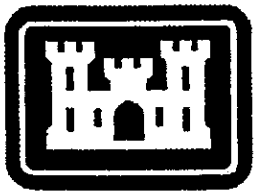

U.S. Army Corps
of Engineers

FINAL CORRECTIVE ACTION PLAN - PART A
EPD FACILITY ID: 9025085

PHASE 1 SITE INVESTIGATION
AT PUMPHOUSE #1

at

HUNTER army AIRFIELD
SAVANNAH, GEORGIA

under

Contract No. DACA21-93-D-0049
Delivery Order No. 22

April 1997

Submitted to:
U.S. Army Corps of Engineers
Savannah, Georgia

Presented by:
Metcalf & Eddy, Inc.
Atlanta, Georgia

Pumphouse #1

Georgia Department of Natural Resources

Environmental Protection Division
Underground Storage Tank Management Program
4244 International Parkway, Suite 104, Atlanta, Georgia 30354
Lonice C. Barrett, Commissioner
Harold Reheis, Director
(404) 362-2698

CORRECTIVE ACTION PLAN
PART A

Facility Name: Hunter Army Airfield

Street Address: Strachan Extension, Building 8060

City: Savannah County Chatham Facility ID: 9025085

Submitted by UST Owner/Operator:

Name: Mr. John Spears (AFZP-DEV)

Company: 3rd Infantry Div. (M)

Address: Building 1139

City: Ft. Stewart State: GA

Zip Code: 31314-5000

Prepared by:

Name: David Humphris, P.G.

Company: Metcalf & Eddy, Inc.

Address: 1201 Peachtree Street, NE
400 Colony Square, Suite 1101

City: Atlanta State: GA

Zip Code: 30361

I. PLAN CERTIFICATION:

A. UST Owner/Operator

I hereby certify that the information contained in this plan and in all the attachments is true, accurate, and complete, and the plan satisfies all criteria and requirements of Rule 391-3-15-.09 of the Georgia Rules for Underground Storage Tank Management.

Name: John Spears, Chief Environmental

Signature: _____ Date: _____

B. Professional Engineer or Professional Geologist

I hereby certify that I have directed the field work and preparation of this plan, in accordance with State Rules and Regulations. As a registered geologist and/or engineer, I certify that I am a qualified groundwater professional, as defined by the Georgia State Board of Professional Geologists. All of the information and laboratory data in this plan and in all of the attachments are true, accurate, complete, and in accordance with applicable State Rules and Regulations.

Name: David M. Wilderman, PG

Signature: _____

Date: 4.30.97

Georgia Stamp or Seal

Please complete the following form, check all of the boxes below that apply, and attach supporting documentation (such as narrative, figures, tables, maps, boring/well logs, etc.) where specified and applicable. Supporting documentation should be three-hole punched and prepared in conformity with the attached guidance document "Underground Storage Tank (UST) Release: Corrective Action Plan - Part A (CAP-A Content," GUST-7A.)

II. INITIAL RESPONSE REPORT:

A. Initial Abatement:

- ■ No Action Required
- ☐ Further Release or Migration of Contaminants Prevented
- ☐ Fire and Safety Hazards from Vapors and/or Free Product Monitored and Mitigated
- ☐ Other (specify) _____

_____

B. Free Product Removal:

- ■ No Free Product Identified as Originating from Release
- ☐ Free Product (Non-Aqueous Phase Hydrocarbons) Removed by:
  - ☐ Manual Bailing
  - ☐ Passive Skimming
  - ☐ Automated Skimming.
  - ☐ Automated Total Fluids Pumping, with Treatment System and Approved Wastewater Discharge
  - ☐ Other (specify) _____

_____

C. Tank History: - **See Supporting Documentation, Section II.C.**

- ■ Site Map Attached Identifying Former and/or Existing USTs - **See Figure 2**
- ☐ Not Applicable

Pumphouse #1

D. Initial Site Characterization:

■ Site Map: include the following items on an attached site map. **See Supporting Documentation, Section II.D**

- Tank Pit Area
- Piping Trenches
- Dispensers
- Sewer Lines (if present)
- Water Lines
- North Arrow
- Sample Locations (with sample numbers and depths)
- Tanks with ID#s, corresponding to Notification Form 7530-1
- Scale 1 in = 200 ft

1. Regulated Substance Released - **See Supporting Documentation, Section II.D.1.**

☐ Gasoline ☐ Diesel ☐ Kerosene ☐ Waste Oil

■ Other Aviation Gas (AVGAS)

2. Source of Contamination - **See Supporting Documentation, Section II.D.2**

Number of USTs: in use 0; closed/removed 8 removed, 2 in place

☐ Existing UST System(s): ☐ piping ☐ Tank ☐ other

■ Former UST System(s): ■ piping ■ Tank ☐ other

3. Impacted Environmental Media - **See Supporting Documentation, Section II.D.3.**

■ Groundwater

☐ Free product

■ Dissolved (BTEX and/or PAH) contamination exceeding:

■ In-stream water quality standards

☐ Drinking Water Maximum Contaminant Levels (MCLs)

■ Soil Exceeding:

☐ Laboratory Detection Limits, but TPH is vertically delineated to Below Detection Limits (BDL) above the groundwater table or a groundwater sample from the worst-case location has BTEX and/or PAHs below applicable Drinking and/or In-stream water quality standards.

☐ Thresholds listed in Table A, Rule 391-3-15-.09

■ Thresholds listed in Table B, Rule 391-3-15-.09

☐ Alternate Threshold Levels (ATLs) (Reference GUST-CAPA Appendix I)

D. Initial Site Characterization (continued):

- ☐ Drinking Water Supply Impacted
- ☐ Surface Water Impacted
- ■ Attach Laboratory Analytical Data: the following items must be included - **See Appendix D**
  - Laboratory Method
  - Date of Analysis
  - Signed Chain of Custody
  - Date of Sampling
  - Detection Limits
  - Quality Control Data

4. Local Water Resources - **See Supporting Documentation, Section II.D.4.**

- ■ Drinking Water Supplies Located In:

  High or average groundwater pollution susceptibility area*:

  - ■ Public water systems within 2.0 miles
  - ☐ Non-public water systems within 0.5 mile

  *Low groundwater pollution susceptibility area**:

  - ☐ Public water systems within 1.0 mile
  - ☐ Non-public water systems within 0.25 mile

* As defined by the Groundwater Pollution Susceptibility Map of Georgia.

- ■ Surface Water Bodies: Distance (nearest) approx. 260 feet (regardless of hydraulic gradient)
- ■ Attach Documentation of Water Supply Survey and Field Reconnaissance

5. Other Hydrogeologic Data (specify values) - **See Supporting Documentation, Section II.D.5.**

- ■ Depth to Groundwater (shallowest) 8.87 ft (MW12)
- ■ Groundwater Flow Direction generally Southwest
- ■ Hydraulic Gradient 0.004 - 0.006

6. Corrective Action Completed Or In-Progress - **See Supporting Documentation, Section II.D.6.**

- ☐ USTs/Source Removed (after confirmed release)
- ■ Excavation and Treatment/Disposal of Contaminated Backfill Material & Native Soils
  - ■ Attach manifests of proper soil disposal - **Refer to Anderson Columbia Environmental Field Report (June, 1995)**
- ☐ Other (specify) _____

Pumphouse #1

D. Initial Site Characterization (continued):

7. Conclusions and Recommendations - **See Supporting Documentation, Section II.D.7.**

☐ No Further Action Required, including the preparation or implementation of a Site Investigation Plan

OR

■ Prepare Corrective Action Plan - Part B, with a schedule for SIP implementation and submittal of CAP-Part B

8. Site Ranking - **See Supporting Documentation, Section II.D.8 and Appendix F**

Environmental Sensitivity Score: 2200
(see Appendix II)

III. SITE INVESTIGATION PLAN: - **See Supporting Documentation, Section III**

A. Horizontal and Vertical Extent of Contaminants In:

■ Soil

■ Groundwater

☐ Free product

■ Dissolved phase

☐ Surface Water

B. Vadose Zone and Aquifer Characteristics:

■ Vertical Soil Permeability (Optional)

☐ Infiltration Rate (Optional)

■ Saturated Horizontal Hydraulic Conductivity

☐ Total Organic Carbon (Optional)

☐ Dissolved Iron (Optional)

■ Effective Porosity

■ Seepage Velocity

■ Grain-size Distribution (Optional)

■ Total Petroleum Hydrocarbons (Optional)

☐ Pilot Test(s) (Optional)

☐ Other (specify) _____

Pumphouse #1

IV. PUBLIC NOTICE:

- ☐ Certified Letters to Adjacent and Potentially Affected Property Owners and Local Officials
- ☐ Legal Notice in Newspaper, as pre-approved by EPD
- ■ Other EPD Approved Method (specify): **See Supporting Documentation, Section IV.**

V. CLAIM FOR REIMBURSEMENT: (For GUST Trust Fund sites only) **N/A**

- ☐ GUST Trust Fund Application (GUST-36), must be attached if applicable
- ☐ Cost Proposal
  - ☐ Non-Reimbursable Costs

    OR
  - ☐ Reimbursable Costs
    - ☐ Invoices and Proofs-of-Payment, per GUST-91
    - ☐ Total Projected Costs to implement the Site Investigation Report (SIR) and prepare data for the Site Investigation Review Meeting, per GUST-91
- ☐ Payment Schedule for Reimbursement

SUPPORTING DOCUMENTATION
FINAL CORRECTIVE ACTION PLAN - PART A
EPD FACILITY ID: 9025085
PUMPHOUSE #1 - BUILDING 8060
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

CONTRACT NO. DACA 21-93-D-0049
DELIVERY ORDER NO. 0022

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LIST OF ACRONYMS

ATL's	Alternate Threshold Levels
AVGAS	Aviation gasoline
bls	below land surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAP	Corrective Action Plan
DNR	Department of Natural Resources
DRO	Diesel Range Organics
EPD	Environmental Protection Division (State of Georgia, Department of Natural Resources)
GRO	Gasoline Range Organics
GUST	Georgia Underground Storage Tank
HAAF	Hunter Army Airfield
HP	Hydropunch
IWQS	Instream Water Quality Standards
MCL	Maximum Contaminant Level
M&E	Metcalf & Eddy, Inc.
mg/kg	milligrams per kilogram
MTBE	Methyl Tert-Buryl Ether
MW	Monitoring Well
OVA	Organic Vapor Analyzer
PAH	Polynuclear Aromatic Hydrocarbons
SAV	Savannah District
SI	Site Investigation
SIP	Site Investigation Plan
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
μg/L	micrograms per liter
UST	Underground Storage Tank
USACE	United States Army Corps of Engineers

LIST OF REFERENCES

Anderson-Columbia, Inc., June 27, 1995, Field Report, submitted to the Georgia EPD in January 1996.

Burroughs Quadrangle, Georgia, 7.5 Minute Series Topographic Map, 1988.

Clarke, John S., Hacke, Charles M. and Peck, Michael F., 1990, Geology and Ground Water Resources of the Coastal Area of Georgia, Department of Natural Resources, Bulletin 113, 106p.

Georgia Department of Natural Resources, Environmental Protection Division, October 23, 1995, Rules and Regulations for Water Quality Control, Chapter 391-3-6.

Georgia Department of Natural Resources, Environmental Protection Division, February 1995, Underground Storage Tank Management, Chapter 391-3-15.

Georgia Department of Natural Resources, Environmental Protection Division, November 1995, Guidance Document - Underground Storage Tank Release: Corrective Action Plan (CAP) Part A, GUST - CAPA.GUI

Garden City Quadrangle, Georgia, 7.5 Minute Series Topographic Map, 1980.

Isle of Hope Quadrangle, Georgia, 7.5 Minute Series Topographic Map, 1988.

Metcalf & Eddy, Inc., 1996 Final Corrective Action Plan - Part B, DAACG Facility Area.

Metcalf & Eddy, Inc., 1996, Final Work Plan for Phase I and Phase II Site Investigation at Pumphouses #1, #2, and #6.

Savannah Quadrangle, Georgia 7.5 Minute Series Topographic Map, 1978.

U.S. Army Corps of Engineers, Savannah District, March 11, 1996, Scope of Work, Phase I and Phase II Site Investigations at Pump Houses #1, #2, and #6, Hunter Army Airfield, Georgia.

The State of Georgia, 1995, Georgia Underground Storage Tank Act, Section 12-b.

CORRECTIVE ACTION PLAN - PART A
SUPPORTING DOCUMENTATION

PUMPHOUSE #1 - BUILDING 8060
EPD FACILITY I.D. #9025085
HUNTER ARMY AIRFIELD
SAVANNAH, GEORGIA

INTRODUCTION

Under Contract DACA 21-93-D-0049 Delivery Order No. 22, with the United States Army Corps of Engineers (USACE) Savannah District (SAV), Metcalf & Eddy, Inc. (M&E) performed a Phase I Site Investigation (SI) at Pumphouses #1 (Building 8060), #2 (Building 8065), and #6 (Building 8070) at Hunter Army Airfield (HAAF) in Savannah, Georgia **(Figure 1)**.

Metcalf & Eddy, Inc. performed a site investigation at the Departure/Arrival Airfield Control Group (DAACG) area near Building 833 at HAAF in 1996. The DAACG area is directly north of the Pumphouse #1 and #2 areas. The DAACG investigation consisted of a passive soil gas survey with 700 soil gas modules, advancement and sampling of 50 soil borings, and the installation and sampling of 32 groundwater monitoring wells. A Corrective Action Plan (CAP) Part B was submitted to the Department of Natural Resources (DNR) Environmental Protection Division (EPD) in October 1996. The environmental investigation indicated that the potential source of petroleum hydrocarbons identified in the DAACG area was originating from near Pumphouse #1. Therefore, the CAP-Part B was submitted under the EPD facility number used for Pumphouse #1, No. 9025085. The CAP-Part B for the DAACG facility recommended further subsurface investigation near Pumphouses #1, #2, and #6 to determine the extent of hydrocarbons in the soil, groundwater, surface water, and sediment.

Metcalf & Eddy, Inc. has prepared this CAP-Part A following guidelines provided by the State of Georgia, DNR EPD. The appropriate Georgia underground storage tank form (GUST-

CAPA.FOR, November 1995) was completed for Pumphouse #1 as directed in the EPD Guidance Document, GUST-CAPA.GUI, November 1995. Information provided in the following sections of this Supporting Documentation is presented in sequence with the CAP-Part A form. Pertinent information necessary to support the CAP-Part A form is contained herein.

II.C. Tank History

Hunter Army Airfield (HAAF) occupies approximately 5,400 acres of land on the southwest side of Savannah, Chatham County, Georgia (see **Figure 1**). Information provided in the following sections pertains to M&E's investigation of the Pumphouse #1 area.

Pumphouse #1 was an aviation gas (AVGAS) fuel island that was used from about 1953 until the 1970s **(Figure 2)**. The pumphouse was idle from the 1970s to 1995. In 1995, eight 25,000 gallon underground storage tanks (USTs) were removed by Anderson Columbia Environmental, Inc. Two 25,000 gallon tanks remain in place, partially under the pumphouse structure. The piping (8-inch cast iron) was removed with the storage tanks in March, 1995. Three soil samples were collected from the north, west, and east excavation sidewalls and the laboratory analysis confirmed the presence of benzene, toluene, ethylbenzene, and xylenes (BTEX). Benzene concentrations in two of the samples were below detection limits. However, the detection limits exceeded the soil threshold level for benzene. Polynuclear aromatic hydrocarbons (PAHs) were not detected in the soil samples. The soil removed during the excavation (quantity estimated at 568 cubic yards due to poor recordkeeping) was disposed at Kedesh Industries in Ludowici, Georgia. Samples of groundwater seeping into the excavation confirmed the presence of BTEX and PAHs. Separate phase hydrocarbons were not encountered during the tank removal. Petroleum impacted groundwater (quantity unknown due to poor recordkeeping) was periodically pumped from the excavation and disposed of offsite at Industrial Water Services in Tallahassee, Florida or Chem-Met Services in Wyondotte, Michigan. The extent of soil and groundwater contamination was not determined during the tank removal activities. The UST, soil, and groundwater disposal manifests as well

as the UST closure forms and analytical data are provided in the Anderson- Columbia Field Report, dated June 27, 1995. The Field Report was submitted to the EPD in January, 1996.

II.D. Initial Site Characterization

A methodical approach was utilized for the field investigation to increase the effectiveness of the sampling program. A thorough review of available historical information was conducted prior to any field activities. Initial field work consisted of collecting soil vapor samples from 257 locations placed on a 70 foot by 70 foot grid over the Pumphouse #1 area. A passive soil vapor survey module (GORE-SORBER®) manufactured by W. L. Gore and Associates, Inc. (Gore) was used to collect soil vapor samples for laboratory analysis. The soil vapor survey was initiated by installing the GORE-SORBER® in a 4-foot deep, 5/8-inch diameter soil boring advanced using an impact hammer. After a 3 week exposure time, the modules were retrieved and analyzed using a Gore-developed method of thermal desorption, gas chromatography, and mass selective detection. Parameters analyzed included BTEX, undecane (C11), tridecane (C13), pentadecane (C15), PAHs and petroleum hydrocarbons. Portions of the Gore report and a petroleum hydrocarbon color contour map are presented in **Appendix A**. The Gore-Sorber results indicated that two main areas near Pumphouse #1 exhibit elevated levels of petroleum hydrocarbons in soil vapor. Another smaller area of potential contamination was identified by the soil vapor survey under the tarmac of Taxiway 3. This area is isolated and it is not in close proximity to any known tanks or piping. Five groundwater monitoring wells were installed to assess both soil and groundwater quality in assumed upgradient, downgradient, and impacted areas of the Pumphouse #1 site and to define groundwater flow direction and gradient. Twenty-eight soil samples were collected from 14 soil boring locations along with 10 soil samples collected from the 5 well borings. In addition, four sediment and four surface water samples were collected from a nearby drainage canal. The results of the field effort are discussed in the following sections.

II.D.1. Regulated Substance Released

AVGAS was reportedly stored in the USTs, but no releases are on record. Quality matching, a process in which GORE-SORBER® chromatograms are compared to chromatograms of selected fuel standards in GORE's fluids library, indicated that a release of AVGAS and other unidentified petroleum hydrocarbon fuels may have occurred.

II.D.2 Source of Contamination

Based on the soil vapor results, it appears that fueling pits, pipelines, and/or the USTs were the sources of contamination. Five monitoring wells and 14 soil borings were drilled in the suspected contaminated areas (**Figure 2**) to confirm the presence of contamination. Soil and groundwater sample results confirm the presence of hydrocarbons near the fueling pits and USTs. However, no clear source of the contamination was identified.

II.D.3. Impacted Environmental Media

Groundwater

Groundwater samples were collected from five monitoring wells (MW01, MW02, MW03, MW11, MW12) for BTEX/Methyl Tert-Butyl Ether (MTBE) (Method 8020) and PAH (Method 8310) analyses. Monitoring well schematics are provided in **Appendix B.** Monitoring well development sheets and photographs are provided in **Appendix C.** All analytical results are provided in **Appendix D.** The analytical data (**Table 1**) indicated BTEX in all five wells, but only benzene exceeded the EPD Instream Water Quality Standard (IWQS) of 71.28 ug/L at locations MW02 (1100 μg/L) and MW03 (740 μg/L) (**Figure 3**). The detection limit for benzene at MW01 exceeded the IWQS due to interference from elevated concentrations from the other BTEX components. No PAHs were detected in groundwater at MW12, but PAHs (primarily naphthalene and 2-methylnaphthalene) were detected in the other wells. MW03 was the only location exceeding the IWQS of 0.0311 ug/L for Benzo(a)pyrene,

benzo(b,k)fluoranthene, and chrysene/benzo(a)anthracene. The detection levels of 0.2 ug/L for the PAHs listed above and 0.5 ug/L for indeno(1,2,3-cd)pyrene/dibenzo(a,h)anthracene are higher than the IWQS due to matrix interferences.

Soils

Two soil samples were collected from the 5 monitoring wells and 14 soil boring locations for a total of 38 samples. The samples were analyzed for BTEX/MTBE (Method 8020), PAHs (Method 8100), gasoline range organics (GRO) - Modified Method 8015, and diesel range organics (DRO) - Modified Method 8100. The soil analytical data is presented in **Table 2** and in **Appendix D**. Geologic logs are provided in **Appendix E**. Seventeen samples exceeded the Georgia EPD soil threshold level (391-3-15-.09) of 0.017 mg/kg for benzene at concentrations ranging from 0.16 to 5.6 mg/kg, including 9 samples whose detection limits were higher than the EPD limit. The higher detection limits were due to interferences caused by high TPH concentrations. **Figure 4** shows the horizontal distribution of benzene in soil. One sample (MW3) exceeded the EPD limit for toluene (115 mg/kg) at an estimated concentration of 160 mg/kg and four samples (MW1, MW3, MW11, and SB20) exceeded the ethylbenzene limit of 18 mg/kg at concentrations of 19, 96, 71, and 34 mg/kg, respectively.

Alternate threshold limits (ATLs) were calculated to determine if ATLs could be applied at Pumphouse #1. The calculated ATLs for toluene (at MW-3) and ethylbenzene (at MW-1 and MW-11) were higher than Georgia Rule (Chapter 391-3-15.09), Table B soil threshold levels. However, other contamination exceeding EPD's Table B limits exist at these locations, thereby making the use of ATLs inappropriate. PAHs were detected in 16 of the 38 samples, with 6 samples exceeding the soil threshold level of 0.660 mg/kg. The samples exceeding criteria were collected from SB02, SB06, SB07, SB08, SB24, and MW11 and ranged in concentration from 0.8 to 5.4 mg/kg.

Surface Water/Sediment

Four surface water samples were collected (SWE07 [most upgradient], SWE08, SWE09, and SWE10 [most downgradient]) and analyzed for the same parameters as groundwater (BTEX/MTBE and PAHs). Analytical results, presented in **Table 3**, confirmed BTEX at concentrations below IWQS. The highest concentrations were identified in the upstream sample, and concentrations progressively decreased downstream (**Figure 5**). Surface water samples (SWE04 and SWE05) collected for the Pumphouse #2 investigation, located to the east and hydraulically upgradient in surface water flow direction, indicated no impacts on surface water by petroleum hydrocarbons. Hydrocarbons identified in SWE07 appear to be associated with groundwater contamination identified at Pumphouse #1. PAHs were not detected in any surface water sample. However, the detection limits for several PAH compounds exceeded the IWQS.

