



DRAFT
SOIL VAPOR EXTRACTION/AIR SPARGING
(SVE/AS) PILOT STUDY REPORT
VIRGIN ISLAND CHEMICAL SITE
ST. CROIX, U.S. VIRGIN ISLANDS

Prepared for :

BERLEX LABORATORIES INC.
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Prepared by :



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October 2000

Project No.: 003-6016

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October 20, 2000

Project No.: 003-6016

Ms. Caroline Kwan
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RE: DRAFT SVE/AS PILOT STUDY REPORT
VIRGIN ISLAND CHEMICAL SITE, ST. CROIX, U.S. VIRGIN ISLANDS

Dear Ms. Kwan:

On behalf of Berlex Laboratories, Inc. and Pharmacia & Upjohn, Golder Associates Inc. (Golder) is pleased to provide three (3) copies of the Draft Soil Vapor Extraction/Air Sparging (SVE/AS) Pilot Study Report for the Virgin Island Chemical Site located in St. Croix, U.S. Virgin Islands. Copies have also been transmitted directly to the Virgin Islands DPNR and CDM Federal Programs.

As discussed during our meeting on October 10, 2000, this report expands upon and replaces Appendix A of the Draft Feasibility Study that was submitted on July 28, 2000.

If you have any questions, please do not hesitate to contact Terry Grimmer of Berlex (510-262-5495), Bill Gierke of P&U (616-833-2017), or either of the undersigned.

Very truly yours,

GOLDER ASSOCIATES INC.

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SAS:bjb

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EXECUTIVE SUMMARY

A Soil Vapor Extraction / Air Sparging (SVE/AS) Pilot Study was conducted in Spring 2000 at the Virgin Island Chemical Site in St. Croix, U.S. Virgin Islands. The Pilot Study was conducted in order to evaluate the feasibility of SVE and SVE/AS in two study areas of the site: the Former Process Pit Area (FPP Area) and the Aboveground Storage Tank Area (AST Area). The FPP Area is primarily impacted by chloroform, and the AST Area is primarily impacted by ethylbenzene and xylenes. The main objective of the Pilot Study was to provide Site-specific data to evaluate the feasibility and effectiveness of SVE and SVE/AS as potential remedial technologies to remove volatile organic compounds (VOCs) in soil and groundwater in the AST and FPP Areas. A secondary objective of the Pilot Study was to develop design, performance, and cost data for the efficient operation of a full-scale system in one or both areas.

The SVE/AS system network included the installation of six SVE wells in the AST Area, one SVE well in the FPP Area, and one AS well in each Area. In addition, clusters of vapor monitoring probes (VMPs), consisting of up to three probes at different depths, were installed at radial distances of approximately 5 feet, 10 feet, 20 feet, and 40 feet from the primary SVE well in each Area. The VMPs were used primarily to monitor pressure responses in the subsurface during system operation. One groundwater monitoring probe (GMP) was also installed within 3 feet of the primary SVE well in each Area in order to monitor water levels, including mounding effects.

Pilot testing was conducted in three general phases. Phase I involved testing a single SVE well in each area, and included a step test and constant rate test. Phase II involved testing one SVE well plus one AS well in each Area, and also included a step test and constant rate test. In each case, the results of the step tests were used to determine the optimum operating points for the blower and air compressor for SVE and AS, respectively, during the constant rate tests. The third phase, designated the Extended Phase II test, was subsequently conducted involving the simultaneous operation of the entire SVE/AS system (i.e., all 7 SVE wells and 2 AS wells) over a duration of approximately three days.

The test results for the AST Area indicated that a single SVE well located in this area exhibits a radius of influence (ROI) of about 20-25 feet. Due to heterogeneities in the subsurface, specifically intermittent sandy layers, the ROI is expected to vary and could be greater in some

locations within the AST Area, as observed in the field data. The field data and calculations for ROI, air permeability, and mass removal verify that SVE is a viable and efficient technology for removal of VOCs in the vadose zone in the AST area. Further, the observed vacuum responses, together with the calculated ROI, indicate that the existing network of six SVE wells should be adequate for full-scale SVE operation in the AST Area.

