)fluoranthene							
benzo(a)pyrene							
indeno(1,2,3-cd)pyrene							
dibenzo(a,h)anthracene							
benzo(g,h,i)perylene							
aniline	50/1650	U					
benzoic acid							
benzyl alcohol							
4-chloroaniline							
dibenzofuran	10/330						
2-methylnaphthalene							
2-methylphenol							
4-methylphenol							
2-nitroaniline	50/1650						
3-nitroaniline							
4-nitroaniline							
2,4,5-trichlorophenol							

RECEIVED
NOV 30 1990
SUPERFUND SECTION

MDL
H_2O/501L

J - Estimated value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit. MDL
NA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-0 (4/86 Laboratory)

STATE LABORATORY OF PUBLIC HEALTH
DIVISION OF HEALTH SERVICES, N.C. DEPARTMENT OF HUMAN RESOURCES
P.O. BOX 28047 - 306 N. WILMINGTON, ST., RALEIGH, N.C. 27611

ORGANIC CHEMICAL ANALYSIS

PURGEABLE COMPOUNDS	LAB NO	907194	907196				
	FIELD #	12331	12335				
COMPOUND	TYPE	(1)	(4)	( )	( )	( )	( )
	UNITS	(µg/l) µg/kg	(µg/l) µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg	µg/l µg/kg
chloromethane	10 ppb	u	u				
bromomethane	10						
dichlorodifluoromethane	5						
vinyl chloride	10						
chloroethane	10						
methylene chloride	5						
trichlorofluoromethane							
ethene, 1,1-dichloro							
ethane, 1,1-dichloro-							
1,2-trans-dichloroethene							
chloroform							
ethane, 1,2-dichloro-							
ethane, 1,1,1-trichloro-							
carbontetrachloride							
bromodichloromethane							
propane, 1,2-dichloro-							
1,3-trans-dichloropropene							
trichloroethylene							
chlorodibromomethane							
benzene							
ethane, 1,1,2-trichloro-							
1,3-cis-dichloropropene							
2-chloroethyl vinyl ether	10						
bromoform	10						
ethane, 1,1,2,2-tetrachloro-	5						
ethene, tetrachloro-							
toluene							
chlorobenzene							
ethylbenzene							
acetone	10	u	u				
2-butanone	10						
carbondisulfide	5						
2-hexanone	10						
4-methyl-2-pentanone	10						
styrene	5						
vinyl acetate	10						
xylenes (total)	5						
	MDL						

RECEIVED
NOV 30 1990
SUPERFUND SECTION

J - Estimated value.
K - Actual value is known to be less than value given.
L - Actual value is known to be greater than value given.
U - Material was analyzed for but not detected. The number is the Minimum Detection Limit.
NA - Not analyzed.
1/ - Tentative identification.
2/ - On NRDC List of Priority Pollutants.

N.C. Division of Health Services
DHS 3068-O (4/86 Laboratory)

N.C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

P. O. Box
306 N. Wilmington
Raleigh, N

Site Number NCD 003 184 249 Field Sample Number [illegible]

Name of Site Union Carbide Site Location Greenville, NC

Collected By Harvey Allen ID# 76 Date Collected 11/9/90 Time 12:00

Type of Sample:

Environmental	Concentrate
✓ Groundwater (1)	Solid (5)
Surface Water (2)	Liquid (6)
Soil (3)	Sludge (7)
Other (4)	Other (8)

Comments: Greenville Municipal Well (Southside) cubes

RECEIVED
DEC 0 . 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg
Arsenic		✓ Arsenic	<0.01	✓ Silver	<0.05
Barium		✓ Barium	0.06	Sulfates	
Cadmium		✓ Cadmium	<0.005	Zinc	
Chromium		Chloride		Ph	
Lead		✓ Chromium	<0.01	Conductivity	
Mercury		Copper		TDS	
Selenium		Fluoride		TOC	
Silver		Iron			
		✓ Lead	0.006		
		Manganese			
		✓ Mercury	<0.0002		
		Nitrate			
		✓ Selenium	<0.005		

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results m
P&T:GC/MS		EDB		Methoxychlor	
Acid:B/N Ext.		PCB's		Toxaphene	
TOX		Petroleum		2,4-D	
		Endrin		2,4,5-TP (silvex)	
		Lindane			

MICROBIOLOGY

Parameter
(MF) Coliform Colonies/100mls
(MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
Gross Alpha	
Gross Beta	

Date Received _____ Date Reported _____

Date Extracted _____ Date Analyzed _____

CEKLA

C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public H
P. O. Box 2
306 N. Wilmington
Raleigh, 2

Site Number NCD 003 184 249 Field Sample Number 12331

ame of Site Union Carbide Site Location Greenville, NC

Collected By Harvey Allen ID# 76 Date Collected 11/9/90 Time 12:00

ype of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	Solid (5)	Greenville Municipal Well (Southside) VOA
Surface Water (2)	Liquid (6)	
Soil (3)	Sludge (7)	
Other (4)	Other (8)	