Four sediment samples, SWE07 through SWE10, were collected and analyzed for the same parameters as the soil (BTEX/MTBE, PAHs, GRO and DRO). The analytical data (**Table 4**) indicates that the sediment has not been impacted by BTEX components. PAHs were detected at locations SE07, SE09, and SE10, but only SE09 and SE10 exceeded the EPD soil screening limit of 0.66 mg/kg at concentrations ranging from 0.8 to 3.6 mg/kg. PAH concentrations increase downgradient of Pumphouse #1. **Figure 5** also shows the sediment sample results.

II.D.4 Local Water Resources

Drinking Water Supplies

No potable water supply wells have been identified within a 1/2 mile radius of the site. Nine potable water wells were identified within a 2-mile radius. Potable wells within the 2-mile radius are cased to a minimum depth of 90 feet below land surface (bls), and they are not hydraulically connected within the surficial aquifer due to several interbedded clay layers at depth. Clarke et al, 1990, documents two confining units, Miocene unit A (15-90 feet thick)

and Miocene unit B (10-50 feet thick), separating the surficial aquifer from the deeper aquifers. The Miocene unit A is typically encountered 60 feet bls in the Savannah, Georgia area. The Miocene unit B is located directly below unit A at a depth of approximately 80 feet bls. Thus, the water supply wells are not considered potential receptors of contamination identified in the shallow aquifer at Pumphouse #1.

Surface Water Bodies

The nearest surface water body is the drainage ditch approximately 260 feet south of the site. The open ditch, about 15 feet deep, is part of the stormwater drainage system on the base. Water depths in the center of the ditch fluctuate with seasonal rainfall but normally range from 1 to 2 feet. Surface water flows from east to west with an approximate gradient of 0.005. The ditch contains water for the majority of the year. **Figure 1** shows surface water bodies within a 1-mile radius of the site.

II.D.5. Other Hydrogeologic Data

Groundwater measurements were collected across the Pumphouse #1 area on December 9, 1996. The groundwater elevations (**Table 6**) were used to construct a potentiometric surface map (**Figure 6**). The figure indicates that groundwater flow is generally to the southwest with a gradient of approximately 0.005. At the far western edge of the site, the groundwater flow changes to a more west/west-northwest direction.

II.D.6. Corrective Action Completed or In-Progress

Refer to Section II.C. on completed actions at this site.

II.D.7. Conclusions and Recommendations

Eight of the 10 USTs have been removed and the last two tank removals are under design. The Phase I field work identified three areas of potential contamination using a soil vapor survey. Fourteen soil borings and five monitoring wells were installed to assess soil and groundwater quality in and around the potentially contaminated areas. A survey of potential receptors identified potable wells and a surface water body in proximity to the investigation area. Potable well records indicated that they were cased to a significant distance below ground surface and are separated from the shallow aquifer by two confining units. The potable wells are therefore not considered potential receptors of shallow aquifer contamination (i.e. benzene above IWQS). One surface water body was located approximately 260 feet south of Pumphouse #1, which is most likely hydraulically connected to the shallow aquifer. No other potential receptors were identified during the investigation.

Four surface water and sediment samples were collected from the drainage ditch. Analytical results of these samples detected hydrocarbon compounds in water below IWQS and sediment in the drainage ditch above soil thresholds for some PAHs.

The GUST Rule, 391-3-15-.09, provides soil threshold levels for a number of petroleum compounds depending on groundwater susceptibility and location to potential receptors. Since the receptor survey indicated that the surface water body is less than 500 feet from Pumphouse #1, the more stringent soil threshold levels listed in Table B of the GUST Rule were used to evaluate soil contamination at the pumphouse. Concentrations of some volatile and semivolatile hydrocarbons in soil exceeded soil threshold levels.

Concentrations of benzene in groundwater samples collected from the Pumphouse #1 area exceeded State IWQS levels. Surface water samples contained volatile hydrocarbons at concentrations below State IWQS levels. Sediment samples exceeded the soil threshold limit for semivolatile hydrocarbons (PAHs).

M&E recommends that additional soil borings and monitoring wells be installed to define the vertical and horizontal extent of contamination in the Pumphouse #1 area. A Site Investigation Plan (SIP) is provided in Section III of this CAP-Part A which outlines additional proposed activities. The objectives of the expanded investigation will be to: (1) fully define the horizontal extent of subsurface hydrocarbon contamination, (2) define the vertical extent of contamination hydraulically downgradient of source areas, (3) evaluate the potential existence of preferred subsurface migration pathways, (4) determine shallow aquifer hydraulic characteristics, and (5) evaluate possible remedial responses. Information obtained from these additional investigative activities will be summarized in a CAP-Part B as specified in Georgia Rule 391-3-15 and submitted to the Georgia DNR EPD for review.

II.D.8. Site Ranking

The Pumphouse #1 site has an Environmental Sensitivity Score of 2,200. The calculation of this score is provided in **Appendix F.**

III. Site Investigation Plan

The primary purpose for continued site investigation is to define the horizontal and vertical extent of petroleum contamination in the vicinity of Pumphouse #1. The following SIP outlines proposed sampling locations, investigative methodologies, and sample location rationale. A figure illustrating proposed sampling locations is also provided in the SIP. A proposed schedule for SIP implementation is provided in **Table 7.**

Soil Investigation

Additional subsurface investigation is proposed at Pumphouse #1 to define the extent of hydrocarbon compounds in soil. Soil samples will also be collected from proposed groundwater monitoring locations. **Figure 7** provides an illustration of proposed soil boring and groundwater monitoring well locations.

Seventeen soil borings are proposed at the Pumphouse #1 site. Two soil samples will be collected from each boring. The samples will be collected from the intervals exhibiting the highest OVA readings above the water table provided adequate vertical delineation (at least 2 feet between sampling intervals) is achieved. Soil samples can be collected from the saturated zone over the range of water table fluctuation (i.e. "smear zone") at the discretion of the geologist to accomplish vertical delineation of contamination. The soil boring installation and sampling procedures are outlined in the Work Plan prepared by Metcalf & Eddy (1996) for Pumphouses #1, #2, and #6.

Each soil sample will be analyzed using EPA methods 8020, 8100, Modified 8100 DRO, and Modified 8015 GRO analysis. Analytical results will be evaluated along with existing data to determine if the horizontal and vertical extent of petroleum contamination has been identified. These analytical results will also be used to evaluate potential soil treatment alternatives.

Aquifer characteristic parameters will be obtained from direct measurements performed on four Shelby tube samples collected at Pumphouse #1. The Shelby tubes will be analyzed for permeability, falling head permeability, specific gravity, particle size, and moisture content. Saturated hydraulic conductivity, effective porosity, and seepage velocity will be determined after reviewing direct measurement results and literature values. These aquifer coefficients will be used in developing the objectives of corrective action.

Groundwater Monitoring Well Installation

Eleven shallow wells and one deep well will be installed to define the downgradient horizontal and vertical extent of soluble hydrocarbons in groundwater. Proposed well locations are provided in **Figure 7**. The shallow groundwater monitoring wells will be constructed using similar methodologies employed during the CAP-Part A investigation. Each shallow well will be installed into the upper 15 feet of the unconfined aquifer. The deep well will be positioned between identified contamination and the nearest potential receptor (drainage ditch). The deep monitoring well will be installed 15 feet deeper than the shallow wells and will utilize a 5-foot

screen resulting in a 10-foot separation in screen depths from shallow to deep wells. The bentonite seal will be hydrated with formation water since it will be below static water table. The bentonite will be allowed to hydrate for at least one hour before grouting with a tremie pipe.

Two soil samples will be collected from each monitoring well location. The samples will be collected from the intervals exhibiting the highest OVA readings above the water table provided adequate vertical delineation (at least 2 feet between sampling intervals) is achieved. Soil samples can be collected from the saturated zone over the range of water table fluctuation (i.e. "smear zone") at the discretion of the geologist to accomplish vertical delineation of contamination. The soil boring installation and sampling procedures are outlined in the Work Plan prepared by Metcalf & Eddy (1996) for Pumphouses #1, #2, and #6. Soil samples will be analyzed for BTEX/MTBE, PAH, DRO, and GRO. Analytical results of soil boring samples will be used to define the horizontal and vertical extent of impacted soil.

Each monitoring well will be developed following procedures outlined in the Work Plan prepared by Metcalf & Eddy (1996) for the Pumphouses #1, #2, and #6 Site Investigation. Groundwater samples will be collected from all newly installed monitoring wells following the development and stabilization periods. Each sample will be analyzed for soluble hydrocarbons using EPA methods 8020 and 8100. Analytical results of these samples will be plotted on site maps along with previous groundwater sample results to evaluate the vertical and horizontal extent of contamination. Groundwater analytical results will also be used to evaluate appropriate remedial alternatives for contaminated groundwater.

IV. Public Notice

The site is located within the boundaries of HAAF, with the closest property boundary being 0.8 mile away. Since no private property is contiguous to the study area, public notification is not required.

TABLE 1

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN GROUNDWATER

SITE:	GA EPD		MW01		MW02	MW03	MW11		MW12
SAMPLE ID:	INSTREAM		HT4-MW01		HT4-MW02	HT4-MW03	HT4-MW11		HT4-MW12
SAMPLE DATE:	WQS [1]		12/9/96		12/9/96	12/9/96	12/10/96		12/10/96
UNITS:	ug/L		ug/L		ug/L	ug/L	ug/L		ug/L
CONSTITUENT (METHOD)									
VOLATILES (8020) [2]									
Benzene	71.28	<	110 *		[1100]	[740]	40	<	2.2
Ethylbenzene	28,718		1900		1400	2000	1000		130
Toluene	200,000		16000		25000	19000	610		40
Xylene (total)	10,000 [3]		9500		5900	7400	4200		500
POLYNUCLEAR AROMATICS (8310)									
Benzo(a)pyrene	0.0311 **	<	0.2	<	0.2	[0.21]	< 0.2	<	0.2
Benzo(b,k)fluoranthene [4]	0.0311/0.0311 **	<	0.2	<	0.2	[0.28]	< 0.2	<	0.2
Chrysene + Benzo(a)anthracene [4]	0.0311/0.0311 **	<	0.2	<	0.2	[0.26]	< 0.2	<	0.2
Fluoranthene	370	<	0.5	<	0.5	0.76 J	< 0.5	<	0.5
Naphthalene	-		16		7	9.2	9.8	<	1
Phenanthrene + Anthracene [4]	- /110000		2.2	<	0.2	0.42 J	< 0.2	<	0.2
2-Methylnaphthalene	-		2.8		1.3	1.9	2.4	<	1

J - Result is Estimated < = Less than detection limit.
[ ] - Concentration exceeds WQS
* - Detection limit exceeds standard due to dilutions necessary for resolution of high concentrations of other compounds.
1 - GA EPD Instream WQS- Georgia DNR, EPD Water Quality Control, Instream Water Quality Standards, Chapter 391-3-6-.03 section 5(d)(ii) & (iii) 10/23/95.
** - WQS is lower than detection limit
(-) WQS not listed
(2) - Volatiles analysis includes MTBE
(3) - The MCL is given since no WQS exists.
(4) - PAH compounds co-elute, and can not be individually confirmed.

TABLE 2

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SOIL BORINGS

SITE:		MW01	MW01	MW02	MW02	MW02	MW03	MW03
SAMPLE ID:	SOIL	WB0101	WB0102	WB0201	WB0202	WB5501	WB0301	WB0302
SAMPLE DATE:	THRESHHOLD	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/19/96	11/19/96
DEPTH (ft):	LEVELS [1]	10	15	10	15	15	10	15
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg DUPLICATE	mg/kg	mg/kg
CONSTITUENTS (METHOD)								
VOLATILES (8020) [2]								
Benzene	0.017	[3 J]	< 0.003	[0.59 J]	< 0.0015	[1.1 J]	< 2.9 *	< 0.03 *
Ethylbenzene	18	[19 J]	0.062	1.4	0.53 J	< 0.74	[96 J]	6.1 J
Toluene	115	15 J	0.45	1.3 J	0.07 J	< 0.79	[160 J]	9.8 J
Xylene (total)	700	130 J	0.37	8.4	1.2 J	1.8	260 J	19 J
POLYNUCLEAR AROMATICS (8100M)								
Benzo(a)pyrene	NA	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
Benzo(b,k)fluoranthene [3]	0.66	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	0.61
Benzo(ghi)perylene	-	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
Chrysene + Benzo(a)anthracene [3]	0.66	0.42	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	0.6
Fluoranthene	NA	0.84	< 0.42	< 0.38	< 0.4	< 0.4	0.42	1.1
Fluorene	NA	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
Naphthalene	-	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
Phenanthrene & Anthracene [3]	NA	1.1	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	0.58
Pyrene	NA	0.65	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	0.7
1-Methylnaphthalene	-	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
2-Methylnaphthalene	-	< 0.36	< 0.42	< 0.38	< 0.4	< 0.4	< 0.4	< 0.4
PETROLEUM HYDROCARBONS (8015M)								
GRO	-	4000 J	3.4	1200 J	200 J	2500 J	21000 J	1400 J
DRO	-	50	15	< 11	< 12	< 12	23 J	27 J

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
* - Detection limit exceeds soil threshold level due to dilutions .
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 2, CONTINUED

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SOIL BORINGS

SITE:		MW11	MW11	MW11	MW12	MW12	SB01	SB01
SAMPLE ID:	SOIL	WB1101	WB1102	WB5701	WB1201	WB1202	SB0101	SB0102
SAMPLE DATE:	THRESHHOLD	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96	11/18/96	11/18/96
DEPTH (ft):	LEVELS [1]	10	15	15	10	15	6	10
UNITS	mg/kg	mg/kg	mg/kg	mg/kg DUPLICATE	mg/kg	mg/kg	mg/kg	mg/kg
CONSTITUENTS (METHOD)								
VOLATILES (8020) [2]								
Benzene	0.017	< 3.1 *	< 0.57 *	< 0.03	< 0.048	< 0.0061	[0.16 J]	< 0.0014
Ethylbenzene	18	[71 J]	14 J	< 0.03	< 0.72	< 0.0061	0.67	0.052
Toluene	115	< 41	< 7.6	< 0.03	< 0.77	< 0.0061	0.63	0.019
Xylene (total)	700	84 J	13 J	0.056	1.9 J	< 0.0061	5.7	0.082
POLYNUCLEAR AROMATICS (8100M)								
Benzo(a)pyrene	NA	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
Benzo(b,k)fluoranthene [3]	0.66	[3.9 J]	< 0.39	< 0.4	< 0.4	< 0.4	0.52	< 0.38
Benzo(ghi)perylene	-	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
Chrysene + Benzo(a)anthracene [3]	0.66	[5.4 J]	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	0.55
Fluoranthene	NA	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	0.47	0.47
Fluorene	NA	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
Naphthalene	-	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 2.1 *	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
Phenanthrene & Anthracene [3]	NA	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	0.52	0.42
Pyrene	NA	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	0.39
1-Methylnaphthalene	-	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
2-Methylnaphthalene	-	< 2.1	< 0.39	< 0.4	< 0.4	< 0.4	< 0.37	< 0.38
PETROLEUM HYDROCARBONS (8015M)								
GRO	-	20000 J	7800 J	2.6	< 220	< 0.22	210 J	17
DRO	-	150 J	15	14	33	< 12	85	45

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
* - Detection limit exceeds soil threshold level due to dilutions .
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 2, CONTINUED

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SOIL BORINGS

SITE:		SB02	SB02	SB03	SB03	SB03	SB04	SB04
SAMPLE ID:	SOIL	SB0201	SB0202	SB0301	SB0302	SB5001	SB0401	SB0402
SAMPLE DATE:	THRESHHOLD	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96
DEPTH (ft):	LEVELS [1]	6	10	6	10	10	6	10
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg DUPLICATE	mg/kg	mg/kg
CONSTITUENTS (METHOD)								
VOLATILES (8020) [2]								
Benzene	0.017	< 0.062 *	< 0.0014	[2.1 J]	[5.5 J]	[0.65 J]	[0.26 J]	[3 J]
Ethylbenzene	18	< 0.77	0.07 J	8.2 J	16 J	1.3 J	1.5	14 J
Toluene	115	< 0.82	< 0.019	16 J	9.7 J	0.92 J	2.6 J	53 J
Xylene (total)	700	0.9 J	0.032 J	34 J	68 J	6.1 J	10	73 J
POLYNUCLEAR AROMATICS (8100M)								
Benzo(a)pyrene	NA	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Benzo(b,k)fluoranthene [3]	0.66	0.76 J	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Benzo(ghi)perylene	-	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Chrysene + Benzo(a)anthracene [3]	0.66	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Fluoranthene	NA	0.46 J	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Fluorene	NA	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Naphthalene	-	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Phenanthrene & Anthracene [3]	NA	< 0.42	0.53 J	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
Pyrene	NA	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
1-Methylnaphthalene	-	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
2-Methylnaphthalene	-	< 0.42	< 0.4	< 0.36	< 0.42	< 0.4	< 0.38	< 0.4
PETROLEUM HYDROCARBONS (8015M)								
GRO	-	370 J	99 J	4700 J	2100 J	810 J	1000 J	7200 J
DRO	-	140 J	44 J	26	18 J	< 12 J	< 11	24

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
* - Detection limit exceeds soil threshold level due to dilutions .
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 2, CONTINUED

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SOIL BORINGS

SITE:		SB05	SB05	SB06	SB06	SB06	SB07	SB07
SAMPLE ID:	SOIL	SB0501	SB0502	SB0601	SB0602	SB5101	SB0701	SB0702
SAMPLE DATE:	THRESHHOLD	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/19/96	11/19/96
DEPTH (ft):	LEVELS [1]	6	10	6	12	12	6	12
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg DUPLICATE	mg/kg	mg/kg
CONSTITUENTS (METHOD)								
VOLATILES (8020) [2]								
Benzene	0.017	< 0.0015	[0.13 J]	< 0.00029	[1.6 J]	< 0.0014	< 0.00028	< 0.00029
Ethylbenzene	18	0.1	< 0.29	0.0032 J	6.3 J	0.34	0.0067	0.022
Toluene	115	0.59	< 0.3	0.0041 J	3.1 J	0.023 J	< 0.0038	0.022
Xylene (total)	700	0.61	0.37 J	0.0084	30 J	0.094	0.046	0.13
POLYNUCLEAR AROMATICS (8100M)								
Benzo(a)pyrene	NA	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
Benzo(b,k)fluoranthene [3]	0.66	< 0.4	< 0.39	0.62	[1.1]	[0.81]	[1.6]	< 0.4
Benzo(ghi)perylene	-	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	0.55	< 0.4
Chrysene + Benzo(a)anthracene [3]	0.66	< 0.4	< 0.39	< 0.4	< 0.38	[1.8]	< 0.38	0.52
Fluoranthene	NA	< 0.4	< 0.39	< 0.4	0.74	0.63	< 0.38	< 0.4
Fluorene	NA	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
Naphthalene	-	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 0.4	< 0.39	< 0.4	0.53	< 0.38	< 0.38	< 0.4
Phenanthrene & Anthracene [3]	NA	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
Pyrene	NA	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
1-Methylnaphthalene	-	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
2-Methylnaphthalene	-	< 0.4	< 0.39	< 0.4	< 0.38	< 0.38	< 0.38	< 0.4
PETROLEUM HYDROCARBONS (8015M)								
GRO	-	5.6 J	88 J	1.2 J	5000 J	420 J	0.31	1.8
DRO	-	52	180 J	130 J	24	26	92 J	< 12 J

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
* - Detection limit exceeds soil threshold level due to dilutions .
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 2, CONTINUED

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SOIL BORINGS

SITE:		SB08	SB08	SB19	SB19	SB20	SB20	SB21
SAMPLE ID:	SOIL	SB0801	SB0802	SB1901	SB1902	SB2001	SB2002	SB2101
SAMPLE DATE:	THRESHHOLD	11/19/96	11/19/96	11/20/96	11/20/96	11/20/96	11/20/96	11/20/96
DEPTH (ft):	LEVELS [1]	6	12	6	8	6	8	3
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
CONSTITUENTS (METHOD)								
VOLATILES (8020) [2]								
Benzene	0.017	< 0.00028	< 0.0003	< 0.0056	< 0.0063	< 1.4 *	< 6.2 *	< 0.0052
Ethylbenzene	18	< 0.0036	< 0.0037	< 0.0056	< 0.0063	5.9	[34]	< 0.0052
Toluene	115	< 0.0038	< 0.004	< 0.0056	< 0.0063	< 1.4	1.3 J	0.038
Xylene (total)	700	0.0039 J	0.0012 J	< 0.0056	< 0.0063	46	220	0.0082
POLYNUCLEAR AROMATICS (8100M)								
Benzo(a)pyrene	NA	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Benzo(b,k)fluoranthene [3]	0.66	[1.6]	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Benzo(ghi)perylene	-	1.5	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Chrysene + Benzo(a)anthracene [3]	0.66	[1.2]	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Fluoranthene	NA	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Fluorene	NA	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Naphthalene	-	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	1.1	< 0.34
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Phenanthrene & Anthracene [3]	NA	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
Pyrene	NA	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	< 0.41	< 0.34
1-Methylnaphthalene	-	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	0.58	< 0.34
2-Methylnaphthalene	-	< 0.39	< 0.4	< 0.38	< 0.42	< 0.38	0.95	< 0.34
PETROLEUM HYDROCARBONS (8015M)								
GRO	-	4.2	< 0.22	< 0.28	0.51	800 J	4000 J	< 0.26
DRO	-	< 12 J	< 12 J	22	4.2	140	550	5.3

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
* - Detection limit exceeds soil threshold level due to dilutions .
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 2, CONTINUED

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SOIL BORINGS

SITE:		SB21	SB22	SB22	SB22	SB23	SB23	SB24	SB24
SAMPLE ID:	SOIL	SB2102	SB2201	SB2202	SB5401	SB2301	SB2302	SB2401	SB2402
SAMPLE DATE:	THRESHHOLD	11/20/96	11/20/96	11/20/96	11/20/96	11/21/96	11/21/96	11/21/96	11/21/96
DEPTH (ft):	LEVELS [1]	11	8	10	10	7	9	7	11
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg DUPLICATE	mg/kg	mg/kg	mg/kg	mg/kg
CONSTITUENTS (METHOD)									
VOLATILES (8020) [2]									
Benzene	0.017	< 0.0066	< 0.0052	[0.26 J]	[0.22 J]	< 0.0056	< 0.0058	< 0.0054	< 0.0061
Ethylbenzene	18	< 0.0066	< 0.0052	5.3 J	2.9	< 0.0056	< 0.0058	< 0.0054	< 0.0061
Toluene	115	0.0078	< 0.0052	10 J	5.6	< 0.0056	< 0.0058	0.008 J	< 0.0061
Xylene (total)	700	0.008	< 0.0052	38 J	13	0.0026 J	< 0.0058	0.0041 J	0.0023 J
POLYNUCLEAR AROMATICS (8100M)									
Benzo(a)pyrene	NA	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	0.97	< 0.4
Benzo(b,k)fluoranthene [3]	0.66	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	[1.8]	< 0.4
Benzo(ghi)perylene	-	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	0.71	0.55
Chrysene + Benzo(a)anthracene [3]	0.66	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	[2.2]	< 0.4
Fluoranthene	NA	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	2.4	< 0.4
Fluorene	NA	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	0.73	< 0.4
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	0.57	< 0.4
Phenanthrene + Anthracene [3]	NA	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	2.9	< 0.4
Pyrene	NA	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	1.8	< 0.4
1-Methylnaphthalene	-	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	< 0.36	< 0.4
2-Methylnaphthalene	-	< 0.43	< 0.34	< 0.39	< 0.39	< 0.36	< 0.38	< 0.36	< 0.4
PETROLEUM HYDROCARBONS (8015M)									
GRO	-	1400 J	< 0.26	630 J	430 J	< 0.2	< 0.2	< 0.2	< 0.22
DRO	-	11	8.3	23	26	13	18	< 10	< 12

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 3

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SURFACE WATER

SITE:		SWE07	SWE08	SWE09	SWE10
SAMPLE ID:	INSTREAM	HT4-SW07	HT4-SW08	HT4-SW09	HT4-SW10
SAMPLE DATE:	WQS [1]	12/10/96	12/10/96	12/10/96	12/10/96
UNITS:	ug/L	ug/L	ug/L	ug/L	ug/L
CONSTITUENT (METHOD)					
VOLATILES (8020) [2]					
Benzene	71.28	19 J	5.2 J	1 J	< 1
Ethylbenzene	28,718	30 J	3.8 J	< 1	< 1
Toluene	200,000	230 J	50 J	1.8 J	< 1
Xylene (total)	10,000 [3]	270 J	55 J	3.1 J	< 2
POLYNUCLEAR AROMATICS (8310)		ND	ND	ND	ND

J - Result is Estimated < = Less than detection limit.
ND = Constituents not detected above the detection limit, see Appendix D, Analytical Data.
(1) - Ga Instream WQS- Georgia DNR, EPD Water Quality Control, Instream Water Quality Standards, Chapter 391-3-6-.03 section 5(d)(ii) & (iii) 10/23/95.
(-) WQS not listed
(2) - Volatiles analysis includes MTBE
(3) - The MCL is given since no WQS exists.