The AS test results were similarly positive in the AST Area. Based on observed dissolved oxygen levels and pressure responses, AS achieved an ROI of 20 to 30 feet from the sparge well. Very substantial reductions of ethylbenzene and xylene were observed in groundwater during the course of the 3-day test, due to the combined effect of in-situ air stripping and enhanced aerobic biodegradation resulting from the introduction of sparge air. An estimated 70 to 90 pounds of VOCs were removed during all phases of the Pilot Study. It is concluded that SVE and SVE/AS are both feasible technologies for effective VOC removal in the vadose and saturated zones in the AST Area.

SVE and SVE/AS testing in the FPP Area yielded inconclusive results as the applicability of mass removal data as an indicator of SVE/AS system performance was severely limited due to the extremely low residual source mass of chloroform that was initially present in soil and groundwater. Although some mass removal of chloroform was obtained during the Pilot Study, no appreciable changes were seen in groundwater conditions for chloroform in the immediate area of the SVE/AS system throughout the course of pilot testing. The physical data (e.g., vacuum/pressure responses, dissolved oxygen) indicated generally weak responses in the subsurface during both SVE and AS. This indicates poor airflow distribution, likely as a result of low air permeability and the development of preferential airflow pathways. It is concluded that implementation of an SVE or SVE/AS system in the FPP Area is not warranted due to the very low mass of residual chloroform present in soils and groundwater (i.e. generally below MCLs). Also, chloroform primarily biodegrades anaerobically and natural attenuation parameters measured during the Pilot Study and the RI (Golder, 2000) indicate that natural attenuation processes are important in degrading chloroform in groundwater. Therefore, operation of AS in the FPP area may inhibit existing anaerobic natural attenuation processes, which are addressing residual low-level concentrations that are currently near or below MCLs.

1.0 INTRODUCTION

This Report describes the pilot-scale Soil Vapor Extraction / Air Sparging (SVE/AS) Pilot Study that was conducted in Spring 2000 at the Virgin Island Chemical (VICHEM) Site located in St. Croix, U.S. Virgin Islands. Figure 1 presents the general location of the Site. The Pilot Study, or Treatability Study, was conducted pursuant to the USEPA-approved Draft Final Treatability Study Workplan (McLaren/Hart 1999). The field and laboratory work for the Pilot Study was carried out under the direction of McLaren/Hart, Inc. (McLaren/Hart). This Report was prepared by Golder Associates Inc. (Golder) on behalf of Berlex Laboratories, Inc. (Berlex) and Pharmacia & Upjohn (P&U), with assistance from former McLaren/Hart personnel.

This Report is divided into the following sections:

- Section 1.0 provides a brief Site background and description of the SVE and AS technologies;
- Section 2.0 describes the procedures and methods utilized during the SVE/AS Pilot Study, including deviations from the EPA-approved Workplan (M/H, 1999);
- Section 3.0 presents the results of the Pilot Study; and,
- Section 4.0 provides an analysis of the results as they relate to the objectives of the study and relevant evaluation criteria.

1.1 Purpose

Pilot studies provide site-specific data necessary to evaluate proposed remedial actions. They serve two primary purposes: (1) to aid in the selection of the remedy, and (2) to aid in the implementation of the selected remedy. Pilot studies conducted during the Remedial Investigation/ Feasibility Study (RI/FS) phase indicate whether a given technology can meet the expected cleanup goals for the site and provide important information for remedy selection. Additionally, data collected during this phase can be used to evaluate the design and operating parameters necessary for efficient technology performance and implementation of a sound, cost-effective remedy.

Based on the information collected during the RI, two specific areas of concern were identified at the VICHEM Site; namely the Aboveground Storage Tank (AST) Area, primarily impacted with ethylbenzene and xylenes, and the Former Process Pit (FPP) Area, impacted by chloroform.