RECEIVED
NOV 30 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg
Arsenic		Arsenic		Silver	
Barium		Barium		Sulfates	
Cadmium		Cadmium		Zinc	
Chromium		Chloride		Ph	
Lead		Chromium		Conductivity	
Mercury		Copper		TDS	
Selenium		Fluoride		TOC	
Silver		Iron			
		Lead			
		Manganese			
		Mercury			
		Nitrate			
		Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results m
✓ P&T:GC/MS		EDB		Methoxychlor	
Acid:B/N Ext.		PCB's		Toxaphene	
TOX		Petroleum		2,4-D	
		Endrin		2,4,5-TP (silvex)	
		Lindane			

MICROBIOLOGY

Parameter
(MF) Coliform Colonies/100mls
(MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/l
Gross Alpha	
Gross Beta	

Date Received 11-13-90 BD Date Reported 11-26-90

John R. Neal Date Analyzed 11-15-90 mw

CERCLA

N. C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public H
P. O. Box 2
306 N. Wilmington
Raleigh, N

Site Number NCD 003 184 249 Field Sample Number 12332

Name of Site Union Carbide Site Location Greenville, NC

Collected By Harvey Allen ID# 76 Date Collected 11/9/90 Time 12:00

Type of Sample:

Environmental	Concentrate	Comments
✓ Groundwater (1)	___ Solid (5)	Greenville Municipal Well (Southside) ZL
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
___ Other (4)	___ Other (8)	

RECEIVED
NOV 30 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron		___	
___		___ Lead		___	
___		___ Manganese		___	
___		___ Mercury		___	
___		___ Nitrate		___	
___		___ Selenium		___	

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results m
___ P&T:GC/MS		___ EDB		___ Methoxychlor	
✓ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
___		___ Endrin		___ 2,4,5-TP (silvex)	
___		___ Lindane			

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls
___
___

RADIOCHEMISTRY

Parameter	Results PCi/l
___ Gross Alpha	
___ Gross Beta	
___	
___	

Date Received 11-13-90 BQ

11-14-90 AA Mil TM

Date Reported

Date Analyzed 11-26-90 BQ

C. Department of Human Resources
Division of Health Services

SAMPLE ANALYSES REQUEST

State Laboratory of Public H
P. O. Box 2
306 N. Wilmington S
Raleigh, 2

Site Number NCD 003 184 249 Field Sample Number 12335

Name of Site Union Carbide Site Location Greenville, NC

Collected By Harvey Allen ID# 76 Date Collected 11/8/90 Time 15:00

Type of Sample:

Environmental	Concentrate	Comments
___ Groundwater (1)	___ Solid (5)	Trip Blank VOA
___ Surface Water (2)	___ Liquid (6)	
___ Soil (3)	___ Sludge (7)	
✓ Other (4)	___ Other (8)	

RECEIVED
NOV 30 1990
SUPERFUND SECTION

INORGANIC CHEMISTRY

Extractables		Total			
Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg/
___ Arsenic		___ Arsenic		___ Silver	
___ Barium		___ Barium		___ Sulfates	
___ Cadmium		___ Cadmium		___ Zinc	
___ Chromium		___ Chloride		___ Ph	
___ Lead		___ Chromium		___ Conductivity	
___ Mercury		___ Copper		___ TDS	
___ Selenium		___ Fluoride		___ TOC	
___ Silver		___ Iron			
		___ Lead			
		___ Manganese			
		___ Mercury			
		___ Nitrate			
		___ Selenium			

ORGANIC CHEMISTRY

Parameter	Results mg/1	Parameter	Results mg/1	Parameter	Results mg
✓ P&T:GC/MS		___ EDB		___ Methoxychlor	
___ Acid:B/N Ext.		___ PCB's		___ Toxaphene	
___ TOX		___ Petroleum		___ 2,4-D	
		___ Endrin		___ 2,4,5-TP (silvex)	
		___ Lindane			

MICROBIOLOGY

Parameter
___ (MF) Coliform Colonies/100mls
___ (MPN) Coliform Colonies/100mls

RADIOCHEMISTRY

Parameter	Results PCi/ l
___ Gross Alpha	
___ Gross Beta	

Date Received 11-13-90 BD Date Reported

Date Extracted Date Analyzed 11-15-90 mw

907196

SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH

Chain of Custody Record

CERCLA

Hazardous Waste Materials

Location of Sampling: ____ Generator ____ Transporter ____ Treatment Faci
____ Storage Facility ____ Disposal Facility ____ Landfill
✓ Other: Off site Wells & Trip Blank

Company's Name Union Carbide Telephone(919) 756 - 9975

Address ~~P.O. Box 100 W. Green~~ P.O. Box 1547, Greenville, NC 27835

Collector's Name Harley H. Aller Telephone(919) 733 - 2801
signature

Date Sampled 11/8/90 - 11/9/90 Time Sampled 11/8/90 15:00 11/9/90 12:00

Type of Process Generating Waste

Field Information

RECEIVED
NOV 30 1990
SUPERFUND SECTION

Field Sample No. 12331 12332 12335

Chain of Possession:

signature	title	inclusive dates
Harley Aller	Env. Engineer	11/8/90 - 11/9/90
William Clement	Chemist	11-13-90