TABLE 4

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
CONSTITUENTS DETECTED IN SEDIMENTS

SITE:		SWE07	SWE08	SWE09	SWE10
SAMPLE ID:	SOIL	HT4-SE07	HT4-SE08	HT4-SE09	HT4-SE10
SAMPLE DATE:	THRESHHOLD	12/10/96	12/10/96	12/10/96	12/10/96
DEPTH (ft):	LEVELS [1]	0	0	0	0
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
CONSTITUENTS (METHOD)					
VOLATILES (8020) [2]					
Benzene	0.017	< 0.62 *	< 0.01	< 0.094 *	< 0.12 *
POLYNUCLEAR AROMATICS (8100M)					
Benzo(a)pyrene	NA	0.6	< 0.7	1	1.9
Benzo(b,k)fluoranthene [3]	0.66	< 0.5	< 0.7	[2.4]	[3.6]
Benzo(ghi)perylene	-	< 0.5	< 0.7	1.8	2.3
Chrysene + Benzo(a)anthracene [3]	0.66	< 0.5	< 0.7	[1.9]	[2.7]
Fluoranthene	NA	< 0.5	< 0.7	1.7	1.9
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene [3]	0.66	< 0.5	< 0.7	[0.8]	[1.3]
Phenanthrene + Anthracene [3]	NA	< 0.5	< 0.7	1.2	< 0.84
Pyrene	NA	< 0.5	< 0.7	1.6 J	2 J
PETROLEUM HYDROCARBONS (8015M)					
GRO	-	130 J	< 0.38	< 0.33	0.98 J
DRO	-	< 15	< 21	24	< 26

J = Result is Estimated. < = Less than detection limit
[ ] - Concentration exceeds Soil Threshold Level
* - Detection limit exceeds soil threshold level due to dilutions .
(1) - Soil Threshold Levels-GA DNR EPD, Chapter 391-3-15-.09, UST Management, Table B, for an Average of Higher Groundwater Pollution Susceptibility Area based on a distance of < 500 feet to a surface water body.
(-) Level not listed. NA - Not Applicable; Health-based threshold level exceeds the expected soil concentration under free product condition.
(2) - Volatiles analysis includes MTBE
(3) - PAH compounds co-elute and can not be individually confirmed.

TABLE 5
WATER SUPPLY WELLS WITHIN A 2-MILE RADIUS OF PUMPHOUSE #1

Well I.D.	Quad.	Owner	Total Depth	Casing Depth	Use
112	36Q	SCL RR, Shops	508	275	Commercial
285	36Q	U.S. Army, Hunter 1	504	259	Public
286	36Q	U.S. Army, Hunter 2	555	260	Institution
287	36Q	U.S. Army, Hunter 3	370	324	Public
006	37P	City of Savannah 13	1000	270	Public
302	36Q	City of Savannah 25	540	287	Public
290	36Q	U.S. Army, Hunter 4	300	90	Institutional
284	36Q	U.S. Army, Hunter 9	623	270	Fire
036	36P	City of Savannah 36	414	252	Public

Quad: Georgia Grid System. The full well name as in Bulletin 113 is 37Q034.

Sources: Hunter AAF in AT&E, 1993.
GA Geologic Survey, Bulletin 113, 1990.
U.S.G.S. Well Listing, 1996.
City of Savannah Well Listing, 1996.

TABLE 6
PUMPHOUSE #1 AREA MONITORING WELL SUMMARY

Location	Screen Interval ft, bgs	Depth to Water TOC	TOC Elevation	Water Level Elevation	Ground Elevation
MW01	6.8 - 16.8	10.52	36.28	25.76	36.5
MW02	7.0 - 17.0	10.28	37.34	27.06	37.5
MW03	6.0 - 16.0	9.39	37.24	27.85	37.5
MW11	7.0 - 17.0	9.66	36.99	27.33	37.2
MW12	6.5 - 16.5	8.87	35.70	26.83	35.9

Date of static gauging - 12/9/96
TOC - Top of Casing

TABLE 7
PROPOSED SIP IMPLEMENTATION SCHEDULE

Task No.	Task Description	Estimated Start Date	Estimated Completion Date	Calendar Days After NTP
1	USACE Approval of Final CAP Part A	March 6, 1997	April 28, 1997	0
2	Mobilize for Phase II	April 28, 1997	May 2, 1997	5
3	Complete Phase II SI	May 5, 1997	May 28, 1997	30
4	Prepare Draft CAP Part B	May 29, 1997	July 28, 1997	90
5	Review Draft CAP Part B	July 29, 1997	Aug. 28, 1997	120
6	Prepare Final CAP Part B	Aug. 29, 1997	Sept. 12, 1997	134
7	Submit Final CAP Part B	Sept. 15, 1997	Sept. 15, 1997	137

APPENDIX A

PASSIVE SOIL VAPOR SURVEY

APPENDIX A

PASSIVE SOIL VAPOR SURVEY

DESCRIPTION OF PASSIVE SOIL VAPOR MODULES AND MODULE INSTALLATION AND RETRIEVAL PROCESSES

Each soil vapor module consists of four separate GORE-SORBER® Passive Sorbent Collection Devices (sorbers). A sorber is 40 millimeters (mm) long, with a 3 mm inside diameter (ID), and contains 40 milligrams (mg) of granular adsorbent material. Two Tenax-TA® resin and two carbonaceous resin sorbers are sheathed in the bottom of a 4-foot length of vapor-permeable insertion and retrieval cord. Both the retrieval cord and sorbent container are constructed solely of inert, hydrophobic, microporous GORE-TEX® expanded polytetrafluoroethylene.

The hydrophobic nature of the material means that liquid water will be excluded yet they do not retard vapor transfer, thus allowing VOC and SVOC vapors to freely penetrate the module and collect on the adsorbent material. This ability to protect the sorbent media from contact with ground and soil pore water without retarding soil vapor adsorption facilitates the use of the modules in saturated and very low permeability, poorly drained soils.

Installation of the modules was performed by utilizing a slam bar and an electric rotary hammer-drill to create a 5/8-inch-diameter pilot hole for the deployment of the modules to an average depth of 4 feet below grade. Modules were inserted into the completed boreholes using a stainless steel insertion rod after the pilot hole was completed. The top of each cord was fastened to a cork, which was tamped flush with the ground surface to assist in retrieval of the module, and to seal the annulus of the boring.

The modules were left in place for the recommended 3-week screening period. Module retrieval required field personnel to remove the cork, grasp the retrieval cord and manually pull the module from each location. Corks were separated from the module and discarded. The exposed modules were resealed in their respective designated shipping vials and placed immediately on ice in coolers, along with trip blanks and water temperature control blanks (provided by GORE). Coolers were returned along with the chain-of-custody (COC) form to GORE's laboratory in Elkton, Maryland via overnight carrier. Sorber analysis consists of thermal desorption, gas chromatography, and mass selective detection. The results of the Screening Survey are summarized in a brief report which includes the chain of custody, laboratory analytical data summary tables, and color contour maps. Excerpts from Gore's report and the petroleum hydrocarbons contour map are provided in this Appendix.

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ENVIRONMENTAL PRODUCTS GROUP

Creative Technologies Worldwide

GORE-SORBER℠ Screening Survey Final Report

Pumphouses 1, 2 & 6, Hunter Army Airfield
Savannah, GA

November 19, 1996

Prepared For:
Metcalf & Eddy, Inc.
1201 Peachtree Street, NE
400 Colony Square, Suite 1101
Atlanta, GA 30361

W.L. Gore & Associates, Inc.
Written/Submitted by

Jay W. Hodny, M.S.
Associate

W.L. Gore & Associates, Inc.
Reviewed/Approved by

Mark J. Wrigley, P.G.
Associate

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GORE-SORBER[sm] Screening Survey
Final Report

REPORT DATE: November 19, 1996 **AUTHOR:** JWH

SITE INFORMATION

Site Reference: Pumphouses 1, 2, & 6, Hunter Army Airfield, Savannah, GA
Customer Purchase Order Number: 155834
Customer Project Number: Job #019457-4102
Gore Production Order Number: 069711 **Gore Site Code:** TP

FIELD PROCEDURES

 # Modules shipped: 684
 # Modules Installed: 651
 # Modules Lost in Field: 6
 # Unused Modules Returned: 4
Exposure Time: 21, 22 **[days]**

#Modules Retrieved: 645
#Trip Blanks Returned: 29

Field work performed by: Metcalf & Eddy

Coolers/Modules Received by: CJF (Gore), October 16,17, & 18, 1996 @ 12:00pm
Chain of Custody Form attached: √
Chain of Custody discrepancies: Page 1 of the COCs for Coolers #8 and #9 appeared to have been switched (i.e., Cooler #8 and #9 COCs are mismatched to the Installation/Retrieval logs for these two coolers).
Comments: Temperature of the water control blanks for seven coolers, exceeded the generally accepted criteria for preservation of environmental samples, 4.0±2.0 °C.

GORE-SORBER[sm] Screening Survey
Final Report

FIELD PROCEDURES SUMMARY

Cooler #	# Modules Shipped	# Installed	# Trip Blanks	# Retrieved	# Lost	# Returned Unused	Installation Dates	Retrieval Dates	Water Control Blank Temp °C
1	68	65	3	64	1	0	9/25/96	10/17/96	6.8
2	68	65	3	62	3	0	9/25/96	10/17/96	5.7
3	68	65	3	65	0	0	9/25/96	10/16,17/96	6.1
4	68	61	3	60	1	4	9/25/96	10/16,17/96	3.7
5	69	69	0	69	0	0	9/24/96	10/16/96	7.3
6	68	65	3	65	0	0	9/24/96	10/16/96	7.0
7	68	65	3	65	0	0	9/24/96	10/15,16/96	10.1
8	69	65	3	65	0	0	9/23/96	10/15/96	7.0
9	69	66	4	65	1	0	9/23/96	10/15/96	8.5
10	69	65	4	65	0	0	9/24,25/96	10/16/97	2.9

GORE-SORBER[sm] Screening Survey Final Report

ANALYTICAL PROCEDURES

W.L. Gore & Associates' Screening Module Laboratory operates under the guidelines of its Quality Assurance Manual, Operating Procedures and Methods. The quality assurance program is consistent with Good Laboratory Practices (GLP) and ISO Guide 25, "General Requirements for the Competence of Calibration and Testing Laboratories", third edition, 1990. The Laboratory is audited regularly by a quality system design, development and auditing company.

Instrumentation consists of Hewlett-Packard 5890 gas chromatographs and 5971 mass selective detectors, as well as Perkin-Elmer ATD 400 automated thermal desorption units. Sample preparation simply involves cutting the tip off the bottom of the sample module and transferring one or more exposed sorbent containers (sorbers, each containing 40mg of a suitable granular adsorbent) to a thermal desorption tube for analysis. Sorbers remain clean and protected from dirt, soil, and ground water by the insertion/retrieval cord, and require no further sample preparation.

Screening Method Quality Assurance:

Before each run sequence, two instrument blanks, a sorber containing 5µg BFB (Bromofluorobenzene), and a method blank are analyzed. The BFB mass spectra must meet the criteria set forth in our methods before samples can be analyzed. A sorber containing BFB is also analyzed after every 30 samples and/or trip blanks, as is a method blank. Standards containing the selected target compounds at three calibration levels of 5, 20, and 50µg are analyzed at the beginning of each run. The criterion for each target compound is less than 35% RSD (relative standard deviation). If this criterion is not met for any target compound, the analyst has the option of generating second- or third-order standard curves, as appropriate. A second-source reference standard, at a level of 20µg per target compound, is analyzed after every ten samples and/or trip blanks, and at the end of the run sequence. Positive identification of target compounds is determined by the presence of the target ion and at least two secondary ions, retention time versus reference standard, and the analyst's judgment.

NOTE: All data have been archived. Any replicate sorbers not used in the initial analysis will be discarded fifteen (15) days from the date of analysis.

Laboratory analysis: thermal desorption, gas chromatography, mass selective detection
Quality Assurance Level: 2 (ANA-4/GS3)
Instrument ID: # 2, 3 **Chemist:** JW/WW **Data Subdirectory:** 069711
Compounds/mixtures requested: Expanded VOCs and SVOCs Target List (A4)
Deviations from Standard Method: For analytical run 069711E, MtBE, Octane, and Pentadecane 50 µg standard dropped due to non-linearity.
Comments: Soil vapor analytes and abbreviations are tabulated in the Data Table Key (page 7).

GORE-SORBER[sm] Screening Survey Final Report

DATA TABULATION

 # CONTOUR MAPS ENCLOSED: Four (4) B-size color contour maps
LIST OF MAPS ENCLOSED:

- Benzene, Toluene, Ethylbenzene, m,p,o-Xylenes (BTEX)
- Undecane, Tridecane, & Pentadecane (C11, C13, & C15)
- Combined PAHs (PAHs)
- Petroleum Hydrocarbons (Petro. Hydro.)

Compound Name	Method Detection Limit [µg]	Low Map (gray) Limit [µg]	Highest Detect Level [µg]	Upper Map (purple) Limit [µg]
BTEX	0.02	0.02	719.64	719.64
C11, C13, & C15	0.02	0.02	36.75	36.75
PAHs	0.03	0.03	17.94	17.94
Petro. Hydro.	*	1.07	1,755.96	1,755.96

* - No method detection limit is available.

NOTE: All data values presented in Appendix A represent masses of compound(s) desorbed from the GORE-SORBER Screening Modules received and analyzed by W.L. Gore, as identified in the Chain of Custody (Appendix A). The measurement traceability and instrument performance are reproducible and accurate for the measurement process documented. Semi-quantitation of the compound mass is based on either a single-level (QA Level 1) or three-level (QA Level 2) standard calibration.

Comments:

- At the request of Metcalf & Eddy, the minimum (gray) contour level, for each mapped analyte or group of analytes, was set at the method detection limit. No method detection limit exists for the Petroleum Hydrocarbons data; therefore, the gray level was set at the average blank level for these data. The maximum contour level was set at the maximum value observed. The maximum blank levels and average blank levels reported were posted on each map along the color scale bar.
- Stacked total ion chromatograms (TIC's) are included in Appendix A. The last three digits of each module number are incorporated into the TIC identification (e.g.: TP370TC.D represents module #127370).
- Elevated levels of several target analytes were reported in trip blank #127386.
- During the analysis of module #126998, the masses of hydrocarbons eluting from the instrumentation caused an instrument detector overload (under maximum dilution conditions). Therefore, values reported in the data table are indicated with a ">" sign. This indicates that the microgram levels were at least this high. Quantification of these compounds is integrated up to a point of confidence in the chromatograms. For mapping

purposes, those values reported with a ">" sign were set equal to that value. For example, with module #126998, toluene was reported as >377.34 µg. Thus, this level was set at 377.34 µg for mapping purposes.

- Modules exhibiting unresolved peak envelopes (UPEs) were tentatively identified by matching the UPE to fluids in Gore's fluids library. Metcalf & Eddy, Inc. were interested in tentative matches indicating fluids in the range of aviation fuel products. A similar tentative fluids match was performed on this dataset, using the same chemist judgment criteria as that reported in the GORE-SORBER Screening Survey Final Report, Stormwater Drainage System, Hunter Army Airfield, Savannah, GA, dated February 12, 1996. The results are summarized in Appendix A, Tentative Fluid Matching Results.

GORE-SORBER is a registered trademark of W. L. Gore & Associates, Inc.

GORE-SORBER[sm] Screening Survey
Final Report

KEY TO DATA TABLE

Pumphouses 1, 2 & 6, Hunter Army Airfield, Savannah, GA

UNITS

µg	micrograms (per sorber), reported for compounds using external standards.
MDL	method detection limit

ANALYTES

BTEX	combined masses of benzene, toluene, ethylbenzene and total xylenes (Gasoline Range Aromatics)
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)
MTBE	methyl t-butyl ether
t12DCE	trans-1,2-dichloroethene
11DCA	1,1-dichloroethane
c12DCE	cis-1,2-dichloroethene
$CHC1_3$	chloroform
111TCA	1,1,1-trichloroethane
12DCA	1,2-dichloroethane
BENZ	benzene
$CC1_4$	carbon tetrachloride
TCE	trichloroethene
TOL	toluene
OCT	octane
PCE	tetrachloroethene
ClBENZ	chlorobenzene
EtBENZ	ethylbenzene
mpXYL	m-, p-xylene
oXYL	o-xylene
135TMB	1,3,5-trimethylbenzene
124TMB	1,2,4-trimethylbenzene
TMBs	1,2,4- & 1,3,5-trimethylbenzene
14DCB	1,4-dichlorobenzene
UNDEC	undecane
NAPH	naphthalene
TRIDEC	tridecane
2MeNAPH	2-methyl naphthalene
PENTADEC	pentadecane
5 PAHs	naphthalene, 2-methynaphthalene, acenaphthene, acenaphthylene, and fluorene

BLANKS

TBn	unexposed trip blanks, which traveled with the exposed modules
method blankn	method blank, retained at Gore

APPENDIX B

MONITORING WELL SCHEMATICS

GROUND WATER INSTALLATION

PROJECT: Pumphouse 1,2,6 JOB NO. 019457 WELL NO. MW01

DRILLING CONTRACTOR: PSI

COORDINATES:

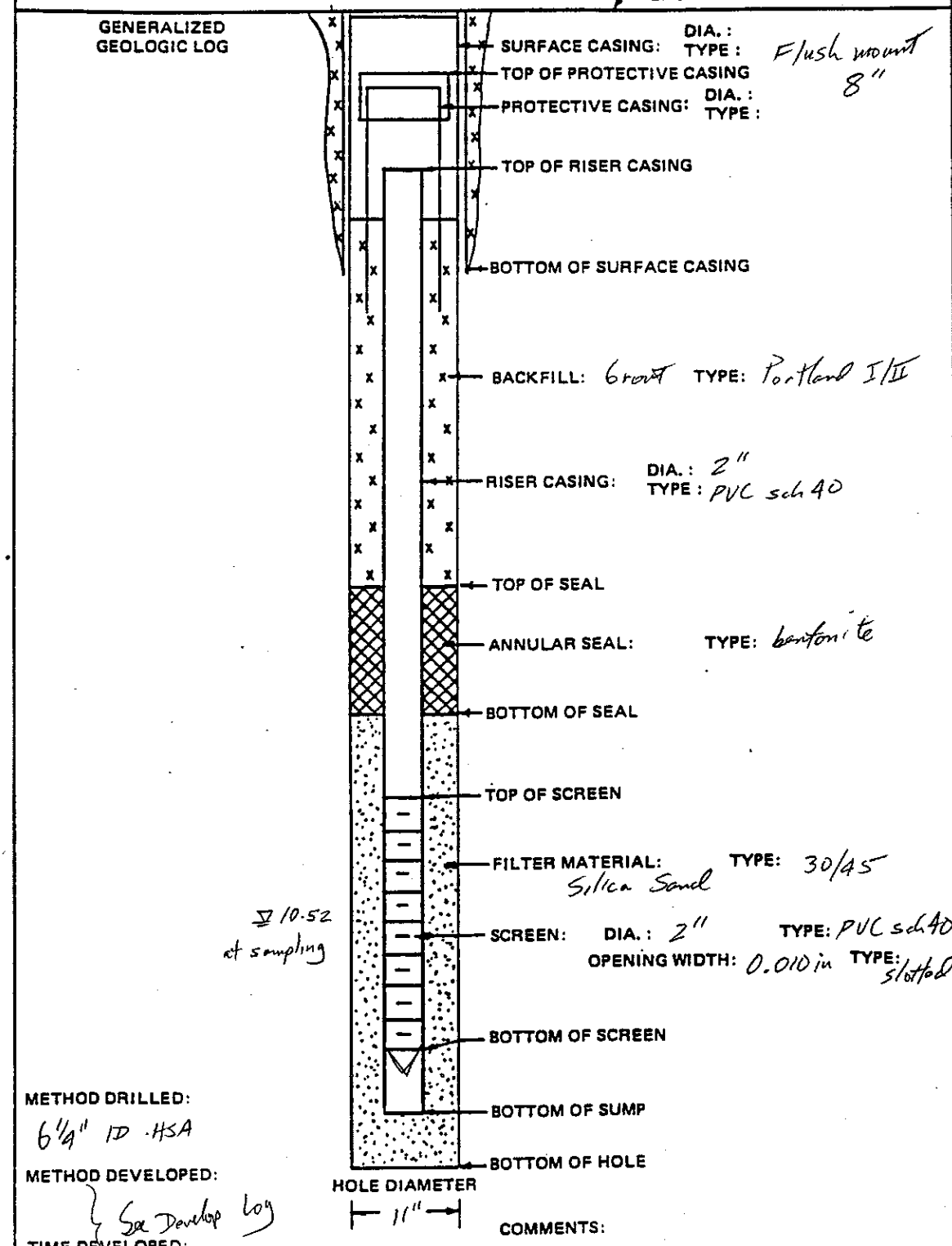
BEGUN: 11/18/96 SUPERVISOR: D. Humphreys