Subsequent to the submittal of the Draft Remedial Investigation Report in January 1999, the potential feasibility of implementing soil vapor extraction (SVE) and air sparging (AS) in each area was discussed with EPA during a February 1999 meeting attended by McLaren/Hart, Berlex, and P&U. The parties agreed that further examination of SVE/AS as a potential remedial technology for source control of Site contaminants was warranted. Subsequently, the Pilot Study was conducted by McLaren/Hart and Environmental Resource Technologies (ERTEC) during the period February through May 2000.

The primary objective of the Pilot Study at the VICHEM Site was to provide Site-specific data to evaluate the feasibility and effectiveness of SVE and SVE/AS as potential remedial technologies to remove volatile organic compounds (VOCs) in soil and groundwater in the AST and FPP Areas.

1.2 Site Background

Site Description

This section briefly summarizes data and information regarding the physical setting of the VICHEM Site, past operations, and previous investigative work. Background information included in this section was excerpted from the February 2000 Final Remedial Investigation Report (McLaren/Hart 2000) and the July 2000 Remedial Investigation Addendum (Golder 2000). More detailed information on Site history and background can be found in the RI Report.

The Virgin Island Chemical (VICHEM) Site is located in the south-central portion of St. Croix in the U.S. Virgin Islands. The VICHEM Site is located on Plot 13Q of Estate Bethlehem Middle Works in the south-central portion of St. Croix, U.S. Virgin Islands (see Figure 1). Site access is via Route 66, which traverses the island east and west and abuts the south-southwest boundary of the Site. The VICHEM Site is bordered to the north and east by an intermittent stream, the River Gut, which originates north of the Site and drains to the Caribbean Sea.

The VICHEM Site was initially developed during the early 1970's and a variety of pharmaceutical manufacturing and blending operations, under a number of different corporate entities, occurred until 1982. However, specific timeframes for the operation of the manufacturing processes are uncertain. In general, toluene, pyridine, and quinidine (chemicals used by many of the occupants) represent the historically largest volume spills or other releases at the Site. The Site is owned by the Charles H. Steffey Holding Corporation and is currently

abandoned and overgrown with heavy vegetation. A chain-link fence was installed in Spring 2000 to encompass the Site boundary and secure the area. Over half the Site is covered by buildings and/or process equipment. Several structures remain on-site, including:

- Laboratory/warehouse building;
- Maintenance building;
- Nine reportedly empty (M/H, 2000) Aboveground Storage Tanks identified as T-3 through T-11, an unlabeled AST, and eleven concrete pads at former AST locations;
- Production area building;
- Stainless-steel and glass reactor areas (northwest of centrifuge building);
- Loading dock (former location of laboratory pit);
- Concrete storage pad adjacent to the loading dock and next to the scalehouse;
- Cooling towers;
- Generator building;
- Generator and fire pump building; and
- One 250,000-gallon fire water AST.

Two storm drains are located on-site. The Central Storm Drain runs beneath the paved area between the laboratory and maintenance buildings. The Southern Storm Drain, where observed, is a concrete-lined depression along the southern wall of the maintenance building and the edge of the reactor area. Both storm drains discharge to the River Gut (M/H, 2000). Two former production wells, P-1 and P-2, also are located on-site. P-1 was sealed during RI field activities conducted in Spring 2000.

Site Regulatory History

In October 1982, EPA was notified of the facility's impending closure and off-site removal of waste materials. Between 1984 and 1991, several investigations were conducted at the Site by EPA, Island Chemical Company, and the VICHEM Company. The following six areas of environmental concern were identified through this investigative work:

- Laboratory and Warehouse Building;
- AST Area;
- FPP Area;
- Loading Dock/Formal Laboratory Pit Area;
- Soil Beneath Concrete Pad Near ASTs (northern corner of Site); and
- Concrete Storage Pad (north of Laboratory and Warehouse Building).