Results reported

signature	title	date
John R. Neal	Chemist	11-26-90

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

Receipt for Samples

The samples described below were collected in connection with the administration, enforcement, and documentation of the:

( ) North Carolina Hazardous Waste Management Rules, 10 NCAC 10F

( ) North Carolina Solid Waste Management Rules, 10 NCAC 10G

(X) Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

( ) Toxic Substances Control Act (TSCA). 15 U.S.C. §2601, et seq., specifically Section 11 of TSCA, 15 U.S.C. § 2610.

919-733-2801

Harvey Allen — Inspector's Name

401 Oberlin Rd, Ral, NC 27605 — Inspector's Address

(Union Carbide Site)

Greenville Municipal Well (Southside Well) — Name of Firm

919-551-1563

P.O. Box 1847 Greenville 27835 — Firm Address

Cliff Strickland — Firm Owner, Operator, or Agent

Lab Technician — Title

SAMPLE NUMBER	COLLECTED		SAMPLE TYPE			DUPLICATE SAMPLES			SAMPLE LOCATION	
	DATE	TIME	WATER	SOIL	OTHER	OFFERED	ACCEPTED	REJECTED	ON-SITE	OFF-SITE
Greenville Municipal Well	11/9/90	12:00	X			X		X		X

Receipt for the sample(s) described above is hereby acknowledged:

Harvey Allen
Signature of Inspector

Environmental Engineer
Title

Receipt/rejection of duplicate or split samples is hereby acknowledged:

Cliff Strickland
Signature of Firm Owner, Operator, or Agent

Lab Tech
Title

COMMENTS

Chain of Custody Record

CERCLA

Hazardous Waste Materials

Location of Sampling: ____Generator ____Transporter ____Treatment Facil
____Storage Facility ____Disposal Facility ____Landfill
✓ Other: Off-site Well

Company's Name Union Carbide Telephone (919) 756-9975

Address P.O. Box 1547, Greenville, NC 27835

Collector's Name Harley H. Allen (signature) Telephone (919) 733-2801

Date Sampled 11/9/90 Time Sampled 12:00

Type of Process Generating Waste

Field Information

RECEIVED
DEC 6 1990
SUPERFUND SECTION

Field Sample No. 15904

Chain of Possession:

	signature	title	inclusive dates
1.	Harley Allen	Env Engineer	11/13/90
2.	[illegible]	Chemist	13 Nov 90
3.			

Results reported

signature	title	date
[illegible]	Chemist	13 Nov 90

Instructions: Complete all applicable information including signatures, and submit with analysis request forms.

Appendix E

Water Supply Well # 4
Construction Details and Drilling Logs

HARTSFIELD WATER COMPANY, INC.

P. O. DRAWER 3109 - PH. 523-2154
KINSTON, NORTH CAROLINA 28501

H-1

CUSTOMER: Greenville Utilities Commission #4 ADDRESS: Greenville, North Carolina - 1969

TYPE OF FORMATION CLAY - SAND ROCK & ETC.	COLOR	RATE OF DRILLING HARD - SOFT JETTED & ETC.	SIZE OF GRAIN IF SAND	OTHER INFORMATION	THICKNESS FROM	TO
Clay	Yellow	Med. Hard			0'	6'
Clay & Sand	White	Loose	M/F = Medium fine		6	14
Sand	White	Jet	M/F		14	19
Sand	Gray	Jet	M/F		19	29
Sand	Gray	Jet	M/F	Clay at bottom	29	39
Clay	Gray	Med. Hard		Poor sample	39	49
Clay	Gray	Med. Hard		Poor sample	49	59
Sand	[illegible]	Loose	FINE		59	69
Sand	[illegible]	Loose	FINE	Streak small rock	69	79
Sand	Gray	Loose	FINE	Rock at 85'	79	89
Sand	Gray	Loose	FINE	Streak of rock	89	99
Clay & Sand	Gray	Soft		Streak of shell	99	109
Clay & Sand	Gray	Soft		Streak of shell	109	119
Clay	Gray	Soft		Streak of shell	119	129
Clay	Gray	Soft		Streak of shell	129	139
Clay	Gray	Soft			139	149
Clay	Gray	Soft		Shell at 157	149	159
Clay	Gray	Soft			159	169
Sand	[illegible]	Loose	Fine		169	179
Sand	[illegible]	Loose	Fine	Streak of clay	179	189
Sand	[illegible]	Loose	Fine	Streak of clay	189	199
Clay	Gray	Hard			199	208
Sand	[illegible]	Loose	Fine		208	218
Sand	[illegible]	Loose	Fine		218	218
Sand	[illegible]	Loose	Fine	Tight in places	218	228
Sand	[illegible]	Loose	Fine	Tight in places	228	238