FINISHED: 11/18/96 DRILLER: M. Grible

WELL SITE:

WATER LEVEL: DEPTH/ELEV. 10.52 / 25.76

REFERENCE POINT & ELEVATION:



	DEPTH IN FT	ELEV. IN FT MSL
GROUND SURFACE		36.5
SURFACE CASING / TOP OF PROTECTIVE CASING	—	—
TOP OF RISER CASING	0.2	36.28
BOTTOM OF SURFACE CASING	—	—
TOP OF SEAL	2.5	34.0
BOTTOM OF SEAL	4.8	31.7
TOP OF SCREEN	6.8	29.7
BOTTOM OF SCREEN	16.8	19.7
BOTTOM OF SUMP	NA	
BOTTOM OF HOLE	18.0	18.5

METHOD DRILLED: 6 1/4" ID HSA

METHOD DEVELOPED: } See Develop log

TIME DEVELOPED: }

COMMENTS:

Metcalf & Eddy

GROUND WATER INSTALLATION

PROJECT: Pump house 1,2,6 JOB NO. 019457 WELL NO. MW02

DRILLING CONTRACTOR: PSI

COORDINATES:

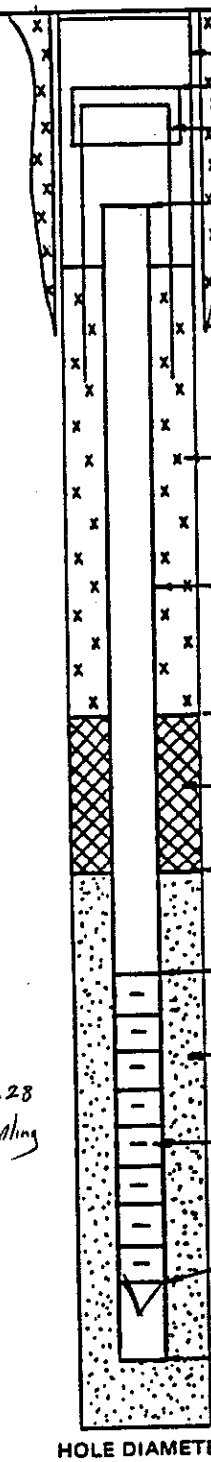
BEGUN: 11/18/96 FINISHED: 11/18/96 SUPERVISOR: D. Humphris DRILLER: M. Gribble

WELL SITE:

WATER LEVEL: 10.28 DEPTH/ELEV. 27.06

REFERENCE POINT & ELEVATION:

GENERALIZED GEOLOGIC LOG



▽ 10.28 at sampling

DEPTH IN FT	ELEV. IN FT
0	37.5
—	—
0.2	37.34
—	—
3.0	34.5
5.0	32.5
7.0	30.5
17.0	20.5
NA	—
18.0	19.5

METHOD DRILLED: 6 1/4" ID HSA

METHOD DEVELOPED: } See Develop log

TIME DEVELOPED: }

COMMENTS:

Metcalf & Eddy

GROUND WATER INSTALLATION

PROJECT: Pumphouse 1, 2, 6 JOB NO. 019457 WELL NO. MW03

DRILLING CONTRACTOR: PSI

COORDINATES:

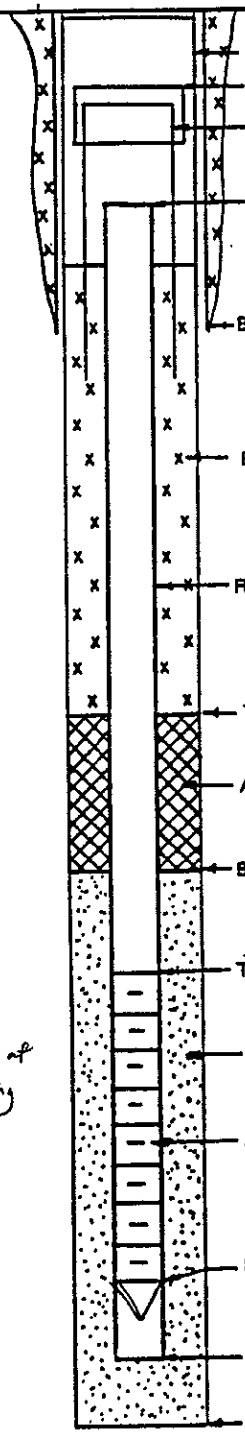
BEGUN: 11/19/96 FINISHED: 11/19/96 SUPERVISOR: D Humphris DRILLER: M. Gribble

WELL SITE:

WATER LEVEL: DEPTH/ELEV. 9.39 / 27.85

REFERENCE POINT & ELEVATION:

GENERALIZED GEOLOGIC LOG



DEPTH IN	ELEV. IN
0	37.5
—	—
0.3	37.24
—	—
1.6	35.9
3.6	33.9
6.0	31.5
16.0	21.5
NA	-
17.0	20.5

▽ 9.39 at sampling

METHOD DRILLED: 6 1/4" ID HSA

METHOD DEVELOPED: } See Develop Log

TIME DEVELOPED: }

COMMENTS:

M&E Metcalf & Eddy

GROUND WATER INSTALLATION

PROJECT: Pumphouse 1, 2, 6 JOB NO. 019457 WELL NO. MW-11

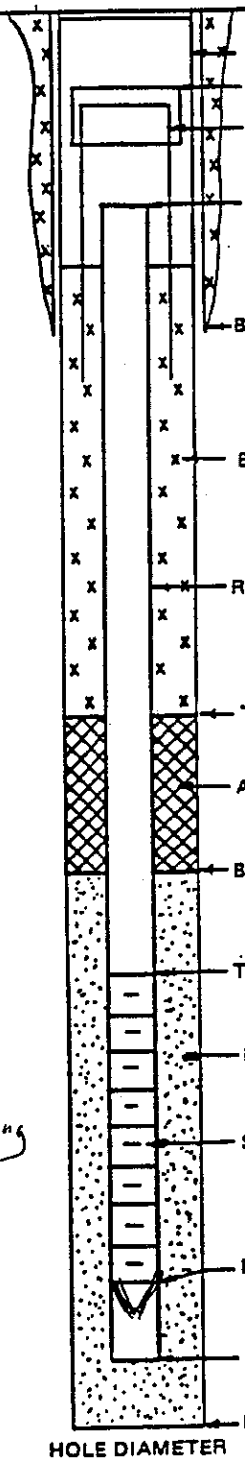
DRILLING CONTRACTOR: PSI COORDINATES:

BEGUN: 11/21/96 SUPERVISOR: D. Humphris WELL SITE: WATER LEVEL: DEPTH/ELEV. 9.66 / 27.33

FINISHED: 11/21/96 DRILLER: M. Gribble

REFERENCE POINT & ELEVATION:

GENERALIZED GEOLOGIC LOG



Flush mount 8"

▽ 9.66 at sampling

DEPTH IN	ELEV. IN
0	37.2
—	—
0.2	36.99
—	—
2.8	34.4
5.0	32.2
7.0	30.2
17.0	20.2
—	
18.0	19.2

METHOD DRILLED: 6¼" ID HSA

METHOD DEVELOPED: See Develop log

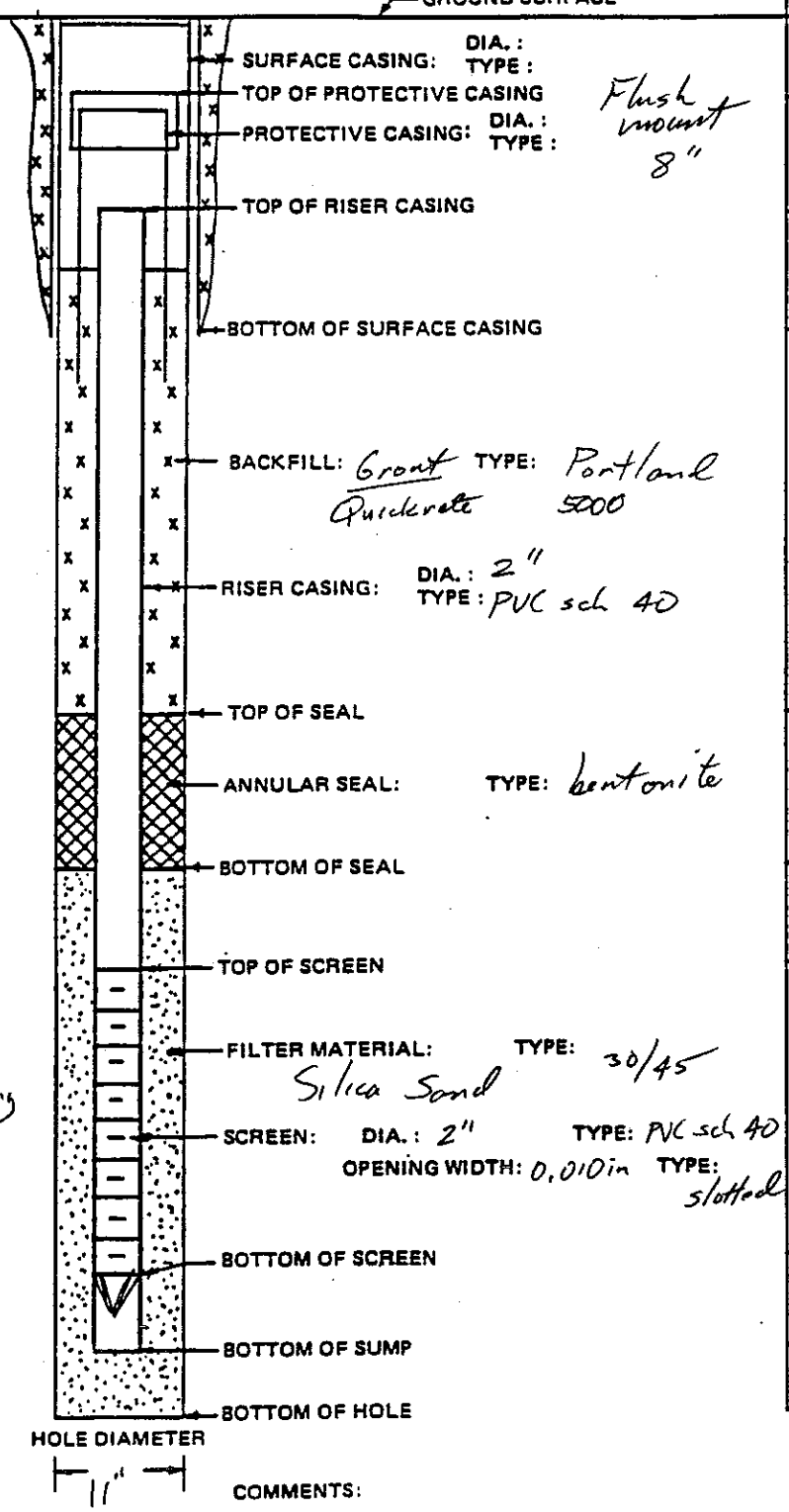
TIME DEVELOPED:

COMMENTS:

Metcalf & Eddy

GROUND WATER INSTALLATION	PROJECT: Pumphouse 1,2,6	JOB NO. 019457	WELL NO. MW12
DRILLING CONTRACTOR: PSI	COORDINATES:		
BEGUN: 11/21/96 FINISHED: 11/21/96	SUPERVISOR: D. Humphries DRILLER: M. Gribble	WELL SITE:	WATER LEVEL: 8.87 DEPTH/ELEV.: 26.83

REFERENCE POINT & ELEVATION:



	DEPTH IN	ELEV. IN
GROUND SURFACE	0	35.9
SURFACE CASING: DIA.: TYPE: / TOP OF PROTECTIVE CASING	—	—
PROTECTIVE CASING: DIA.: TYPE: Flush mount 8" / TOP OF RISER CASING	0.2	35.70
BOTTOM OF SURFACE CASING	—	—
BACKFILL: Grout TYPE: Portland Quickcrete 5000 / RISER CASING: DIA.: 2" TYPE: PVC sch 40 / TOP OF SEAL	2.0	33.9
ANNULAR SEAL: TYPE: bentonite / BOTTOM OF SEAL	4.4	31.5
TOP OF SCREEN	6.5	29.4
FILTER MATERIAL: TYPE: 30/45 Silica Sand / SCREEN: DIA.: 2" TYPE: PVC sch 40 / OPENING WIDTH: 0.010in TYPE: slotted / BOTTOM OF SCREEN	16.5	19.4
BOTTOM OF SUMP	—	—
BOTTOM OF HOLE	18.0	17.9

▽ 8.87 at sampling

METHOD DRILLED: 6 1/4" ID HSA

METHOD DEVELOPED: See Develop log

TIME DEVELOPED:

COMMENTS:

Metcalf & Eddy

APPENDIX C

MONITORING WELL DEVELOPMENT SHEETS

AND PHOTOGRAPHS

MONITORING WELL DEVELOPMENT

Metcalf & Eddy

WELL I.D. NO.: MW01

DATE: 11/22/96

LOGGED BY: D. Humphris

METHOD OF DEVELOPMENT: 12 VDC Whale Pumps

STATIC WATER LEVEL: 10.5' bgs

TD 16.8 6.3 ft water

50 gal = 5 vol

SAMPLE NO.	TIME 0831	PARAMETERS				PUMPING RATE (gpm)	VOLUME PUMPED (gal)	PHOTO TAKEN	OBSERVATIONS
		TEMP (°F)	pH	COND'Y (umhos)	TURBIDITY (NTU)				
1	838	62.5	4.97	62.2		0.5	2.5		Surge @ 0, 2.5
2	854	63.9	4.98	74.8			5		Surge @ 5, 7.5
3	902	64.0	5.00	71.0		1 gpm	7.5		Surge at 10
4	919	63.9	5.01	72.9			15		Surge @ 15, 20, 25
5	933	62.8	5.08	74.5			25		
6	951	65.2	5.10	71.2			35		clearing.
7	1002	66.9	5.08	70.7			45		clearing - no sediment in jar @ 5min
8	1012	66.9	5.04	70.4			55		
9	1026	67.5	5.02	70.3			65		Re-cal pH clearing
10	1034	67.6	5.87	69.5			75		clearing - lt yellow color - no change
							~~85~~		in 20 gal - no sediment
11	1042	67.9	5.81	66.8			85		
12	1054	67.5	5.77	65.7			95		no change in color
13	1104	67.8	5.82	66.8			105	Y	stop

TOTAL DEVELOPMENT TIME: 2:03

TOTAL VOLUME PURGED: 105 GAL.

COMMENTS: Lt. yellow color - no sediment
Fe probable

MONITORING WELL DEVELOPMENT

Metcalf & Eddy

WELL I.D. NO.: MW2

METHOD OF DEVELOPMENT: Grundfos Pump

DATE: 11/22/96

STATIC WATER LEVEL: @ 10.0' bgs

LOGGED BY: Daniel Howard

TD = 17.0' 7' water

53.3 gal = 5 vol

SAMPLE NO.	TIME	PARAMETERS				PUMPING RATE (gpm)	VOLUME PUMPED (gal)	PHOTO TAKEN	OBSERVATIONS
		TEMP (°F)	pH	COND'Y (umhos)	TURBIDITY (NTU)				
1	1126	71.7	5.73	59.2		1.5	2.5	None	surge well
2	1132	69.9	5.49	44.0		2.0	5.0	None	surge well
3	1136	70.5	5.50	41.6		2.0	7.5	None	surge well
4	1140	69.4	5.52	44.0		1.5	10.0	None	surge well
5	1146	70.0	5.50	43.8		1.5	15.0	None	surge well
6	1151	69.8	5.48	40.9		1.5	20.0	None	surge well
7	1157	69.5	5.45	39.1		1.5	25.0	None	surge well
8	1203	69.0	5.42	39.1		1.5	30.0	None	very turbid
9	1208	70.8	5.40	37.5		2.0	35.0	None	turbid
10	1211	71.0	5.39	36.2		2.0	40.0	None	
11	1215	70.5	5.26	36.5		2.0	45.0	None	
12	1219	70.0	5.30	35.3		2.0	50.0	None	
13	1223	72.1	5.30	35.5		2.0	55.0	None	
14	1230	71.5	5.23	35.2		2.0	65.0	None	cloudy
15	1237	71.5	5.24	33.3		2.0	75.0	None	clear with light brown tint
16	1250	67.0	5.27	31.3		4	85		No sediment, v. sl. yell tint.
17	1304	67.2	5.28	29.8			95	Y	STOP- fairly clear - sl. yell tint
18									no sediment

TOTAL DEVELOPMENT TIME: 1:28

TOTAL VOLUME PURGED: 95 Gal

COMMENTS

MONITORING WELL DEVELOPMENT

Metcalf & Eddy

WELL I.D. NO.: MW03

METHOD OF DEVELOPMENT: ~~MW03~~ 12V DC Whale

DATE: 11/22/96

STATIC WATER LEVEL: 9.3 bgs

LOGGED BY: D. Humphreys

TD-160' W.L=6.7'
≈ 12gal = 5 vol

SAMPLE NO.	TIME 1325	PARAMETERS				PUMPING RATE (gpm)	VOLUME PUMPED (gal)	PHOTO TAKEN	OBSERVATIONS
		TEMP (°F)	pH	COND'Y (umhos)	TURBIDITY (NTU)				
1	1329	67.9	5.47	156.3		1-1.2	2.5	-	Surge @ 0, 2.5, 5
2	1337	67.2	5.56	114.7			7.5		Surge @ 7.5, 10
3	1346	67.7	5.50	103.6			15		Surge @ 15, 20
4	1358	67.2	5.48	86.5			25		Surge @ 25
5	1402	67.1	5.46	81.2			30		
6	1406	68.1	5.41	77.6			35		
7	1408	70.2	5.41	72.5			40		
8	1411	~~78~~ 69.2 on	5.40	~~78~~ 66.5			45		
9	1418	68.5	5.42	67.5			55		
10	1425	68.2	5.38	64.7			65		
11	1427	68.3	5.40	60.5			75		clearing
12	1440	66.5	5.37	60.9			85		Pale yellow tint - no sediment
13	1446	67.8	5.43	61.2			95		No change in 15 gal
14	1455	67.8	5.36	60.3			105		
15	1458	68.8	5.35	61.7			110	Y	almost clear, sl. yellow tint no sediment

TOTAL DEVELOPMENT TIME: 1:33

TOTAL VOLUME PURGED: 110 GAL

COMMENTS

MONITORING WELL DEVELOPMENT

Metcalf & Eddy

WELL I.D. NO.: MW 11

DATE: 11/26/96

LOGGED BY: Daniel Howard

METHOD OF DEVELOPMENT: GrundFos Pump

STATIC WATER LEVEL: ~~6.8' TOC 6.9' bgs~~ 9.41' TOC / 9.51' bgs

TD - 17.0

7.49 x 6.9 = 51.7 gal (5 vol)

SAMPLE NO.	TIME 0816	PARAMETERS TEMP (°F)	pH	COND'Y (umhos)	TURBIDITY (NTU)	PUMPING RATE (gpm)	VOLUME PUMPED (gal)	PHOTO TAKEN	OBSERVATIONS
									Surge
1	0821	69.5	5.89	120.2		1.5	2.5	None	Surge color brown, very cloudy
2	0824	72.0	5.63	107.3		1.5	5		Surge color red brown turbid
3	0827	72.6	5.58	101.3		1.5	7.5		Surge color red brown turbid
4	0830	72.4	5.59	96.8		1.5	10		Surge color red brown turbid
5	0834	73.1	5.54	89.4		1.5	15		Surge color red brown, turbid
6	0838	72.4	5.51	83.5		1.5	20		Surge color red brown, turbid
7	0843	72.6	5.55	82.7		1.5	25		surge color red brown turbid
8	0847	73.2	5.51	73.1		1.5	30		color red brown, turbid
9	0850	73.0	5.45	70.0		1.5	35		turbid, color red brown
10	0854	73.2	5.45	66.6		1.5	40		turbid, color red brown
11	0857	73.3	5.47	69.0		1.5	45		turbid, color light brown
12	0900	73.1	5.46	65.9		1.5	50		turbid, color light brown slight petroleum odor
13	0906	72.1	5.44	63.7		1.5	60		turbid, color light brown
14	0912	70.5	5.56	60.3		1.5	70		¼" cloudy, very light brown
15	0918	71.2	5.51	57.8		1.5	80		slightly cloudy
16	0923	71.2	5.51	55.0		1.5	90		slightly cloudy
17	0930	71.7	5.36	53.5		1.5	100		slightly cloudy
18	0935	72.2	5.51	52.2		1.5	110	↓	clear
19	0941	71.0	5.47	50.7		1.5	120	Y	clear
20									

TOTAL DEVELOPMENT TIME: 1hr 25 min

TOTAL VOLUME PURGED: 120 gal

COMMENTS

MONITORING WELL DEVELOPMENT

Metcalf & Eddy

WELL I.D. NO.: MW12

DATE: 11/26/96

LOGGED BY: D. Humphris

METHOD OF DEVELOPMENT: 12 V DC whale Pump

STATIC WATER LEVEL: 9.6' TOC 9.8' bgs

TD = 16.5' 6.7' x 6.9 = 46.3 gal = 5 Vol

SAMPLE NO.	TIME 810	PARAMETERS				PUMPING RATE (gpm)	VOLUME PUMPED (gal)	PHOTO TAKEN	OBSERVATIONS
		TEMP (°F)	pH	COND'Y (umhos)	TURBIDITY (NTU)				
1	0816	70.8	4.66	50.9		1-1.2	2.5		Surge @ 0, 2.5
2	0820	74.9	5.12	56.7			5		Surge @ 5, 7.5
3	0828	74.7	5.30	52.1			10		Surge @ 10, 12.5
4	0837	73.9	5.34	49.7			15		Surge @ 15
5	0844	74.2	5.37	56.4			20		Surge @ 20
6	0850	74.7	5.42	55.3			25		Surge @ 25
7	0857	75.1	5.38	53.6			30		
8	0900	75.6	5.28	45.6			35		
9	0904	75.0	5.21	41.0			40		clearing
10	0908	74.5	5.15	37.1			45		
11	0912	74.6	5.12	36.0			50		clearing
12	0916	75.0	5.12	34.7			55		
13	0920	75.4	5.06	34.0			60		
14	0924	75.2	5.03	32.2			65		
15	0930	75.0	5.03	34.3			70		Lt Br/yellow tint - no sediment
16	0935	75.1	5.03	34.2			75		
17	0941	73.7	5.04	33.8			80		
18	0950	74.3	5.02	32.8			90		no change in 20 Gal
19	1000	72.6	5.03	31.4			100		
20	1009	72.7	4.97	29.8			110		no change
21	1013	73.4	4.96	30.4			115		
22	1018	73.8	4.90	30.9			120	Y	Lt. Yellow tint, no sediment, no change in 50 Gal.