During the initial assessment stages of the VICHEM Site by the regulatory agencies, several response activities were conducted by both EPA and Berlex. These activities included soil

excavation with on-site treatment (e.g., drying trays) or off-site disposal, drum removals, and off-site disposal of the AST contents.

The VICHEM Site was placed on the National Priorities List (NPL) on January 18, 1994. On October 6, 1994, the U.S. Environmental Protection Agency (EPA) entered into an Administrative Order on Consent (AOC), Index No. II CERCLA-94-0401, with Berlex Laboratories, Inc. (Berlex), one of the respondents to the AOC. Pursuant to Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, the AOC required the performance of a Remedial Investigation/Feasibility Study (RI/FS) at the Site.

Site Conceptual Model

The VICHEM Site geology is characterized by approximately 85 feet of fill and Alluvial material overlying the clayey marl of the Kingshill Formation. Much of the fill appears to be reworked natural material and so its composition is very similar to the underlying Alluvium which is comprised of olive brown sandy-clay to sandy-silt, to clayey-sand with occasional amounts of clayey-gravel and sand in the upper 30 to 40 feet. Between a depth of approximately 30 to 60 feet below ground surface (bgs), the Alluvium is comprised mainly of a medium brown to gray clay with only occasional traces of fine sand and gravel. From approximately 60 to 90 feet bgs, the Alluvium consists of silty-clay and sand to medium to coarse sand and clay. Underlying the Alluvium is the Kingshill Formation, which is the principal water-bearing unit. Below about 100 feet bgs, the Kingshill is described as a light brown to white clay.

The water table is typically encountered approximately 10 to 30 feet bgs and is subject to significant fluctuations due to seasonal changes and precipitation. The VICHEM Site hydrogeology is characterized by the presence of a largely unconfined to semi-confined shallow (approximately 30 feet thick) alluvium aquifer with a predominant flow direction to the south-southeast. Underlying the shallow aquifer is an aquitard or aquitards, comprised of the stiff clay, between 30 and 60 feet bgs, which confines the lower Alluvium and acts as a significant hydraulic barrier isolating the upper Alluvium from the lower Alluvium aquifer and the underlying Kingshill Formation. The lower Alluvium aquifer exhibits a predominant flow direction to the southeast.

A brief description of the constituents of concern (COCs) at the two areas of concern at the Site (i.e., FPP and AST Areas) is included in Section 1.4. A complete description of the Site conceptual model, including nature and extent of contamination and associated risks, is found in the RI Report (M/H, 2000), RI Addendum (Golder, 2000), and Draft FS Report (Golder, 2000).

1.3 Treatment Technology Description

Technology Description

Soil vapor extraction (also known as vacuum extraction, soil venting, or enhanced volatilization) is an accepted and proven technique for removing VOCs from subsurface soil, and is identified as a "Presumptive Remedy" for CERCLA sites with VOCs in soils (EPA, 1993). SVE is generally an in-situ technique by which the volatilization of VOCs is induced in the subsurface and the constituents are removed in extracted vapor. The use of SVE results in the reduction of VOC concentrations in the subsurface and consequently reduces the potential for further transport of contaminants (USEPA, 1991; USEPA, 1995).

The transport and removal of VOCs by SVE may be controlled by one or more of the following processes: advection, volatilization, desorption and diffusion. During SVE, as air is drawn through the soil/waste mass, contaminants volatilize and are carried with the air through more permeable regions via advection. Removal induces further volatilization from the source materials. Contaminated areas that are not in contact with the advective flow of air rely on diffusion of contaminants toward zones of enhanced airflow. Diffusion is a much slower, rate-limiting process compared to advection (USACOE, 1995). The effectiveness of SVE is typically limited to the vadose zone.