TOTAL DEVELOPMENT TIME: 2:08

TOTAL VOLUME PURGED: 120 Gal

COMMENTS

APPENDIX D

ANALYTICAL DATA

* The analytical data presented in this appendix is obtained from the Subcontractor Analytical Laboratory in a direct download from the laboratory LIMS System. The analytical data is loaded into M&E's analytical Database, printed in a specified format, validated and checked for accuracy against the hard copy report submitted by the Subcontractor Lab. M&E maintains the Original Analytical Report as part of the Project Files. A copy of the Original Analytical Report is available on request.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSES # 1
PRIMARY ANALYTICAL RESULTS FOR GROUNDWATER

CONSTITUENT (Units in ug/l)	SITE	MW01	MW02	MW03	MW11	MW12
	SAMPLE ID	HT4-MW01	HT4-MW02	HT4-MW03	HT4-MW11	HT4-MW12
	DATE	12/09/96	12/09/96	12/09/96	12/10/96	12/10/96
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary
MTBE		<5000	<5000	<5000	<250	<100
Benzene		<110	1100	740	40	<2.2
Ethylbenzene		1900	1400	2000	1000	130
Toluene		16000	25000	19000	610	40
Xylene (total)		9500	5900	7400	4200	500
		---	---	---	---	---
Acenaphthene		<1	<1	<1	<1	<1
Acenaphthylene		<1	<1	<1	<1	<1
Benzo(a)pyrene		<0.2	<0.2	0.21	<0.2	<0.2
Benzo(b,k)fluoranthene		<0.2	<0.2	0.28	<0.2	<0.2
Benzo(ghi)perylene		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene + Benzo(a)anthracene		<0.2	<0.2	0.26	<0.2	<0.2
Fluoranthene		0.60 J	<0.5	0.76 J	<0.5	<0.5
Fluorene		0.60 J	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene		16	7.0	9.2	9.8	<1
Phenanthrene + Anthracene		2.2 J	<0.2	0.42 J	<0.2	<0.2
Pyrene		<0.5	<0.5	<0.5	<0.5	<0.5
1-Methylnaphthalene		<1	<1	<1	<1	<1
2-Methylnaphthalene		2.8	1.3	1.9	2.4	<1

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA Methods: 8020, 8100 & MTBE RCL 8000MSLS J = Result is Estimated R = Result is Rejected

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	MW01	MW01	MW02	MW02	MW02	MW03
	SAMPLE ID	WB0101	WB0102	WB0201	WB0202	WB5501	WB0301
	DATE	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/19/96
	DEPTH (ft)	10.00	15.00	10.00	15.00	15.00	10.00
	RESULT TYPE	Primary	Primary	Primary	Primary	Duplicate	Primary
MTBE		<26	<0.030	<5.4	<0.15	<5.9	<290
Benzene		3.0 J	<0.0030	0.59 J	<0.0015	1.1 J	<2.9
Ethylbenzene		19	0.062	1.4	0.53 J	<0.74	96 J
Toluene		15 J	0.45	1.3 J	0.070 J	<0.79	160 J
Xylene (total)		130 J	0.37	8.4	1.2 J	1.8	260 J
		---	---	---	---	---	---
Acenaphthene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Acenaphthylene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Benzo(a)pyrene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Benzo(b,k)fluoranthene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Benzo(ghi)perylene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Chrysene + Benzo(a)anthracene		0.42	<0.42	<0.38	<0.40	<0.40	<0.40
Fluoranthene		0.84	<0.42	<0.38	<0.40	<0.40	0.42
Fluorene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Naphthalene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
Phenanthrene + Anthracene		1.1	<0.42	<0.38	<0.40	<0.40	<0.40
Pyrene		0.65	<0.42	<0.38	<0.40	<0.40	<0.40
1-Methylnaphthalene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
2-Methylnaphthalene		<0.36	<0.42	<0.38	<0.40	<0.40	<0.40
		---	---	---	---	---	---
GRO		4000 J	3.4	1200 J	200 J	2500 J	21000 J
DRO		50	15	<11	<12	<12	23 J

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	MW03	MW11	MW11	MW11	MW12	MW12
	SAMPLE ID	WB0302	WB1101	WB1102	WB5701	WB1201	WB1202
	DATE	11/19/96	11/21/96	11/21/96	11/21/96	11/21/96	11/21/96
	DEPTH (ft)	15.00	10.00	15.00	15.00	10.00	15.00
	RESULT TYPE	Primary	Primary	Primary	Duplicate	Primary	Primary
MTBE		<3.0	<310	<57	<0.30	<5.8	<0.062
Benzene		<0.030	<3.1	<0.57	<0.030	<0.048	<0.0061
Ethylbenzene		6.1 J	71 J	14 J	<0.030	<0.72	<0.0061
Toluene		9.8 J	<41	<7.6	<0.030	<0.77	<0.0061
Xylene (total)		19 J	84 J	13 J	0.056	1.9 J	<0.0061
		---	---	---	---	---	---
Acenaphthene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Acenaphthylene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Benzo(a)pyrene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Benzo(b,k)fluoranthene		0.61	3.9 J	<0.39	<0.40	<0.40	<0.40
Benzo(ghi)perylene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Chrysene + Benzo(a)anthracene		0.60	5.4 J	<0.39	<0.40	<0.40	<0.40
Fluoranthene		1.1	<2.1	<0.39	<0.40	<0.40	<0.40
Fluorene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Naphthalene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
Phenanthrene + Anthracene		0.58	<2.1	<0.39	<0.40	<0.40	<0.40
Pyrene		0.70	<2.1	<0.39	<0.40	<0.40	<0.40
1-Methylnaphthalene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
2-Methylnaphthalene		<0.40	<2.1	<0.39	<0.40	<0.40	<0.40
		---	---	---	---	---	---
GRO		1400 J	20000 J	7800 J	2.6	(200)	<0.22
DRO		27 J	150 J	15	14	33	<12

Values represent total concentrations unless noted < =Not detected at indicated reporting limit ---=Not analyzed
() =Less than Reporting Limit

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	SB01	SB01	SB02	SB02	SB03	SB03
	SAMPLE ID	SB0101	SB0102	SB0201	SB0202	SB0301	SB0302
	DATE	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96
	DEPTH (ft)	6.00	10.00	6.00	10.00	6.00	10.00
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
MTBE		<2.2	<0.140	<6.2	<0.14	<5.3	<6.1
Benzene		0.160 J	<0.0014	<0.062	<0.0014	2.1 J	5.5 J
Ethylbenzene		0.67	0.052	<0.77	0.070 J	8.2 J	16 J
Toluene		0.63	0.019	<0.82	<0.019	16 J	9.7 J
Xylene (total)		5.7	0.082	0.90 J	0.032 J	34 J	68 J
		---	---	---	---	---	---
Acenaphthene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Acenaphthylene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Benzo(a)pyrene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Benzo(b,k)fluoranthene		0.52	<0.38	0.76 J	<0.40	<0.36	<0.42
Benzo(ghi)perylene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Chrysene + Benzo(a)anthracene		<0.37	0.55	<0.42	<0.40	<0.36	<0.42
Fluoranthene		0.47	0.47	0.46 J	<0.40	<0.36	<0.42
Fluorene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthr		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Naphthalene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
Phenanthrene + Anthracene		0.52	0.42	<0.42	0.53	<0.36	<0.42
Pyrene		<0.37	0.39	<0.42	<0.40	<0.36	<0.42
1-Methylnaphthalene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
2-Methylnaphthalene		<0.37	<0.38	<0.42	<0.40	<0.36	<0.42
		---	---	---	---	---	---
GRO		210# J	17	370 J	99 J	4700 J	2100 J
DRO		85	45	140 J	44 J	26	18 J

Values represent total concentrations unless noted < =Not detected at indicated reporting limit ---=Not analyzed
=Constituent in more than one test method, highest result reported.
EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	SB03	SB04	SB04	SB05	SB05	SB06
	SAMPLE ID	SB5001	SB0401	SB0402	SB0501	SB0502	SB0601
	DATE	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96	11/18/96
	DEPTH (ft)	10.00	6.00	10.00	6.00	10.00	6.00
	RESULT TYPE	Duplicate	Primary	Primary	Primary	Primary	Primary
MTBE		<5.9	<5.5	<5.9	<0.15	<2.3	<0.029
Benzene		0.65 J	0.26 J	3.0 J	<0.0015	0.13 J	<0.00029
Ethylbenzene		1.3 J	1.5	14 J	0.10	<0.29	0.0032 J
Toluene		0.92 J	2.6 J	53 J	0.59	<0.30	0.0041 J
Xylene (total)		6.1 J	10	73 J	0.61	0.37 J	0.0084
		---	---	---	---	---	---
Acenaphthene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Acenaphthylene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Benzo(a)pyrene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Benzo(b,k)fluoranthene		<0.40	<0.38	<0.40	<0.40	<0.39	0.62
Benzo(ghi)perylene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Chrysene + Benzo(a)anthracene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Fluoranthene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Fluorene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Naphthalene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Phenanthrene + Anthracene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
Pyrene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
1-Methylnaphthalene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
2-Methylnaphthalene		<0.40	<0.38	<0.40	<0.40	<0.39	<0.40
		---	---	---	---	---	---
GRO		810 J	1000 J	7200 J	5.6 J	88 J	1.2 J
DRO		<12 J	<11	24	52	180 J	130 J

Values represent total concentrations unless noted < =Not detected at indicated reporting limit ---=Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	SB06	SB06	SB07	SB07	SB08	SB08
	SAMPLE ID	SB0602	SB5101	SB0701	SB0702	SB0801	SB0802
	DATE	11/18/96	11/18/96	11/19/96	11/19/96	11/19/96	11/19/96
	DEPTH (ft)	12.00	12.00	6.00	12.00	6.00	12.00
	RESULT TYPE	Primary	Duplicate	Primary	Primary	Primary	Primary
MTBE		<5.6	<0.14	<0.028	<0.029	<0.028	<0.030
Benzene		1.6 J	<0.0014	<0.00028	<0.00029	<0.00028	<0.00030
Ethylbenzene		6.3 J	0.34	0.0067	0.022	<0.0036	<0.0037
Toluene		3.1 J	0.023 J	<0.0038	0.022	<0.0038	<0.0040
Xylene (total)		30 J	0.094	0.046	0.13	0.0039 J	0.0012 J
		---	---	---	---	---	---
Acenaphthene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
Acenaphthylene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
Benzo(a)pyrene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
Benzo(b,k)fluoranthene		1.1	0.81	1.6	<0.40	1.6	<0.40
Benzo(ghi)perylene		<0.38	<0.38	0.55	<0.40	1.5	<0.40
Chrysene + Benzo(a)anthracene		<0.38	1.8	<0.38	0.52	1.2	<0.40
Fluoranthene		0.74	0.63	<0.38	<0.40	<0.39	<0.40
Fluorene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthr		0.53	<0.38	<0.38	<0.40	<0.39	<0.40
Naphthalene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
Phenanthrene + Anthracene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
Pyrene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
1-Methylnaphthalene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
2-Methylnaphthalene		<0.38	<0.38	<0.38	<0.40	<0.39	<0.40
		---	---	---	---	---	---
GRO		5000 J	420 J	0.31	1.8	4.2	<0.22
DRO		24	26	92 J	<12 J	<12 J	<12 J

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	SB19	SB19	SB20	SB20	SB21	SB21
	SAMPLE ID	SB1901	SB1902	SB2001	SB2002	SB2101	SB2102
	DATE	11/20/96	11/20/96	11/20/96	11/20/96	11/20/96	11/20/96
	DEPTH (ft)	6.00	8.00	6.00	8.00	3.00	11.00
	RESULT TYPE	Primary	Primary	Primary	Primary	Primary	Primary
MTBE		<0.056	<0.063	<14	<62	<0.052	<0.066
Benzene		<0.0056	<0.0063	<1.4	<6.2	<0.0052	<0.0066
Ethylbenzene		<0.0056	<0.0063	5.9	34	<0.0052	<0.0066
Toluene		<0.0056	<0.0063	<1.4	1.3 J	0.038	0.0078
Xylene (total)		<0.0056	<0.0063	46	220	0.0082	0.0080
		---	---	---	---	---	---
Acenaphthene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Acenaphthylene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Benzo(a)pyrene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Benzo(b,k)fluoranthene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Benzo(ghi)perylene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Chrysene + Benzo(a)anthracene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Fluoranthene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Fluorene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Naphthalene		<0.38	<0.42	<0.38	1.1	<0.34	<0.43
Phenanthrene + Anthracene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
Pyrene		<0.38	<0.42	<0.38	<0.41	<0.34	<0.43
1-Methylnaphthalene		<0.38	<0.42	<0.38	0.58	<0.34	<0.43
2-Methylnaphthalene		<0.38	<0.42	<0.38	0.95	<0.34	<0.43
		---	---	---	---	---	---
GRO		<0.28	0.51	800 J	4000 J	<0.26	1400 J
DRO		22	4.2	140	550	5.3	11

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	SB22	SB22	SB22	SB23	SB23	SB24
	SAMPLE ID	SB2201	SB2202	SB2202	SB2301	SB2302	SB2401
	DATE	11/20/96	11/20/96	11/20/96	11/21/96	11/21/96	11/21/96
	DEPTH (ft)	8.00	10.00	10.00	7.00	9.00	7.00
	RESULT TYPE	Primary	Primary	Duplicate	Primary	Primary	Primary
MTBE		<0.052	<3.0	<2.8	<0.056	<0.058	<0.054
Benzene		<0.0052	0.26 J	0.22 J	<0.0056	<0.0058	<0.0054
Ethylbenzene		<0.0052	5.3 J	2.9	<0.0056	<0.0058	<0.0054
Toluene		<0.0052	10 J	5.6	<0.0056	<0.0058	0.0080 J
Xylene (total)		<0.0052	38 J	13	0.0026 J	<0.0058	0.0041 J
		---	---	---	---	---	---
Acenaphthene		<0.34	<0.39	<0.39	<0.36	<0.38	<0.36
Acenaphthylene		<0.34	<0.39	<0.39	<0.36	<0.38	<0.36
Benzo(a)pyrene		<0.34	<0.39	<0.39	<0.36	<0.38	0.97
Benzo(b,k)fluoranthene		<0.34	<0.39	<0.39	<0.36	<0.38	1.8
Benzo(ghi)perylene		<0.34	<0.39	<0.39	<0.36	<0.38	0.71
Chrysene + Benzo(a)anthracene		<0.34	<0.39	<0.39	<0.36	<0.38	2.2
Fluoranthene		<0.34	<0.39	<0.39	<0.36	<0.38	2.4
Fluorene		<0.34	<0.39	<0.39	<0.36	<0.38	0.73
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.34	<0.39	<0.39	<0.36	<0.38	0.57
Naphthalene		<0.34	<0.39	<0.39	<0.36	<0.38	<0.36
Phenanthrene + Anthracene		<0.34	<0.39	<0.39	<0.36	<0.38	2.9
Pyrene		<0.34	<0.39	<0.39	<0.36	<0.38	1.8
1-Methylnaphthalene		<0.34	<0.39	<0.39	<0.36	<0.38	<0.36
2-Methylnaphthalene		<0.34	<0.39	<0.39	<0.36	<0.38	<0.36
		---	---	---	---	---	---
GRO		<0.26	630 J	430 J	<0.2	<0.2	<0.2
DRO		8.3	23	26	13	18	<10

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SOILS

CONSTITUENT (Units in mg/kg)	SITE	SB24
	SAMPLE ID	SB2402
	DATE	11/21/96
	DEPTH (ft)	11.00
	RESULT TYPE	Primary
MTBE		<0.062
Benzene		<0.0061
Ethylbenzene		<0.0061
Toluene		<0.0061
Xylene (total)		0.0023 J

Acenaphthene		<0.40
Acenaphthylene		<0.40
Benzo(a)pyrene		<0.40
Benzo(b,k)fluoranthene		<0.40
Benzo(ghi)perylene		0.55
Chrysene + Benzo(a)anthracene		<0.40
Fluoranthene		<0.40
Fluorene		<0.40
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthr		<0.40
Naphthalene		<0.40
Phenanthrene + Anthracene		<0.40
Pyrene		<0.40
1-Methylnaphthalene		<0.40
2-Methylnaphthalene		<0.40

GRO		<0.22
DRO		<12

Values represent total concentrations unless noted < =Not detected at indicated reporting limit --- =Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSES # 1
PRIMARY ANALYTICAL RESULTS FOR SURFACE WATER

CONSTITUENT (Units in ug/l)	SITE	SWE07	SWE08	SWE09	SWE10
	SAMPLE ID	HT4-SW07	HT4-SW08	HT4-SW09	HT4-SW10
	DATE	12/10/96	12/10/96	12/10/96	12/10/96
	RESULT TYPE	Primary	Primary	Primary	Primary
MTBE		<100	<20	<10	<10
Benzene		19 J	5.2 J	1.0 J	<1
Ethylbenzene		30 J	3.8 J	<1	<1
Toluene		230 J	50 J	1.8 J	<1
Xylene (total)		270 J	55 J	3.1 J	<2
		---	---	---	---
Acenaphthene		<1	<1	<1	<1
Acenaphthylene		<1	<1	<1	<1
Benzo(a)pyrene		<0.2	<0.2	<0.2	<0.2
Benzo(b,k)fluoranthene		<0.2	<0.2	<0.2	<0.2
Benzo(ghi)perylene		<0.5	<0.5	<0.5	<0.5
Chrysene + Benzo(a)anthracene		<0.2	<0.2	<0.2	<0.2
Fluoranthene		<0.5	<0.5	<0.5	<0.5
Fluorene		<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.5	<0.5	<0.5	<0.5
Naphthalene		<1	<1	<1	<1
Phenanthrene + Anthracene		<0.2	<0.2	<0.2	<0.2
Pyrene		<0.5	<0.5	<0.5	<0.5
1-Methylnaphthalene		<1	<1	<1	<1
2-Methylnaphthalene		<1	<1	<1	<1

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA Methods: 8020, 8100 & MTBE RCL 8000MSLS J = Result is Estimated R = Result is Rejected

HUNTER ARMY AIRFIELD
CAP-A PUMPHOUSE # 1
PRIMARY ANALYTICAL RESULTS FOR SEDIMENTS

CONSTITUENT (Units in mg/kg)	SITE	SWE07	SWE08	SWE09	SWE10
	SAMPLE ID	HT4-SE07	HT4-SE08	HT4-SE09	HT4-SE10
	DATE	12/10/96	12/10/96	12/10/96	12/10/96
	DEPTH (ft)	0.00	0.00	0.00	0.00
	RESULT TYPE	Primary	Primary	Primary	Primary
MTBE		<6.2	<0.10	<0.094	<0.12
Benzene		<0.62	<0.010	<0.0094	<0.012
Ethylbenzene		<0.62	<0.010	<0.0094	<0.012
Toluene		<0.62	<0.010	<0.0094	<0.012
Xylene (total)		<0.62	<0.010	<0.0094	<0.012
		---	---	---	---
Acenaphthene		<0.50	<0.70	<0.62	<0.84
Acenaphthylene		<0.50	<0.70	<0.62	<0.84
Benzo(a)pyrene		0.60	<0.70	1.0	1.9
Benzo(b,k)fluoranthene		<0.50	<0.70	2.4	3.6
Benzo(ghi)perylene		<0.50	<0.70	1.8	2.3
Chrysene + Benzo(a)anthracene		<0.50	<0.70	1.9	2.7
Fluoranthene		<0.50	<0.70	1.7	1.9
Fluorene		<0.50	<0.70	<0.62	<0.84
Indeno(1,2,3-cd)pyrene + Dibenzo(a,h)anthr		<0.50	<0.70	0.80	1.3
Naphthalene		<0.50	<0.70	<0.62	<0.84
Phenanthrene + Anthracene		<0.50	<0.70	1.2	<0.84
Pyrene		<0.50	<0.70	1.6 J	2.0 J
1-Methylnaphthalene		<0.50	<0.70	<0.62	<0.84
2-Methylnaphthalene		<0.50	<0.70	<0.62	<0.84
		---	---	---	---
GRO		130 J	<0.38	<0.33	0.98 J
DRO		<15	<21	24	<26

Values represent total concentrations unless noted < = Not detected at indicated reporting limit --- = Not analyzed

EPA METHODS:8020,8100,8015M,8100M. For RCL 8000LSLS J = RESULT IS ESTIMATED. R = RESULT IS REJECTED.

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter 4 | TASK ORDER NO.

PROJECT NO: 01845741.02 | SAMPLE EVENT: Well Sampling

LABORATORY ID: SLS | PROGRAM TYPE:

SAMPLER(S) NAME: G. Rowell | SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	PAH
Method No.										8020	8100					8100m	8015m	8310
12-10		W	Temp Blank															
	1350	W	HT4-SW08	SW08	PP01		2	N	N									X
	1350	S	HT4-SE08	SE08	PP01		2	N	N	X	X					X	X	
	1415	W	HT4-SW07	SW07	PP01		2	N	N									X
	1415	S	HT4-SE07	SE07	PP01		2	N	N	X	X					X	X	
	1430	S	HT4_SE06	SE06	PP01		2	N	N	X	X					X	X	
	1430	S	HT4-SE53	SE06	PD01		2	N	N	X	X					X	X	
	1430	W	HT4-SW06	SW06	PP01		2	N	N									X
↓	1430	W	HT4-SW52	SW06	PD01		2	N	N									X

Relinquished by: (Signature) G. Rowell | Date/Time: 12-10-96/1810 | Received by: Federal Express | Date/Time: 12/10/96 6:10

Cooler Temperature:

Remarks:

AIRBILL CO.

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y)/N

SG87284

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger — FAX # (404) 872-3161

SUBCONTRACTOR SAV. LABS — PROJECT # Hunter 4

SAMPLE CUSTODIAN A. Campbell (E) SG-87284 — TODAY'S DATE 12/10/96

DATE/TIME SAMPLES RECEIVED 12/10/96 16:10

AIRBILL NUMBER _____ — NO. OF COOLERS IN SHIPMENT 7

COOLER OPENED: DATE 12/10/96 TIME 16:10

CHAIN OF CUSTODY SEAL INTACT? YES [✓] NO [ ]

CHAIN OF CUSTODY PROVIDED? YES [✓] NO [ ]

SAMPLE LABELS PRESENT? YES [✓] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [✓] NO [ ]

TYPE OF COLLANT USED Wet Ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER	TEMP INSIDE COOLER
# Cooler #5	3.6
#	
#	
#	
#	

RECORD TEMPERATURE BLANK (1) 3.6 (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: HTH-SW08, HTH-SE08, HTH-SW07, HTH-SE07, HTH-SE06, HTH-SE53, HTH-SW06, HTH-SW52

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter 9

PROJECT NO: 01945-74102

LABORATORY ID: SLS

SAMPLER(S) NAME: G. Rowell

TASK ORDER NO.

SAMPLE EVENT: Well Sampling

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
12-10	1030	S	HT4-SE01	SE01	PP01		2	N	N
	1100	S	HT4-SE10	SE10	PP01		2	N	N
	1100	W	HT4-SW10	SW10	PP01		2	N	N
	1115	S	HT4-SE09	SW09	PP01		2	N	N
	1115	W	HT4-SW09	SW09	PP01		2	N	N
		W	Temp Blank						
*	1315	W	HT4-SW02	SW02	PP01		6	N	N
	1315	S	HT4-SE02	SE02	PP01		2	N	N

	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	PAH
Method No.	8020	8100					8100m	8015m	8310
	X	X					X	X	
	X	X					X	X	X GR
									X
	X	X					X	X	
									X
GR	X	X				X	X	X	X GR
	X	X					X	X	X GR

Relinquished by: (Signature) G. Rowell

Date/Time: 12-10-96 / 1810

Received by: SC-87284 J. Campbell

Date/Time: 12/10/96 1810

Cooler Temperature:

Remarks: * MS/MSD

AIRBILL CO.

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y) N

SC-87284

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger
FAX # (404) 872-3161
SUBCONTRACTOR SAV. LABS
PROJECT # Hunter 4
SAMPLE CUSTODIAN A. Campbell (C) SC-87284
TODAY'S DATE 12/10/96
DATE/TIME SAMPLES RECEIVED 12/10/96 6:10
AIRBILL NUMBER
NO. OF COOLERS IN SHIPMENT 7
COOLER OPENED: DATE 12/10/96 TIME 6:10

CHAIN OF CUSTODY SEAL INTACT?	YES ✓	NO
CHAIN OF CUSTODY PROVIDED?	YES ✓	NO
SAMPLE LABELS PRESENT?	YES ✓	NO
BOTTLE LABELS CORRESPOND W/COC?	YES ✓	NO

TYPE OF COLLANT USED Wet Ice
COOLANT CONDITION: MELTED PARTIALLY MELTED/FROZEN ✓
FROZEN

COOLER NUMBER	# Cooler #3	TEMP INSIDE COOLER	2.3
	#		
	#		
	#		
	#		

RECORD TEMPERATURE BLANK (1) 2.3 (2) (3)
CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)
IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: HTH-SF01, HTH-SE10, HTH-SW10, HTH-SF09, HTH-SW09, HTH-SW08, HTH-SW02MS, HTH-SW02MSD, HTH-SF02

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter 4

PROJECT NO: 019457.4102

LABORATORY ID: SLS

SAMPLER(S) NAME: G. Rowell

TASK ORDER NO.

SAMPLE EVENT: Well Sampling

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F)FIELD
12-10		W	Temp Blank						
	0805	W	HT4-MW09	MW09	PP01		2	N	N
	0830	W	HT4-MW10	MW10 ~~DUP~~	PP01		2	N	N
	0850	W	HT4-MW11	MW11 ~~DUP~~	PP01		2	N	N
↓	0910	W	HT4-MW12	MW12	PP01		2	N	N
12-9	1730	W	HT4-MW51	MW08	PD01		2	N	N
12-10	1030	W	HT4-SW01	SW01	PP01		2	N	N

Method No.	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
		8310							
		X							
		X							
		X							
		X							
		X							
		X							

Relinquished by: (Signature) G. Rowell

Date/Time: 12-10-96/1610

Received by: SLS-87284 (Sample Control)

Date/Time: 12/10/96 1610

Cooler Temperature:

Remarks:

AIRBILL CO.

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT

METCALF & EDDY Representative C. Hettinger

FAX # (404) 872-3161

SUBCONTRACTOR SAV. LAB S

PROJECT # Hunter 4

SAMPLE CUSTODIAN A. Campbell (D) 86-8728H ~~86-8717~~ K

TODAY'S DATE 12/10/96

DATE/TIME SAMPLES RECEIVED 12/10/96 6:10

AIRBILL NUMBER

NO. OF COOLERS IN SHIPMENT 7

COOLER OPENED: DATE _____ TIME _____

CHAIN OF CUSTODY SEAL INTACT? YES ☑ NO ☐

CHAIN OF CUSTODY PROVIDED? YES ☑ NO ☐

SAMPLE LABELS PRESENT? YES ☑ NO ☐

BOTTLE LABELS CORRESPOND W/COC? YES ☑ NO ☐

TYPE OF COLLANT USED

COOLANT CONDITION: MELTED

PARTIALLY MELTED/FROZEN ✓

FROZEN

COOLER NUMBER # Cooler #4

TEMP INSIDE COOLER 2.8

#

#

#

#

RECORD TEMPERATURE BLANK (1) 2.8 (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: HTH-MW09, HTH-MW10, HTH-MW11, HTH-MW12, HTH-MW51, HTH-SW01.

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter 4

PROJECT NO: 019457 4102

LABORATORY ID: SLS

SAMPLER(S) NAME: G. Rowell

TASK ORDER NO.

SAMPLE EVENT: Well Sampling

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No.											8310							
12-9	1445	W	HT4-EB01	mw01	BR01		2	N	N		X							
	1445	W	HT4-mw01	mw01	PP01		2	N	N		X							
	1510	W	HT4-mw02	mw02	PP01		2	N	N		X							
	1525	W	HT4-mw03	mw03	PP01		2	N	N		X							
	1600	W	HT4-mw04	mw04	PP01		2	N	N		X							
↓	1600	W	HT4-mw50	mw04	PD01		2	N	N		X							
			Temp Blank															

Relinquished by: (Signature) G. Rowell

Date/Time: 12-10-96/1810

Received by: SLS-86284 G. Campbell

Date/Time: 12/10/96 10:10

Cooler Temperature: 4°C

Remarks:

AIRBILL CO.

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE Y/N

SE-87284

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger FAX # (404) 872-3161

SUBCONTRACTOR SAV. LABS PROJECT # Hunter 4

SAMPLE CUSTODIAN A. Campbell (B) SE-87284 TODAY'S DATE 12/10/96

DATE/TIME SAMPLES RECEIVED 12/10/96 16:10

AIRBILL NUMBER _____ NO. OF COOLERS IN SHIPMENT 1

COOLER OPENED: DATE 12/10/96 TIME 16:10

CHAIN OF CUSTODY SEAL INTACT? YES [✓] NO [ ]

CHAIN OF CUSTODY PROVIDED? YES [✓] NO [ ]

SAMPLE LABELS PRESENT? YES [✓] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [✓] NO [ ]

TYPE OF COLLANT USED Wet Ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER # Cooler #2 TEMP INSIDE COOLER 1.6

_____

_____

_____

_____

RECORD TEMPERATURE BLANK (1) 1.6 (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: HTN-EB0, HTN-MW01, HTN-MW02, HTN-MW03 HTN-MW04, HTN-MW05.

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter 4

PROJECT NO: 019457 4102

LABORATORY ID: SLS

SAMPLER(S) NAME: G. Rowell

TASK ORDER NO.

SAMPLE EVENT: Well Sampling

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: G. Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
										Method No. 8020								
12-9	1445	W	HT4-TB01	MW01	BT01		3	Y	N	X								
	1445	W	HT4-EB01	MW01	BR01		3	Y	N	X								
	1445	W	HT4-MW01	MW01	PP01		3	Y	N	X								
	1510	W	HT4-MW02	MW02	PP01		3	Y	N	X								
	1525	W	HT4-MW03	MW03	PP01		3	Y	N	X								
	1600	W	HT4-MW04	MW04	PP01		3	Y	N	X								
	1600	W	HT4-MW50	MW04	PD01		3	Y	N	X								
	1615	W	HT4-MW05	MW05	PP01		3	Y	N	X								
	1630	W	HT4-MW06	MW06	PP01		3	Y	N	X								
*	1710	W	HT4-MW07	MW07	PP01		9 ~~X~~ CK	Y	N	X								
	1730	W	HT4-MW08	MW08	PP01		3	Y	N	X								
	1730	W	HT4-MW51	MW08	PD01		3	Y	N	X								

Relinquished by: (Signature) G. Rowell

Date/Time: 12-10-96/1810

Received by: 56 872841 A Campbell (F)

Date/Time: 12/10/96 6:10

Cooler Temperature:

Remarks: * MS/MSD

AIRBILL CO.

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y)/N

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter 4 | TASK ORDER NO.

PROJECT NO: 019457 4102 | SAMPLE EVENT: Well Sampling

LABORATORY ID: SLS | PROGRAM TYPE:

SAMPLER(S) NAME: G. Rowell | SAMPLER(S) SIGNATURE: G. Rowell

	DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	Method No.	VOCS 8020	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
			W	TEMP Blank								1								
	12-10	0805	W	HT4-MW09	MW09	PP01		3	Y	N		X								
		0830	W	HT4-MW10	MW10	PP01		3	Y	N		X								
		0850	W	HT4-MW11	MW11	PP01		3	Y	N		X								
		0910	W	HT4-MW12	MW12	PP01		3	Y	N		X								
		1030	W	HT4-SW01	SW01	PP01		3	Y	N		X								
		1100	W	HT4-SW10	SW10	PP01		3	Y	N		X								
		1115	W	HT4-SW09	SW09	PP01		3	Y	N		X								
*		1315	W	HT4-SW02	SW02	PP01		9	Y	~~N~~		X								
		1350	W	HT4-SW08	SW08	PP01		3	Y	~~N~~		X								
		1415	W	HT4-SW07	SW07	PP01		3	Y	N		X								
	↓	1430	W	HT4-SW52	SW06	PD01		3	Y	N		X								

ANALYTICAL PARAMETERS / METHODS

Relinquished by: (Signature) G. Rowell | Date/Time: 12-10-96/1810 | Received by: 96-57284 (F) | Date/Time: 12/10/96 6:10

Cooler Temperature:

Remarks: * MS/MSD

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

AIRBILL CO.

TRACKING NO:

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y/N)

SO 87284

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY

UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT

METCALF & EDDY Representative C. Hettinger

FAX # (404) 872-3161

SUBCONTRACTOR SAV. LABS

PROJECT # Hunter 4

SAMPLE CUSTODIAN A. Campbell (F) SO-87284

TODAY'S DATE 12/10/96

DATE/TIME SAMPLES RECEIVED 12/10/96 16:10

AIRBILL NUMBER

NO. OF COOLERS IN SHIPMENT 1

COOLER OPENED: DATE 12/10/96 TIME 16:10

CHAIN OF CUSTODY SEAL INTACT? YES ☑ NO ☐

CHAIN OF CUSTODY PROVIDED? YES ☑ NO ☐

SAMPLE LABELS PRESENT? YES ☑ NO ☐

BOTTLE LABELS CORRESPOND W/COC? YES ☑ NO ☐

TYPE OF COLLANT USED Wet Ice

COOLANT CONDITION: MELTED

PARTIALLY MELTED/FROZEN ✓

FROZEN 1.5

COOLER NUMBER # Cooler #16

TEMP INSIDE COOLER

#

#

#

#

RECORD TEMPERATURE BLANK (1) 1.5 (2) (3)

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: HTH-SW016, HTH-SW014, HTH-SW013, HTH-SW015 HTH-MW09, ~~HTH~~ HTH-MW10, HTH-MW11, HTH-MW12, HTH-SW01, HTH-SW010, HTH-SW09, HTH-SW08, HTH-SW08MS, HTH-SW08MSD, HTH-SW06, HTH-SW07, HTH-SW52, HTH-TB01, HTH-EB01, HTH-MW01, HTH-MW02 HTH-MW03, HTH-MW04, HTH-MW50, HTH-MW05, HTH-MW06, HTH-MW07, HTH-MW07MS, HTH-MW07MSD, HTH-MW08, HTH-MW51.

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter IV

PROJECT NO: 019457-4102

LABORATORY ID: ~~SADL~~ PH SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCS BTEX+MTBE	SVOC PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
										Method No. 8020	8100					8100M	8015M	
11/19/96	0910	S	SB0701	SB07	PP01	4/6	2	N	—	X	X					X	X	
	0915	S	SB0702	SB07	PP01	10/12	2	N	—	X	X					X	X	
	0945	S	SB0801	SB08	PP01	4/6	2	N	—	X	X					X	X	
	0955	S	SB0802	SB08	PP01	10/12	2	N	—	X	X					X	X	
	1040	S	SB0901	SB09	PP01	4/6	2	N	—	X	X					X	X	
	1045	S	SB0902	SB09	PP01	10/12	2	N	—	X	X					X	X	
	1110	S	SB1001	SB10	PP01	4/6	2	N	—	X	X					X	X	
	1120	S	SB1002	SB10	PP01	10/12	2	N	—	X	X					X	X	
	1405	S	SB1101	SB11	PP01	4/6	2	N	—	X	X					X	X	
*	1410	S	SB1102	SB11	PP01	10/12	2	N	—	X	X					X	X	
	1420	S	SB1201	SB12	PP01	0/2	2	N	—	X	X					X	X	
	1440	S	SB1202	SB12	PP01	10/12	2	N	—	X	X					X	X	

Relinquished by: (Signature) Daniel Howard

Date/Time: 11/19/96/1727

Received by: Marine Hanshell (B)

Date/Time: 11.19.96 5:27

Cooler Temperature:

Remarks: * Use sample SB1102 as MS/MSD also

5686824

AIRBILL CO. Hand Delivered By M+E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE (Y)/N

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter IF

TASK ORDER NO.

PROJECT NO: 019457-4102

SAMPLE EVENT:

LABORATORY ID: SLS

PROGRAM TYPE:

SAMPLER(S) NAME: Daniel Howard

SAMPLER(S) SIGNATURE: Daniel Howard

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
11/19/96	1440	S	SB5201	SB12	PD1	10/12	2	N	—
	1510	S	SB1301	SB13	PP01	4/6	2	N	—
	1520	S	SB1302	~~SB1~~ SB13	PP01	10/12	2	N	—
	1550	S	SB1401	SB14	PP01	4/6	2	N	—
	1600	S	SB1402	SB14	PP01	10/12	2	N	—
↓	—	—	TEMP	Blank	—		1	—	—

VOCs BTEX MTBE	SVOC PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No. 8020	8100					8100M	8015M	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	

Relinquished by: (Signature) Daniel Howard

Date/Time: 11/19/96/1727

Received by: Marina Hamblett (B)

Date/Time: 11.19.96 5:27

Cooler Temperature:

Remarks: 568824

AIRBILL CO. Hand Delivered By M&E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

SG-86824

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger FAX # (404) 872-3161

SUBCONTRACTOR SAV. LABS PROJECT # Hunter 4

SAMPLE CUSTODIAN M. Hannahill (B) TODAY'S DATE 11.19.96

DATE/TIME SAMPLES RECEIVED 11.19.96 5:29

AIRBILL NUMBER _____ NO. OF COOLERS IN SHIPMENT 2

COOLER OPENED: DATE 11.19.96 TIME 5:27

CHAIN OF CUSTODY SEAL INTACT? YES [X] NO [ ]

CHAIN OF CUSTODY PROVIDED? YES [X] NO [ ]

SAMPLE LABELS PRESENT? YES [X] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [X] NO [ ]

TYPE OF COLLANT USED WET ICE

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER		TEMP INSIDE COOLER
#	A	8.8
#	B	2.2
#		
#		
#		

RECORD TEMPERATURE BLANK (1) 8.8 (2) 2.2 (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: SB0701 SB0702 SB0801 SB0802 SB0901 SB0902 SB1001 SB1002 SB1101 SB1102 SB[illegible] SB1201 SB1202 SB5201 SB1301 SB1302 SB1401 SB1402

M&E Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter IV

PROJECT NO: 019457-4102

LABORATORY ID: SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCs BTEX (MTBE)	SVOC PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
										Method No. 8020	8100					8100M	8015M	
11/19/96	0857	S	WB0301	MW03	PP01	8/10	2	N	—	X	X					X	X	
	0906	S	WB0302	MW03	PP01	13/15	2	N	—	X	X					X	X	
	1008	S	WB0401	MW04	PP01	2/4	2	N	—	X	X					X	X	
	1033	S	WB0402	MW04	PP01	13/15	2	N	—	X	X					X	X	
	1425	S	WB0501	MW05	PP01	8/10	2	N	—	X	X					X	X	
*	1439	S	WB0502	MW05	PP01	13/15	2	N	—	X	X					X	X	
	1539	S	WB0601	MW06	PP01	9/11	2	N	—	X	X					X	X	
	1556	S	WB0602	MW06	PP01	14/16	2	N	—	X	X					X	X	
	—	—	TEMP	Blank	—		1	—	—									

Relinquished by: (Signature) Daniel Howard

Date/Time: 11/19/96/1728

Received by: Maxine Hoerschell (A)

Date/Time: 11.19.96 5:29 S686824

Cooler Temperature:

Remarks: Use sample WB0502 as MS/MSD also

AIRBILL CO. Hand Delivered by M&E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER

STORED/SHIPPED IN ICE Y/N

SG-86824

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative: C. Hettinger — FAX #: (404) 872-3161

SUBCONTRACTOR: SAV. LABS — PROJECT #: Hunter 4

SAMPLE CUSTODIAN: M. Haunhill (A) — TODAY'S DATE: 11.19.96

DATE/TIME SAMPLES RECEIVED: 11.19.96 5:29

AIRBILL NUMBER: _____ — NO. OF COOLERS IN SHIPMENT: 2

COOLER OPENED: DATE 11.19.96 TIME 5:29

CHAIN OF CUSTODY SEAL INTACT?	YES [X]	NO [ ]
CHAIN OF CUSTODY PROVIDED?	YES [X]	NO [ ]
SAMPLE LABELS PRESENT?	YES [X]	NO [ ]
BOTTLE LABELS CORRESPOND W/COC?	YES [X]	NO [ ]

TYPE OF COLLANT USED: Wet ICE

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER		TEMP INSIDE COOLER
#	A	8.8
#	B	2.2
#		
#		
#		

RECORD TEMPERATURE BLANK (1) 8.8 (2) 2.2 (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: WB0301 WB0302 WB0401 WB0402 WB0501 WB0502 WB0601 WB0602

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter IV

PROJECT NO: 019457-4102

LABORATORY ID: SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
11/18/96	1306	S	WB0101	MW01	PP01	8/10	2	N	—
	1320	S	WB0102	MW01	PP01	13/15	2	N	—
	1420	S	WB0201	MW02	PP01	8/10	2	N	—
	1450	S	WB0202	MW02	PP01	13/15	2	N	—
	1450	S	WB5501	MW02	PD1	13/15	2	N	—
	1625	S	SB0601	SB06	PP01	4/6	2	N	
	1635	S	SB0602	SB06	PP01	10/12	2	N	
	1635	S	SB5101	SB06	PD2	10/12	2	N	
	—	—	TEMP	Blank	—		1	—	—

VOCs BTEX	SVOC PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
Method No. 8020	8100					8015M	8015M	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	
X	X					X	X	

Relinquished by: (Signature) Daniel Z Howard

Date/Time: 11/18/96/1740

Received by: 560-86798 A. Campbell (B)

Date/Time: 11/18/96 5:40

Cooler Temperature: 1.6°C

Remarks:

AIRBILL CO. Hand Delivered by M&E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative Christine Hottinger FAX # 404/872-3161

SUBCONTRACTOR _____ PROJECT # _____

SAMPLE CUSTODIAN A. Campbell (B) 86-86798 TODAY'S DATE 11/18/96

DATE/TIME SAMPLES RECEIVED 11/18/96 5:40

AIRBILL NUMBER _____ NO. OF COOLERS IN SHIPMENT 2

COOLER OPENED: DATE 11/18/96 TIME 5:40

CHAIN OF CUSTODY SEAL INTACT? YES [✓] NO [ ]

CHAIN OF CUSTODY PROVIDED? YES [✓] NO [ ]

SAMPLE LABELS PRESENT? YES [✓] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [✓] NO [ ]

TYPE OF COLLANT USED Wet Ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER		TEMP INSIDE COOLER
#	Cooler A	✓AC 0.9°C
#	Cooler B	1.6°C
#		
#		
#		

RECORD TEMPERATURE BLANK (1) 0.9°C (2) 1.6°C (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: ~~WB0101, WB0201, WB0301, WB0401, WB5501~~ AC
WB0101, WB0102, WB0201, WB0202, WB5501, SB0601, SB0602, SB5101.

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter TV

PROJECT NO: 019457-4102

LABORATORY ID: SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCs BTEX 8020	SVOC PAH 8100	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB 8	TPH/DRO 8100M	GRO 8020M	
11/18/96	1225	S	SB0101	SB01	PP01	4/6	2	N	—	X	X					X	X	
	1230	S	SB0102	SB01	PP01	8/10	2	N	—	X	X					X	X	
*	1320	S	SB0201	SB02	PP01	4/6	2	N	—	X	X					X	X	
	1325	S	SB0202	SB02	PP01	8/10	2	N	—	X	X					X	X	
	1400	S	SB0301	SB03	PP01	4/6	2	N	—	X	X					X	X	
	1410	S	SB5001	SB03	PD1	8/10	2	N	—	X	X					X	X	
	1410	S	SB0302	SB03	PP01	8/10	2	N	—	X	X					X	X	
	1445	S	SB0401	SB04	PP01	4/6	2	N	—	X	X					X	X	
	1450	S	SB0402	SB04	PP01	8/10	2	N	—	X	X					X	X	
	1540	S	SB0501	SB05	PP01	4/6	2	N	—	X	X					X	X	
	1550	S	SB0502	SB05	PP01	8/10	2	N	—	X	X					X	X	
↓	—	—	TEMP	Blank	—	/	1—	—	—									

Method No.