Air sparging (AS) is an accepted technology for VOC removal in the saturated zone, typically in unconfined aquifers. AS is accomplished by injecting air under pressure below the water table. Consequently, VOCs located within airflow pathways will volatilize or biodegrade. There are two mechanisms that may work individually or together during AS: (1) injected air strips VOCs from soil and groundwater into the vapor flow, and (2) injected air increases the oxygen content of the groundwater, stimulating increased aerobic biodegradation. The sparge air provides a means of transport of VOCs from the saturated zone into the vadose zone, where they biodegrade or can be removed by SVE. Enhancements may include the injection of nutrients to increase biodegradation or heated air to increase volatilization.

SVE systems generally consists of the following: (1) one or more vapor extraction wells, (2) vapor/liquid separator, (3) vacuum pump or air blower, (4) an impermeable barrier (optional), and (5) monitoring probes. Extracted vapors and liquids are monitored and handled accordingly. AS systems generally includes: (1) one or more air injection (sparging) wells, (2) compressor, (3) oil-coalescing filter, (4) particulate filter, (5) air dryer, and (6) monitoring probes. Vacuum gauges, pressure gauges, regulators, and flow meters are appropriately placed within the systems for monitoring purposes. Depending on emission levels and federal, State and local requirements, off-gas treatment (e.g., carbon adsorption, catalytic or thermal oxidation) may be required prior to atmospheric discharge.

Design Considerations

The critical factors that determine the viability of a SVE and/or AS system can be divided into three categories: (1) characteristics of the contaminant; (2) properties of the soil; and (3) site conditions.

Contaminant Characteristics

The extent to which contaminants volatilize is governed by the physical properties of the compounds, notably the Henry's Law constant (H) and vapor pressure (Pv). The Henry's Law constant describes the equilibrium partitioning of a chemical between the vapor phase and aqueous phase. The larger the Henry's Law constant, the more the constituent tends to partition into the vapor phase. The vapor pressure of a chemical describes the tendency of a chemical to evaporate and is described as the pressure exerted by that compound in the vapor phase at equilibrium with the pure compound (in solid or liquid form) in a closed system. Generally, compounds with a vapor pressure greater than 0.5 mm Hg and with Henry's Law constants greater than 0.01 (dimensionless) are amenable to SVE (USEPA, 1991).

The physical and chemical properties of the Site COCs (chloroform, ethylbenzene, xylenes) are shown below (USACOE, 1995; NIOSH, 1990).

<u>Constituent</u>	<u>H (at 283° K)</u>	<u>Pv (mmHg, 298° K)</u>	<u>Water Sol. (mg/l, 298° K)</u>
Chloroform	0.074	160	5000
o-Xylene	0.123	10	204
m-Xylene	0.177	10	173
p-Xylene	0.181	10	200
Ethylbenzene	0.140	9.5	152 -208

Xylene and ethylbenzene are generally very amenable to SVE and AS. Chloroform is also considered amenable to SVE/AS, although to a lesser extent than the other constituents due to its relatively high water solubility and lower Henry's constant. All of the site COCs are considered to be amenable to SVE according to USEPA's presumptive remedy guidance (USEPA, 1993).

Soil Properties

Soil properties dictate how easily air, and associated contaminants, will move through the vadose zone. Critical soil properties include permeability, porosity, adsorption, and moisture content. The air permeability of a soil is a measure of the ease with which vapors flow through the soil. It is regarded as the most important parameter in the success of an SVE/AS system. Coarse-textured and poorly graded soils will generally have higher permeabilities than fine-textured and well-graded soils. Soils with an air permeability less than 10^{-10} cm² may not be amenable to SVE (USACOE, 1995). Optimum soil moisture content is also important for air permeability. Too high of a soil moisture content may contribute high volumes of condensate collecting in the SVE system and may reduce the ability of air vapors to migrate in the vadose zone. Too low of a moisture content, or a desiccated subsurface, will tend to produce airflow channels as well as counteract biodegradation processes. Also, VOCs will tend to adsorb to soils more as the water content decreases. A high organic carbon fraction in the soil will also favor VOC adsorption to the soil rather than partitioning to the soil pore space.

The shallow alluvium at the VICHEM Site consists of sandy clay to clayey sand sediments with lesser and varying amounts of silt and fine sands. Entrained within the matrix are lenses of gravels and sands. Based on lithologic data collected at the Site, these gravel and sand lenses are more prevalent in the AST Area than in the FPP Area. Heterogeneities in the subsurface will tend to produce preferential airflow pathways in the more permeable zones.

Site Conditions

Site conditions that can affect the viability of an SVE/AS system include the depth to water, existence of preferential pathways such as subsurface conduits, and topography. An SVE system alone is not effective in extracting contaminant vapors if the groundwater table is very high (i.e., 5 feet bgs or less). High water levels will cause the system to shut down frequently due to upwelling of groundwater and flooding of screens. Short-circuiting may also occur, resulting in excessive ambient air intrusion via the ground surface. For AS, high water levels may limit

compressed air from reaching the vadose zone. The average depth to the water table at the VICHEM Site in both the AST and FPP Areas is approximately 13 feet bgs.

Subsurface conduits such as utility lines imbedded in sand, will usually create preferential flow pathways that may reduce the effectiveness of the system. There are no underground utility lines in either area. However, there is a storm drain constructed of polyvinyl chloride (PVC) pipe adjacent to the FPP Area. Prior to the Pilot Test, a concrete surface barrier was applied over the AST Area ground surface to limit short-circuiting of air; a concrete barrier already exists at the FPP Area ground surface.

1.4 Description of Pilot Study Areas

AST Area

The AST Area is located along the northwestern Site boundary. According to available information, twenty 8,500-gallon ASTs were originally located in this area. Six tanks were reportedly sold locally in the 1980s. Sometime between 1990 and 1994, four additional ASTs were removed and one was relocated within the AST Area. Ten tanks currently remain on-site within the AST Area. Historic analytical results and inspections identified a variety of liquids that were stored in the ASTs. These liquids primarily included toluene, xylenes, parphenetidine, benzophenone, fluorenone, and ethanol.

Soil samples were collected in the AST Area during the various RI field investigations. A total of 22 soil borings were completed in this area, with samples collected at various depth intervals. Likewise, groundwater samples have been collected during the RI from four monitoring wells, one former production well, five temporary monitoring wells, and one Geoprobe point located south of the area.

The data collected from the AST Area during the RI identified ethylbenzene and xylenes as the predominant COCs impacting subsurface soil and groundwater. The impacted soil encompasses an area between Tanks 3 and 10, existing mainly on-site. The horizontal extent of impacts was conservatively assumed to encompass an area approximately 100 feet by 70 feet.¹ The zone of impacts is conservatively assumed to encompass a 20-foot interval at approximately 5 to 25 feet

¹ Based on a comparison of concentrations detected during the Remedial Investigation against USEPA's soil screening levels for migration to groundwater. The layout of the SVE wells was based on this estimated area.

bgs, extending into the water table interface. The highest concentrations of COCs in subsurface soil were found in the vicinity of Tanks 8 and 9. Concentrations of ethylbenzene and xylenes detected in the two shallow monitoring wells located within the impacted soil area have exceeded federal Maximum Contaminant Levels (MCLs) over the course of several groundwater monitoring events. The horizontal extent of ethylbenzene and xylene contamination in soil and groundwater in the AST Area is depicted in Figures 12 through 14 of the FS Report.

FPP Area

The FPP Area is located in the central portion of the VICHEM Site. The process pit received wastewater from spills and cooling water from production operations. During plant operations, the contents of the pit were sampled to determine if any product had been released. The water was then reused in the system or, if the sample results did not indicate the presence of product, the water was discharged through the Central Storm Drain. Water and sludge were removed from pit in 1985 for off-site disposal and the pit was reportedly “abandoned and sealed with concrete” (M/H, 2000). However, during Geoprobe sampling conducted during the Phase III RI in March 1998, a large concrete monolith indicative of a subsurface pit was not encountered. Based on accounts from former Site workers provided to McLaren/Hart and Berlex, it is believed that this pit was never actually filled in with concrete. During the Phase III field investigation, a hollow concrete vault (measuring approximately 21.5 feet x 7.7 feet x 7.0 feet) was discovered in the vicinity of monitoring well MW-2. This vault is believed to be the FPP.