Relinquished by: (Signature) Daniel Howard Date/Time: 11/18/96/1740

Received by: SO-86798 A. Campbell (A) Date/Time: 11/18/96 5:40

Cooler Temperature: 0.9°C

Remarks: * Use sample SB0201 as MS/MSD also

AIRBILL CO. Hand Delivered by M&E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative Christine Hottinger FAX # _____

SUBCONTRACTOR _____ PROJECT # _____

SAMPLE CUSTODIAN D. Campbell (A) 80-8098 TODAY'S DATE 11/18/96

DATE/TIME SAMPLES RECEIVED 11/18/96 5:40

AIRBILL NUMBER _____ NO. OF COOLERS IN SHIPMENT 2

COOLER OPENED: DATE 11/18/96 TIME 5:40

CHAIN OF CUSTODY SEAL INTACT? YES ☑ NO ☐

CHAIN OF CUSTODY PROVIDED? YES ☑ NO ☐

SAMPLE LABELS PRESENT? YES ☑ NO ☐

BOTTLE LABELS CORRESPOND W/COC? YES ☑ NO ☐

TYPE OF COLLANT USED Wet Ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER		TEMP INSIDE COOLER
#	Cooler A	0.9°C
#	Cooler B	1.6°C
#		
#		
#		

RECORD TEMPERATURE BLANK (1) 0.9°C (2) 1.6°C (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: SB0101, SB0102, SB0201, SB0202, SB0301, ~~SB0302~~ AC
SB5001, SB0302, SB0401, SB0402, SB0501, SB0502.

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter IV

PROJECT NO: 019457-4102

LABORATORY ID: SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCs BTEX + MTBE	SVOC PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
										Method No. 8020	8100					8100M	8015M	
11/20/96	0845	S	WB0701	MW07	PP01	9/11	2	N	—	X	X					X	X	
	0845	S	WB5601	MW07	PD1	9/11	2	N	—	X	X					X	X	
	0855	S	WB0702	MW07	PP01	14/16	2	N	—	X	X					X	X	
	1010	S	WB0801	MW08	PP01	8/10	2	N	—	X	X					X	X	
*	1018	S	WB0802	MW08	PP01	13/15	2	N	—	X	X					X	X	
	1418	S	WB0901	MW09	PP01	8/10	2	N	—	X	X					X	X	
	1430	S	WB0902	MW09	PP01	13/15	2	N	—	X	X					X	X	
	1546	S	WB1001	MW10	PP01	8/10	2	N	—	X	X					X	X	
	1554	S	WB1002	MW10	PP01	13/15	2	N	—	X	X					X	X	
↓	—	—	TEMP	Blank	—		1	—	—									

Relinquished by: (Signature) Daniel Howard

Date/Time: 11/20/96/1751

Received by: ~~O. Campbell~~ (A) ~~SG 86855~~ M Baggett T613380

Date/Time: 11/20/96 5:51 11/26/96 0930

Cooler Temperature: 0.6 °C

Remarks: * MS/MSD

AIRBILL CO. Hand Delivered by M+E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.

UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger

FAX # (404) 872-3161

SUBCONTRACTOR SAV. LABS

PROJECT # Hunter 4

SAMPLE CUSTODIAN A. Campbell (A) SR-810855

TODAY'S DATE 11/20/96

DATE/TIME SAMPLES RECEIVED 11/20/96 5:51

AIRBILL NUMBER

NO. OF COOLERS IN SHIPMENT 2

COOLER OPENED: DATE 11/20/96 TIME 5:51

CHAIN OF CUSTODY SEAL INTACT? YES [✓] NO [ ]

CHAIN OF CUSTODY PROVIDED? YES [✓] NO [ ]

SAMPLE LABELS PRESENT? YES [✓] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [✓] NO [ ]

TYPE OF COLLANT USED Wet Ice

COOLANT CONDITION: MELTED

PARTIALLY MELTED/FROZEN ✓

FROZEN

COOLER NUMBER		TEMP INSIDE COOLER
#	Cooler A	0.6°C
#	Cooler B	1.4°C
#		
#		
#		

RECORD TEMPERATURE BLANK (1) 0.6°C (2) 1.4°C (3)

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, (INTACT?))

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: WB0701, WB5L01, WB0702, WB0801, WB0802, WB0901, WB0902, WB1001, WB1002.

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter IV

PROJECT NO: 019457-4102

LABORATORY ID: SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	VOCs BTEX/MBE 8020	SVOCs PCP/BP/PAH 8100	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO 8015M	GRO 8015M	
Method No.																		
11/20/96	0815	S	SB1501	SB15	PP01	0/2	2	N	—	X	X					X	X	
	0825	S	SB1502	SB15	PP01	4/6	2	N	—	X	X					X	X	
	0855	S	SB1601	SB16	PP01	4/6	2	N	—	X	X					X	X	
	0900	S	SB1602	SB16	PP01	8/10	2	N	—	X	X					X	X	
	0855	S	SB5301	SB16	PD2	4/6	2	N	—	X	X					X	X	
	1000	S	SB1701	SB17	PP01	4/6	2	N	—	X	X					X	X	
	1005	S	SB1702	SB17	PP01	6/8	2	N	—	X	X					X	X	
	1025	S	SB1801	SB18	PP01	1/3	2	N	—	X	X					X	X	
	1035	S	SB1802	SB18	PP01	5/7	2	N	—	X	X					X	X	
	1350	S	SB1901	SB19	PP01	4/6	2	N	—	X	X					X	X	
	1355	S	SB1902	SB19	PP01	6/8	2	N	—	X	X					X	X	
*	1420	S	SB2001	SB20	PP01	4/6	2	N	—	X	X					X	X	

Relinquished by: (Signature) Daniel Howard Date/Time: 11/20/96/1750 Received by: ~~Christopher Cook~~ (B) Date/Time: 5:50

Cooler Temperature: 1.4°C

Remarks: * Use sample SB2001 as MS/MSD also NB Bassin (T613380) 11/26/96 0930

AIRBILL CO. Hand Delivered by M+E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

Metcalf & Eddy

CHAIN - OF - CUSTODY - RECORD

PROJECT NAME: Hunter IV

PROJECT NO: 019457-4102

LABORATORY ID: SLS

SAMPLER(S) NAME: Daniel Howard

TASK ORDER NO.

SAMPLE EVENT:

PROGRAM TYPE:

SAMPLER(S) SIGNATURE: Daniel Howard

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD	~~VOCS~~ BTEX+MTBE	~~SVOC~~ PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	~~TPH~~/DRO	GRO	
Method No.										8020	8100					8100M	8015M	~~8~~ DH
11/20/96	1425	S	SB2002	SB20	PP01	6/8	2	N	—	X	X					X	X	
	1450	S	SB2101 DH	SB21	PP01	1/3	2	N	—	X	X					X	X	
	1505	S	SB2102	SB21	PP01	9/11	2	N	—	X	X					X	X	
	1615	S	SB2201	SB22	PP01	6-/8	2	N	—	X	X					X	X	
	1625	S	SB2202	SB22	PP01	8/10	2	N	—	X	X					X	X	
	1625	S	SB5401	SB22	PD3	8/10	2	N	—	X	X					X	X	
	—	—	TEMP	Blank	—		1	—	—									

Relinquished by: (Signature) Daniel Howard

Date/Time: 11/20/96/1740

Received by: ~~A Campbell~~ (8) ~~[illegible]~~ MBaggett T613380

Date/Time: 11/20/96 5:40 11/26/96 0930

Cooler Temperature: 1.4°C

Remarks:

AIRBILL CO. Hand Delivered by M&E

TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SHIPPED IN ICE (Y)/N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger
FAX # (404) 872-3161
SUBCONTRACTOR SAV. LABS
PROJECT # Hunter 4
SAMPLE CUSTODIAN A. Campbell (B) 80-810855
TODAY'S DATE 11/20/96
DATE/TIME SAMPLES RECEIVED 11/20/96 5:50
AIRBILL NUMBER
NO. OF COOLERS IN SHIPMENT 2
COOLER OPENED: DATE 11/20/96 TIME 5:50

CHAIN OF CUSTODY SEAL INTACT?	YES ☑	NO ☐
CHAIN OF CUSTODY PROVIDED?	YES ☑	NO ☐
SAMPLE LABELS PRESENT?	YES ☑	NO ☐
BOTTLE LABELS CORRESPOND W/COC?	YES ☑	NO ☐

TYPE OF COLLANT USED Wet Ice.
COOLANT CONDITION: MELTED
PARTIALLY MELTED/FROZEN ✓
FROZEN

COOLER NUMBER	TEMP INSIDE COOLER
# Cooler A	0.6°C
# Cooler B	1.4°C
#	
#	
#	

RECORD TEMPERATURE BLANK (1) 0.6°C (2) 1.4°C (3)

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: SB1501, SB1502, SB1601, SB1602, SB5301, SB1701, SB1702, SB1801, SB1802, SB1901, SB1902, SB2001, SB2002, SB2101, SB2102, SB2201, SB2202, SB5401.

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

PROJECT NAME: Hunter IV
TASK ORDER NO.
PROJECT NO: 019457-4102
SAMPLE EVENT:
LABORATORY ID: SLS
PROGRAM TYPE:
SAMPLER(S) NAME: Daniel Howard
SAMPLER(S) SIGNATURE: Daniel Howard

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
11/21/96	0855	S	WB1101	MW11	PP01	8/10	2	N	—
	0926	S	WB1102	MW11	PP01	13/15	2	N	—
	0926	S	WB5701	MW11	~~PS1~~ PD1 01	13/15	2	N	—
	0800	S	SB2401	SB24	PP01	5/7	2	N	—
	0805	S	SB2402	SB24	PP01	9/11	2	N	—
	0835	S	SB2301	SB23	PP01	5/7	2	N	—
	0840	S	SB2302	SB23	PP01	7/9	2	N	—
	—	—	TEMP	Blank	—		1	—	—
	1043		WB1201	MW12	PP01	8/10	2	N	—
↓	1104	✗	WB1202	MW12	PP01	13/15	2	N	—

ANALYTICAL PARAMETERS / METHODS

Method No.	VOCs BTEX+MTBE 8020	SVOC 8100	PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO 8100M	GRO 8015M	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	
	X	X						X	X	

Relinquished by: (Signature) D. Rowell
Date/Time: 11-21-96/1700
Received by: Alan Pace 5086897
Date/Time: 11/21/96 5:00
Cooler Temperature: 10.0°C

Remarks: * WB1202 for MS/MSD Samples hand delivered 5mac 11/21/96

AIRBILL CO.
TRACKING NO:

Send Results to:

Christine Hettinger c/o METCALF & EDDY, INC.
1201 Peachtree St., N.E., 400 Colony Square, Suite 1101
Atlanta, Georgia 30361
(404) 881-8010, FAX (404) 872-3161

STANDARD PRESERVATION (Y):
(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____
STORED/SHIPPED IN ICE (Y)N

SAMPLE RECEIPT CONFIRMATION SUMMARY REPORT

Metcalf & Eddy

TO BE COMPLETED BY SUBCONTRACTOR SAMPLE CUSTODIAN FOR EACH SHIPMENT RECEIVED FROM METCALF & EDDY.
UPON COMPLETION, FAX TO THE DESIGNATED M&E REPRESENTATIVE LISTED BELOW SAME DAY AS SHIPMENT.

METCALF & EDDY Representative C. Hettinger FAX # (404) 872-3161

SUBCONTRACTOR SAV. LABS PROJECT # Hunter 4

SAMPLE CUSTODIAN A. Campbell 56-8897 TODAY'S DATE 11/21/96

DATE/TIME SAMPLES RECEIVED 11/21/96 5:00

AIRBILL NUMBER _____ NO. OF COOLERS IN SHIPMENT 1

COOLER OPENED: DATE 11/21/96 TIME 5:00

CHAIN OF CUSTODY SEAL INTACT? YES [✓] NO [ ]

CHAIN OF CUSTODY PROVIDED? YES [✓] NO [ ]

SAMPLE LABELS PRESENT? YES [✓] NO [ ]

BOTTLE LABELS CORRESPOND W/COC? YES [✓] NO [ ]

TYPE OF COLLANT USED wet Ice

COOLANT CONDITION: MELTED _____ PARTIALLY MELTED/FROZEN ✓

FROZEN _____

COOLER NUMBER # Cooler A TEMP INSIDE COOLER 10.0°C

_____

_____

_____

_____

RECORD TEMPERATURE BLANK (1) 10.0°C (2) _____ (3) _____

CONDITION OF BOTTLES IN SHIPMENT: (BROKEN, LEAKING, INTACT?)

IF BROKEN OR LEAKING LIST SAMPLE ID#'S AND BOTTLE TYPES AFFECTED

LIST SAMPLE ID'S IN EACH SHIPMENT: WB1101, WB1102, WB5701, SB2401, SB2402, SB2301, SB2302, WB1201, WB1202

APPENDIX E

GEOLOGIC LOGS

Hole No. SB01

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT	Pump Houses 1, 2, + 6
2. LOCATION (Coordinates or Station)	SAV. GA.
3. DRILLING AGENCY	PSI
4. HOLE NO. (As shown on drawing title and file number)	SB01
5. NAME OF DRILLER	K. Durham
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	10.0'
8. DEPTH DRILLED INTO ROCK	—
9. TOTAL DEPTH OF HOLE	10.0'
10. SIZE AND TYPE OF BIT	4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 4 / UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES	—
15. ELEVATION GROUND WATER	9.1' BGS
16. DATE HOLE	STARTED 11-18-96 / COMPLETED 11-18-96
17. ELEVATION TOP OF HOLE	36.8'
18. TOTAL CORE RECOVERY FOR BORING	— %
19. SIGNATURE OF INSPECTOR	G. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
	0		Sand, dk. grayish brown, 2.5Y4/2, fine, <5% silt. (SP)	75	1	3-9-9-6 / 1210 — HS - >1000, Bz - 0
	2		Sand, v. fine, dk. brown, 7.5YR 3/4, dry, well round, <5% silt. (SP)	75	2	4-4-5-5 / 1220 — HS - 790, Bz - 0
	4		As Above to 5.3' then Sand, black, 7.5YR 2.5/1, v. fine, 5% silt, dry. (SP)	85	3	4-3-4-10 / 1225 Lab — HS - >1000, Bz - 0
	6		As Above	Auger		Bz - 0
	8		As Above to 9.4' then Sand, lt. brown, 7.5YR 4/6, wet, <5% silt. (SP)	80	4	16-50/5" ▽ / 1230 Lab — HS - >1000, Bz - 0
	10		EOB @ 10.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB02

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT	Pump Houses 1, 2, + 6
2. LOCATION (Coordinates or Station)	SAV. GA.
3. DRILLING AGENCY	PSI
4. HOLE NO. (As shown on drawing title and file number)	SB02
5. NAME OF DRILLER	K. Durham
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	10.0' BGS
8. DEPTH DRILLED INTO ROCK	—
9. TOTAL DEPTH OF HOLE	10.0' BGS
10. SIZE AND TYPE OF BIT	4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 4 / UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES	—
15. ELEVATION GROUND WATER	8.2' BGS
16. DATE HOLE	STARTED 11-18-96 / COMPLETED 11-18-96
17. ELEVATION TOP OF HOLE	35.9'
18. TOTAL CORE RECOVERY FOR BORING	— %
19. SIGNATURE OF INSPECTOR	D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2		Sand, dk. brown, 7.5YR 3/2, dry, ≈10% silt, fine, (SM)	75	1	Blows / OVA, ppm 9-8-9-8 HS - 2 1310 BZ - 0
	4		As Above (SM)	90	2	6-8-4-5 HS - 51 1315 BZ - 0
	6		Sand, v. dk. brown, 7.5YR 2.5/2, <5% silt, moist. (SP)	85	3	3-3-9-17 HS - >1000 1320 Lab BZ - 0
	8		As Above	Auger		
	10		Sand, v. fine, brown, 7.5YR 4/4, <5% silt, saturated. (SP)	65	4	18-27-21-27 ▽ HS - >1000 1325 Lab BZ - 0
			EOB @ 10.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB03

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, & 6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB03
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 10.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 10.0' BGS
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 8.2' BGS
16. DATE HOLE: STARTED 11-18-96; COMPLETED 11-18-96
17. ELEVATION TOP OF HOLE: 36.6'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2		Sand, v. fine, <5% silt, v. pale brown, 10YR 7/4, moist (SP)	87	1	Blows: 2-4-7-10; 1350. OVA, ppm: HS - 620; Bz - 0
	4		Sand, v. fine, v. dk. gray, 10YR 3/1, 5% silt, dry (SP)	70	2	10-10-9-9; 1355. HS - >1000; Bz - 0
	6		As Above, moist. (SP)	70	3	3" Split spoon. 5-11-16-16; 1400. Lab. HS - >1000; Bz - 0
	8		As Above	AUGER		
	10		Sand, lt. brown, 7.5YR 4/6, <5% silt, v. fine, saturated (SP)	75	4	27-40-50/6"; 1410. Lab. HS - >1000; Bz - 0
			EOB @ 10.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB04

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, & 6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB04
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 10.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 10.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 8.5'BGS
16. DATE HOLE: STARTED 11-18-96; COMPLETED 11-18-96
17. ELEVATION TOP OF HOLE: 37.2'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: G. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sand, dk. brown, 7.5YR 4/4, 10% silt, dry, v. fine (SM)	70	1	Blows: 4-9-12-10; 1435; OVA, ppm: HS- 140, BZ- 0
	2		As Above, moist, <5% silt (SP)	80	2	14-10-11-9; 1440; HS- 440, BZ- 0
	4		Sand, v. fine, dk. brown, 7.5YR 3/4, 10% silt, moist (SM)	85	3	9-10-15-40; 1445; 3" spoon Lab; HS- >1000, BZ- 0
	6		As Above	Auger		
	8		Sand, lt. brown, 7.5YR 5/6, <5% silt, fine, saturated (SP)	60	4	15-40-50/4"; 1450; ▽ Lab; HS- >1000, BZ- 0
	10		EOB @ 10.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB 05

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, + 6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB05
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 12.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 12.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 9.8' BGS
16. DATE HOLE: STARTED 11-18-96; COMPLETED 11-18-96
17. ELEVATION TOP OF HOLE: 37.4
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					Blows / OVA, ppm
	2		Sand, brown, 7.5YR 4/2, 10% silt, fine, moist. (SM)	70	1	3-7-7-6 / 1530 — HS - >1000, BZ - 0
	4		Sand, dk. reddish brown, 7.5YR 3/2, v. fine, dry. (SM)	75	2	5-5-7-7 / 1535 — HS - 340, BZ - 0
	6		As Above. (SM)	75	3	5-6-27-50/1.5" / 1540 Lab — HS - >1000, BZ - 0
	8		As Above	AUGER		▽
	10		Sand, brown, 7.5YR 4/4, <5% silt, v. fine, saturated. (SP)	55	4	20-50/4" / 1550 Lab — HS - >1000, BZ - 0
	12		EOB @ 12.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB 06

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT	Pump Houses 1, 2, & 6	10. SIZE AND TYPE OF BIT	4¼" I.D. HSA
2. LOCATION (Coordinates or Station)	SAV. GA.	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
3. DRILLING AGENCY	PSI	12. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
4. HOLE NO. (As shown on drawing title and file number)	SB 06	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED	4 / Ø
5. NAME OF DRILLER	K. Durham	14. TOTAL NUMBER CORE BOXES	—
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.	15. ELEVATION GROUND WATER	11.2' BGS
		16. DATE HOLE: STARTED / COMPLETED	11-18-96 / 11-18-96
7. THICKNESS OF OVERBURDEN	12.0'	17. ELEVATION TOP OF HOLE	37.0'
8. DEPTH DRILLED INTO ROCK	—	18. TOTAL CORE RECOVERY FOR BORING	— %
9. TOTAL DEPTH OF HOLE	12.0'	19. SIGNATURE OF INSPECTOR	D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
	2		Sand, v. dk. grayish brown, 10YR3/2, 10% silt, v. fine, dry. (SM)	60	1	2-7-9-7 / HS- 10 1615 / BZ- 0
	4		As Above (SM)	70	2	4-2-3-4 / HS- 0 1620 / BZ- 0
	6		Sand, v. dusky red, 2.5YR2.5/3, 5-10% silt, v. fine, dry. (SM)	75	3	3-4-5-16 / HS- 840 1625 Lab / BZ- 0
	8		As Above	Auger		
	10		Sand, lt. brown, 7.5YR5/6, v. fine, 15% silt, wet. (SP)	70	4	8-24-50/5" / HS- >1000 1635 Lab ▽ / BZ- 0
	12		EOB @ 12.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB07

DRILLING LOG | DIVISION SAV. | INSTALLATION HAAF | SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB 07
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 12.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 12.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4 | UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 10.0' BGS
16. DATE HOLE: STARTED 11-19-96 | COMPLETED 11-19-96
17. ELEVATION TOP OF HOLE: 36.9'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: G. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
	0–2		Sand, dk. gray, 7.5YR 4/1, v. fine, 5% silt, dry (SP)	55	1	5-7-10-10 / 0830 — HS - 1, Bz - 0
	2–4		Sand, dk. reddish brown, 5YR 3/4, <5% silt, v. fine, dry. (SP)	65	2	7-7-14-15 / 0835 — HS - 40, Bz - 0
	4–6		Sand, dk. reddish brown, 5YR 3/4, 5-10% silt, v. fine, moist. (SM)	70	3	27, 17, 50/5" / 0910 Lab — HS - 100, Bz - 0
	6–8		AS Above	AUGER		
	8–10					
	10–12		Sand, yellowish red, 5YR 4/6, v. fine, <5% silt, saturated (SP)	50	4	▽ 27-30-50/5" / 0915 Lab — HS - 420, Bz - 0
	12–		EOB @ 12.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB08

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB08
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 12.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 12.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 10.4' BGS
16. DATE HOLE: STARTED 11-19-96; COMPLETED 11-19-96
17. ELEVATION TOP OF HOLE: 38.0'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: G. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2		Sand, yellowish brown, 10YR 5/4, v.fine, 5-10% silt, dry (SM)	HAND AUGER	1	Blows / OVA, ppm 0935 HS-2 BZ-0
	4		Sand, v.dk. gray, 10YR 3/1, v.fine, 5-10% silt, moist. (SM)	HAND AUGER	2	HS-8 BZ-0 0940
	6		Sand, yellowish brown, 10YR 3/4, v.fine, 5-10% silt, moist. (SM)	85	3	3-5-8-12 3" Spoon HS-210 0945 Lab BZ-0
	8		As Above.	AUGER		
	10		Sand, lt. brown, 7.5YR 4/6, V.fine, <5% silt, saturated (SP)	30	4	30-50/3" ▽ HS-70 0955 Lab BZ-0
	12		EOB @ 12.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB 19