Soil samples were collected in the FPP Area during the various RI field investigation phases. A total of 20 soil borings were completed in this area, with samples collected at various depth intervals. Likewise, groundwater samples were collected during the RI from eight monitoring wells including one former production well and its replacement monitoring well, and numerous Geoprobe grab samples.

The data collected from the FPP Area during the RI identified chloroform as the predominant COC impacting subsurface soil and groundwater. The impacted soil and groundwater encompasses an area in the vicinity of former RI groundwater sampling point GWPP-27 where the highest chloroform concentration in groundwater was detected historically.

An approximate 400 ft² area in the Former Process Pit (within the vicinity of MW-2) is estimated to be impacted with chloroform. The predominant zone of impacts is conservatively assumed to

encompass a 5-foot interval at approximately 20 to 25 feet bgs, around the (fluctuating) water table interface. Chloroform concentrations in the one shallow monitoring well located within the impacted soil area, as well as Geoprobe grab samples collected in the FPP Area, have historically exceeded the federal MCL. The past extent of chloroform impacts in the FPP Area is depicted in Figure 15 of the FS Report. However, groundwater monitoring data from 2000, included herein, show chloroform concentrations above MCLs at only one location in the area of the suspected source of release, and the extent of chloroform impacts has significantly diminished over time.

2.0 PILOT STUDY APPROACH

2.1 Study Objectives

The SVE/AS pilot study was performed at the VICHEM Site to provide Site-specific data to evaluate the feasibility and overall effectiveness of SVE and SVE/AS as potential remedial technologies for the AST and FPP Areas. Specifically, the objectives of the study included:

- Verification that SVE and SVE/AS are viable technologies for the reduction of VOCs in subsurface soil and groundwater; and
- Development of design, performance, and cost data for efficient operation of a full-scale system in one or both of the impacted areas.

2.2 Permit Acquisition

The following permits were obtained² from the Virgin Islands Department of Planning and Natural Resources (VIDPNR) in preparation for the implementation of the Pilot Study:

- *Earth Change Permit* – for intrusive digging such as installation of underground piping;
- *Well Permit* – for installation of the SVE and AS wells, vapor monitoring points (VMPs), and groundwater monitoring points (GMPs); and
- *Permit to Construct and Operate* – for construction of the SVE/AS system and operation of the system (including air emission requirements).

Additionally, approval was obtained from the current property owner (Charles H. Steffey Holding Corporation) to install the SVE/AS system. Copies of all permits and approvals are provided in Appendix A.

2.3 SVE/AS System Equipment and Materials

2.3.1 Well and Probe Construction

Figure 2 provides a layout of the SVE and AS wells, VMPs, and GMPs installed for the Pilot Study. ERTEC of San Juan, Puerto Rico installed the wells and monitoring points between

² CERCLA projects are exempt from the administrative requirements to obtain permits, provided the substantive technical requirements are satisfied (CERCLA §121(e)(1) and 40 CFR 300.400(e)(1)). In this instance, VIDPNR elected to issue permits, although they are not strictly required.

February 1 and 24, 2000. The wells and probes were constructed within the two study areas described in Section 1.4.

SVE Well Construction

One SVE well was installed in the FPP Area and six SVE wells were installed in the AST Area. For potential cost efficiency, the system was designed and constructed for future operation as a permanent system in the AST Area, with limited modifications. A radius of influence (ROI) of 25 feet was estimated for an SVE well at this Site. This ROI was selected based on ERTEC's previous experience with the design and installation of similar SVE systems in the Virgin Islands. Based on this ROI, it was determined that a total of six SVE wells would be needed to provide a capture zone that would exceed the area of impacted subsurface soil in the AST area.