DRILLING LOG	DIVISION: SAV.	INSTALLATION: HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB 19
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 8.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 8.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 7.0' BGS
16. DATE HOLE: STARTED 11-20-96; COMPLETED 11-20-96
17. ELEVATION TOP OF HOLE: 37.1'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					Blows / OVA, ppm
			Sand, white, 10YR 8/1, v. fine, <5% silt, dry. (SP)	HAND AUGER	1	1340 HS-2 BZ-0
	2		Sand, yellowish brown, 10YR 5/6, v. fine, <5% silt, dry (SP)	HAND AUGER	2	1345 HS-3 BZ-0
	4		Sand, dk. brown, 7.5YR 3/2, v. fine, 5-10% silt, moist. (SM)	50	3	2-3-4-2 1350 Lab HS-10 BZ-0
	6		Sand, dk. reddish brown, 5YR 3/2 v. fine, 5-10% silt, saturated (SM)	70	4	8-8-8-8 1355 ▽ Lab HS-46 BZ-0
	8		EOB @ 8.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB20

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB 20
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 8.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 8.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 7.2'BGS
16. DATE HOLE: STARTED 11-20-96; COMPLETED 11-20-96
17. ELEVATION TOP OF HOLE: 36.2'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
	2		Sand, v. dk. grayish brown, 10YR 3/2, fine, 5-10% silt, dry (SM)	HAND AUGER	1	1410 HS - >1000 BZ - 0
	4		Sand, v. dk. gray, 10YR 3/1, fine 5-10% silt, moist (SM)	HAND AUGER	2	1415 HS - >1000 BZ - 0
	6		AS Above (SM)	45	3	1-1-0-1 / 1420 lab HS - >1000 BZ - 0
	8		Sand, v. dusky red, 5YR 2.5/2, fine, 5% silt, wet. (SP)	45	4	1-1-1-4 / 1425 ▽ lab HS - >1000 BZ - 0
			EOB @ 8.0'BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB21

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, & 6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB21
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 11.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 11.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 9.0' BGS
16. DATE HOLE: STARTED 11-20-96; COMPLETED 11-20-96
17. ELEVATION TOP OF HOLE: 36.6'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
			0.75' Asphalt core			
	2		Sand, reddish yellow, 7.5YR6/8, v.fine, 10-15% silt, dry (SM)	70	1	6-12-10-6 lab HS-32 BZ-0 1450
	4		As above to 3.5' then Sand, pinkish gray, 7.5YR 6/2, v.fine 5-10% silt, dry (SM)	75	2	6-6-6-5 HS-4 1455 BZ-0
	6		Sand, yellowish brown, 10YR5/4, fine, 5-10% silt, moist. (SM)	80	3	4-4-4-6 HS-18 1500 BZ-0
	8		As Above	AUGER		
	10		Sand, black, 10YR2/1, v.fine, 10% silt, saturated. Clay, gray, 10YR6/1, massive, firm, dry (CL)	90	4	▽ 13-10-6-6 lab HS->1000 1505 BZ-0
			EOB @ 11.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB22

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station): SAV. GA.
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): SB22
5. NAME OF DRILLER: K. Durham
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 10.0'
8. DEPTH DRILLED INTO ROCK: —
9. TOTAL DEPTH OF HOLE: 10.0'
10. SIZE AND TYPE OF BIT: 4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4; UNDISTURBED 8
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 9.7' BGS
16. DATE HOLE: STARTED 11-20-96; COMPLETED 11-20-96
17. ELEVATION TOP OF HOLE: 37.1'
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: G. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
			1.7' Asphalt + concrete core			
	2		Sand, pale brown, 10YR 6/3, fine, 5-10% silt, moist (SM)	70	1	1-3-3-3 / 1550 — HS -> 1000, BZ - 0
	4		Sand, grayish brown, 10YR 5/2, fine, 20-30% silt, moist. (SM)	100	2	4-6-7-7 / 1605 — HS - 360, BZ - 0
	6		Sand, lt. gray, 10YR 7/2, v. fine, <5% silt, moist. (SP)	80	3	8-12-10-8 / 1615 — 3" spoon Lab — HS -> 1000, BZ - 0
	8		AS ABOVE	AUGER		
			Sand, grayish brown, 10YR 5/2, fine, 20-30% silt, wet (SM)	100	4	16-32-37-31 / 1625 — Lab — HS -> 1000, BZ - 0
	10		EOB @ 10.0' BGS			

* Samples 3+4 collected from offset located 10' North due to unmarked underground utility.

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB23

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT	Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station)	SAV. GA.
3. DRILLING AGENCY	PSI
4. HOLE NO. (As shown on drawing title and file number)	SB23
5. NAME OF DRILLER	K. Durham
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	9.0'
8. DEPTH DRILLED INTO ROCK	—
9. TOTAL DEPTH OF HOLE	9.0'
10. SIZE AND TYPE OF BIT	4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 4 / UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES	—
15. ELEVATION GROUND WATER	8.0' BGS
16. DATE HOLE	STARTED 11-21-96 / COMPLETED 11-21-96
17. ELEVATION TOP OF HOLE	36.7'
18. TOTAL CORE RECOVERY FOR BORING	— %
19. SIGNATURE OF INSPECTOR	D. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			1.1' concrete core			Blows / OVA, ppm
	2		Sand, lt. yellowish brown, 10YR6/3, v. fine, <5% silt, dry (SP)	100	1	3-5-5-5 / 0825 — HS-100 Bz-0
	4		Sand, lt. gray, 10YR7/2, v. fine, <5% silt, dry (SP)	60	2	6-8-12-12 / 0830 — HS-40 Bz-0
	6		As Above to 6.5' then Sand, pale brown, 10YR6/3, v. fine, 15-25% silt, moist (SM)	85	3	7-11-17-17 / 0835 — 3" spoon lab — HS-160 Bz-0
	8		As Above to 8.5' then clay, v. pale brown, w/ 30% sand, v. fine, wet.	90	4	8-10-8-10 / 0840 — ▽ lab — HS-160 Bz-0
			EOB @ 9.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. SB24

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT	Pump Houses 1, 2, +6
2. LOCATION (Coordinates or Station)	SAV. GA
3. DRILLING AGENCY	PSI
4. HOLE NO. (As shown on drawing title and file number)	SB24
5. NAME OF DRILLER	K. Durham
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	11.0'
8. DEPTH DRILLED INTO ROCK	—
9. TOTAL DEPTH OF HOLE	11.0'
10. SIZE AND TYPE OF BIT	4¼" I.D. HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURER'S DESIGNATION OF DRILL	CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 4 / UNDISTURBED Ø
14. TOTAL NUMBER CORE BOXES	—
15. ELEVATION GROUND WATER	8.0' BGS
16. DATE HOLE	STARTED 11-21-96 / COMPLETED 11-21-96
17. ELEVATION TOP OF HOLE	36.4'
18. TOTAL CORE RECOVERY FOR BORING	— %
19. SIGNATURE OF INSPECTOR	G. Rowell

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Blows / OVA, ppm
			0.7' concrete Core			
	2		Sand, yellowish brown, 10YR5/4, fine <5% silt, dry (SP)	90	1	3-17-21-22 / 0750 — HS-2 BZ-0
	4		As Above. (SP)	90	2	19-17-21-17 / 0755 — HS-2 BZ-0
	6		Sand, black, 10YR2/1, fine, 15% silt, moist (SM)	80	3	20-17-8-5 / 0800 lab — HS-960 BZ-0
	8		As Above	Auger		▽
	10		Sand, brown, 10YR5/3, fine <5% silt, saturated (SP)	80	4	2-5-7-9 / 0805 lab — HS-320 BZ-0
			EOB @ 11.0' BGS			

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. MW01

DRILLING LOG	DIVISION SAV	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT Pumphouse 1, 2, 6	10. SIZE AND TYPE OF BIT 6 1/4" ID HSA
2. LOCATION (Coordinates or Station) HAAF	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY PSI	12. MANUFACTURER'S DESIGNATION OF DRILL CME 75
4. HOLE NO. (As shown on drawing title and file number) MW01	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 5 — UNDISTURBED —
5. NAME OF DRILLER M. Gribble	14. TOTAL NUMBER CORE BOXES —
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 25.76 (12/9/96)
	16. DATE HOLE — STARTED 11/18/96 — COMPLETED 11/18/96
7. THICKNESS OF OVERBURDEN 18.0'	17. ELEVATION TOP OF HOLE 36.28 TOC
8. DEPTH DRILLED INTO ROCK 0.	18. TOTAL CORE RECOVERY FOR BORING — %
9. TOTAL DEPTH OF HOLE 18.0'	19. SIGNATURE OF INSPECTOR D. Humphs

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			SAND: fine-med, v. dk Gy 10YR 3/1, dry - Gray 6/1, silty 25%, mod. sorting. (SM)	—	1	BLOWS Hand Auger — OVA, ppm BZ=0 HS=1
	2		: as above blk 5YR 2.5/1. Sand is wellsorted; silt 15%. v. loose - loose dry. tr. mica. (SM)	100	2	3-4-5-4 — BZ=0 HS=0.5
	4		: as above. dk red br 5YR 3/4, firm silty 10%, wellsorted, dry. cemented nodules. (SW/SM)	63	3	10-15-13-16 — BZ=0 HS=300 — HCodor
	6		Cuttings as above	—	—	Auger — BZ=0 HS-NA
	8		: Lt. Yell Br 10YR 6/4, silty 5-10%, wellsorted, dense. dry (SW)	67	4	4-17-38-46 — Lab — BZ=0 HS=1000+
	10		as above - moist cuttings	-	-	Auger — ∇ in well at install 10.6 bgs
	12					
	14		: as above, saturated, loose-v. firm. silty 5-10%, tr. blk. specks. (glauconite?) (SW)	58	5	7-15-20-27 — Lab + Geotech — BZ=0 HS=650
	16		Cuttings as above	—	—	Auger
	18		E.O.B. @ 18.0'			
	20					

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. MW02

DRILLING LOG	DIVISION SAV.	INSTALLATION HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT Pumphouse 1, 2, 6	10. SIZE AND TYPE OF BIT 6 1/4" ID HSA
2. LOCATION (Coordinates or Station) HAAF	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MSL
3. DRILLING AGENCY PSI	12. MANUFACTURER'S DESIGNATION OF DRILL CME 75
4. HOLE NO. (As shown on drawing title and file number) MW02	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN — DISTURBED 5 — UNDISTURBED —
5. NAME OF DRILLER M. Gribble	14. TOTAL NUMBER CORE BOXES —
6. DIRECTION OF HOLE ☒ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER 27.06 (12/4/96)
	16. DATE HOLE — STARTED 11/18/96 — COMPLETED 11/18/96
7. THICKNESS OF OVERBURDEN 18.0'	17. ELEVATION TOP OF HOLE 37.34 TOC
8. DEPTH DRILLED INTO ROCK Ø	18. TOTAL CORE RECOVERY FOR BORING — %
9. TOTAL DEPTH OF HOLE 18.0'	19. SIGNATURE OF INSPECTOR D. Humphries

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			SAND: fine-med. gr. 7.5YR 4/2 Br., dry, wellsorted, silty 15%. (SM)	—	1	BLOWS Handauger; OVA, ppm HS-1.0 BZ-0
	2		: as above, red staining, loose-firm, dry, silty 10-15%. (SM)	100	2	7-14-15-14; BZ-0 HS-100
	4		: as above. str. Br 7.5YR 4/6 to blk (deepred) 2.5/1, dry, loose-v. firm. wellsorted, silty 10% (SW/SM)	42	3	10-30-15-15; BZ-0 HS-120
	6		Cuttings as above	—	—	Auger
	8		: Yell Br 10YR 5/8, moist, loose-v. dense wellsorted, silty 5%, tr. mica, tr. glauconite (SW)	46	4	3" spoon 15-16-30-50/6 HC odor Lab; BZ-0 HS-1000+
	10		Cuttings as above	—	—	Auger; ▽ in well at install; ▽ in hole @ 15' depth
	12					
	14		as above, firm-v. firm, wet. (SW)	33	5	3" spoon 18-17-16-22 HC odor Lab + Geotech; BZ-0 HS-1000+
	16		as above	—	—	Auger
	18		E.O.B. @ 18.0'			
	20					

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. MW03

DRILLING LOG	DIVISION: SAV	INSTALLATION: HAAF	SHEET 1 OF 1 SHEETS

1. PROJECT: Pumphouse 1, 2, 6
2. LOCATION (Coordinates or Station): HAAF
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): MW03
5. NAME OF DRILLER: M. Grigle
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 17.0'
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 17.0'
10. SIZE AND TYPE OF BIT: 6 1/4" ID HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5; UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 27.85 (12/9/96)
16. DATE HOLE: STARTED 11/19/96; COMPLETED 11/19/96
17. ELEVATION TOP OF HOLE: 37.24 TOC
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: D. Humphus

ELEVATION a	DEPTH b	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0–2		Sand: fine-med; v.dk 6y 7.5YR 3/2 to 6y 6/4 silty 15%, well sorted. dry (SM)	100	1	Blows / Hand auger / OVA 100ppm HS-1000+ BZ-0
	2–4		: as above grading to Pale Br 10YR 6/3, dry, v.loose-firm, silty 5%, tr. glauconite, (SW)	88	2	4-6-7-14 odor BZ-0 HS-500
	4–6		: as above, blk 5YR 2.5/1 to dk reddish 3/2. silty 20% at top, v. loose-v. firm. (SM/SW)	83	3	3-9-7-27 odor BZ-0 HS-1000+
	6–8		Cuttings as above, mixed	—	—	Augur
	8–10		: as above, Br 7.5YR 4/4, wet, loose-dense, well sorted, silty 5%. (SW)	63	4	11-10-27-38 Lab ▽ initial wet sample odor BZ-0 HS-1000+ ▽ 9.7' bgs at install
	10–12		Cuttings mixed of above	—	—	Augur
	12–14		: as above, to dk Yell Br 10YR 4/4, wet, silty 5-10%, loose-firm, well sorted (SW)	66	5	7-12-10-17 odor Lab + geotech BZ-0 HS-1000+
	14–16		Cuttings as above	—	—	Augur
	16–18		E.O.B @ 17.0			
	18–20					

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. MW11

DRILLING LOG | DIVISION: SAV | INSTALLATION: HAAF | SHEET 1 OF 1 SHEETS

1. PROJECT: Pumphouse 1, 2, 6
2. LOCATION (Coordinates or Station): SAV
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): MW11
5. NAME OF DRILLER: M. Gribble
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 18.0'
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 18.0'
10. SIZE AND TYPE OF BIT: 6 1/4" ID HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5 | UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 27.33 (12/9/96)
16. DATE HOLE: STARTED 11/21/96 | COMPLETED 11/21/96
17. ELEVATION TOP OF HOLE: 36.99 TOC
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Humphries

ELEVATION a	DEPTH b	LEGEND	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2		SAND: fine-med; 10YR 3/1 v.dk Gy, silty 15-20%, dry, tr. glauconite, well sorted (SM)	hand auger	1	Blows NA 2,3,12,15 OVA ppm HS-1000+ BZ-0
	4		: as above, Yell Br 5/6, silty 5-10% (SW)	hand auger	2	NR BZ-0 HS-300
	6		: v. dk. Br 10YR 2/2, silty 20%, well sorted, tr. glauconite, dry. v loose-firm Gy-br-5/2 (SM)	83	3	2,3-12-15 BZ-0 HS-700
	8		Cuttings as above	—	Auger	
	10		: v. dusky Red 2.5YR 2.5/2, big roots, sand is well sorted, silty 20%, moist Fe cementation, loose-dense (SM/SW)	67	4	3" spoon 10-16-20-37 Lab BZ-0 at 1 hr well installed HS-1000+ odor ± initial wet cuttings — Gotlach ± in bailer dep in 15'
	12		Cuttings mix of above based on cuttings on augers — clay, Lt br Gy 2.5Y 6/2 sandy - 5-30%	—	Auger	
	14		SAND: Pale Yell 2.5Y 7/3, clayey 5-20% silte wet, loose-firm, tr. mica + glauconite (SC/SW)	25	5	3" spoon 10-9-14-15 Lab BZ-0 HS-1000+
	16		Cuttings mix of clay sand	—	Auger	6-9-23-30 on redrive
	18		E.O.B. @ 18.0'			
	20					

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

Hole No. MW12

DRILLING LOG | DIVISION: SAV | INSTALLATION: HAAF | SHEET 1 OF 1 SHEETS

1. PROJECT: Pumphouse 1, 2, 6
2. LOCATION (Coordinates or Station): SAV
3. DRILLING AGENCY: PSI
4. HOLE NO. (As shown on drawing title and file number): MW12
5. NAME OF DRILLER: M. Gribble
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 18.0'
8. DEPTH DRILLED INTO ROCK: 0
9. TOTAL DEPTH OF HOLE: 18.0'
10. SIZE AND TYPE OF BIT: 6 1/4" ID HSA
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 5 | UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: 26.83 (12/9/96)
16. DATE HOLE: STARTED 11/21/96 | COMPLETED 11/21/96
17. ELEVATION TOP OF HOLE: 35.70 TOC
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: D. Humphries

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Concrete 7"			
			SAND: fine-med, dk Gy 10YR 4/1, well sorted dry, silty 15% (SM)	Hand Auger	1	Blows / OVA ppm: NA odor; BZ - 0; HS - 1000+
	2		: as above, Lt. Yell Br 2.5Y 6/3, tr mica + glauconite, dry, silty 5-10%, well sorted. (SW/SM)	Hand Auger	2	NA; BZ - 0; HS - 220
	4		: as above, loose - firm	50	3	7-10-9-16; BZ - 0; HS - 1000+
			- dk Gy 2.5Y 4/1, wet (SW)			▽ initial wet sample
	6		cuttings as above	—	Auger	
	8		: blk 2.5Y 2.5/1, silty 20%, well sorted, odor, loose-firm, moist.	60	4	3" spoon; 12-8-19-13; odor; BZ - 0; HS - 1000+; ▽ in well at install; ▽ in open hole at 15' depth; Geotech + Lab
			CLAY: Gy Br 2.5Y 5/2 dry, low plastic (CL) (SM)			
	10		Cuttings dk br/ blk clay/sand mix	—	Auger	
	12					3" spoon; 10-15-17-24; BZ - 0; HS - 6; Lab
			SAND: Lt. Br Gy 2.5Y 6/2, fine-med, well sorted, wet, tr. mica + glauconite, silt 5%, loose-v. firm. (SW)	63	5	
	14					
			Cuttings as above	—	Auger	
	16					
	18		E.O.B. @ 18.0' bgs			
	20					

Split-spoon samples for lithologic definition and/or chemical analysis were collected from 3 to 5 feet below ground surface (BGS) and every 5 feet or lithologic change thereafter (unless otherwise noted).

PROJECT | HOLE NO.

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

APPENDIX F

ENVIRONMENTAL SENSITIVITY SCORE

Pumphouse #1

SITE RANKING FORM

1. Soil Contamination

a. Total PAHs - Maximum Concentration

■	> 10 mg/kg =	50
☐	1 - 10 mg/kg =	25
☐	0.66 - 0.99 mg/kg=	10
☐	<0.660 =	0

b. Total BTEX - Maximum Concentration

■	> 150 mg/kg =	50
☐	50 - 149.9 mg/kg =	40
☐	10 - 49.9 mg/kg =	25
☐	0.5 - 9.9 mg/kg =	10
☐	0.005 - .499 mg/kg =	1
☐	< 0.005 mg/kg =	0

c. Depth to Groundwater (bls = Below Land Surface)

■	< 10' bls =	10
☐	10' - 25' bls =	5
☐	25' - 50' bls =	2
☐	> 50' bls =	1

2. Groundwater Contamination

a. Free Product (Nonaqueous-phase liquid hydrocarbons)

☐	> 6" =	2,000
☐	1/8" = 6" =	1,500
☐	Sheen - 1/8" =	250
■	No free product =	0

b. Dissolved Benzene - Maximum Concentration

☐	> 10,000 µg/L =	250
■	1,000 - 10,000 µg/L= (1,100 at MW02)	100
☐	100 - 1,000 µg/L =	50
☐	5 - 100 µg/L =	10
☐	<5 µg/L =	0

If (1.a.) + 1.b.) + (2.a.) + 2.b) is <1, and the CAP is complete, then no further action is required. Go to summary.

Pumphouse #1

3. Distance from Contaminant Plume to Point of Withdrawal for Water Supply

A. Public *				B. Non-public			
Category	Number Identified	Score	Total	Category	Number Identified	Score	Total
Impacted	0 X	100 =	0	Impacted	0 X	100 =	0
< 500'	0 x 0.5 x	50 =	0	< 100'	0 x 0.5 x	26 =	0
500' - 1/4 mi.	0 x 0.5 x	20 =	0	100' - 500'	0 x 0.5 x	10 =	0
1/4 mi - 1 mi	0 x 0.5 x	10=	0	500' - 1/4 mi	0 x 0.5 x	6 =	0
1 mi - 2 mi	0 x 0.5 x	6 =	0	1/4 - 1/2 mi	0 x 0.5 x	4 =	0
3 mi	N/A	0 =	0	> 1/2 mi	N/A	0 =	0
		A. Subtotal	0			B. Subtotal	0

Note: If site is in lower susceptibility area, do not use the shaded area.

4. Distance from Contaminant Plume to Surface-Waters or Utility Trenches Below the Water Table

- ☐ Impacted = 100
- ■ < 500' = 12
- ☐ 500' - 1,000' = 6
- ☐ > 1,000 = 1

5. Susceptibility Area Multiplier

- ☐ If site is located in a Low Ground Water Pollution Susceptibility Area, and no points of withdrawal for water supply lie within 500' and no surface water bodies or submerged utility trenches lie within 500' of the source: = 0.5
- ■ All other sites = 1

SUMMARY

[(1.a. + 1.b.) X (1.c.) + (2.a. + 2.b.) X (3.a. + 3.b. + 4.)] X [(5.)] = 2,200
Environmental Sensitivity Score

[(50 + 50) x 10 + (0 + 100) x (0 + 0 + 12)] x 1
[1000 + (100 x 12)] x 1
[1000 + 1200] x 1
2200

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