Soil borings were advanced using hollow stem auger (HSA) drilling techniques. Continuous split-spoon samples were collected to evaluate lithological conditions that might affect the pattern of air flow during system operation. Additionally, samples were screened for the presence of organic vapors using an organic vapor monitor (OVM).

Each SVE well was constructed of 2-inch diameter, flush-jointed and threaded, 304 Schedule 5, stainless-steel riser. The screen sections were 15 feet in length and consisted of 0.020-inch, wire-wrapped, stainless-steel screen. To account for fluctuating water levels on St. Croix, a 5-foot sump was placed in the bottom of each SVE well to collect condensate or entrained water and to avoid flooding the screened interval. Wells were installed to a total depth of 24.5 feet bgs in the AST Area and 26.5 feet bgs in the FPP Area. Upon reaching the desired depth, the screen and riser was inserted within the augers to the bottom of the borehole. The AST Area SVE wells were screened from 4.5 to 19.5 feet bgs, and the FPP Area SVE well was screened from 6.5 to 21.5 feet bgs.

Sand was poured into the annulus around the screen and riser (as the augers were removed) until approximately 2 feet of sand accumulated above the screen interval. After installation of the sand pack, approximately 2 feet of bentonite pellets was poured into the hole. After allowing the bentonite to hydrate/seal, the remaining annular space was filled with cement/bentonite to approximately 2 feet bgs. Each SVE well was completed with an 3-foot square, flush-mount cover that was secured in place with pre-mixed concrete.

Downhole packers were placed in each SVE well to prevent groundwater extraction from occurring. The packers were set to a depth of 13-14 feet, as the water table was encountered at approximately 15 feet bgs at the time of the study.

Well construction specifications for the SVE wells are provided in Table 1 and illustrated on Figure 3. Boring logs/well construction diagrams also are provided in Appendix B.

GMP Well Construction

A GMP was installed within 3 feet of one SVE well in each area to measure water levels and evaluate worst-case mounding effects due to AS during the Pilot Study. Hollow stem auger drilling techniques were used to install the two monitoring points to a total depth of 30 feet bgs (i.e., 5 feet below the lowest water level recorded during the RI). Each GMP was constructed of 1-inch diameter, flush-jointed and threaded, Schedule 40, PVC riser with a 1-foot section of 0.020-inch, factory-slotted screen at the bottom. Upon reaching the desired depth, the point was installed and completed in the same manner as the SVE wells. Each GMP was completed as a flush-mount with a PVC cap. Construction specifications for the GMPs are provided in Table 1, and construction diagrams are provided in Appendix B.

AS Well Construction

One AS well was installed in each area close to an SVE well and associated GMP. The AS location in the AST Area was selected based upon analytical data for both groundwater and soil, where the greatest concentrations of ethylbenzene and xylenes in each medium coincided at similar locations and depth intervals. To ensure that the AS well was installed to a depth that was sufficient for full capture of the impacted zone through injection of air, the well was installed slightly deeper (50 feet bgs) than the limits of the impacted zone.

In order to determine an appropriate location and depth for the AS well in the FPP Area, data collected from the FPP area during the RI were evaluated. The data indicated that chloroform impacts existed at the top of the water table down to approximately 34 feet bgs. Concentrations in deep monitoring well MW-7 (screened from 64 to 74 feet bgs) did not exceed MCLs during the RI monitoring events. Additionally, deeper samples collected in this area during the RI (sample location GWPP-27A) did not indicate that chloroform had migrated vertically in the FPP Area. However, in order to characterize the 35- to 60-foot zone and determine an appropriate depth for the AS well, a temporary well point was initially installed to a depth of 48 feet at the AS well

location. A groundwater sample was collected from the 46- to 48-foot depth interval and analyzed for the Site Target Compounds prior to the installation of the AS well. There were no exceedances of MCLs by chloroform or other site target compounds in this sample. Upon approval by USEPA, the final depth of the AS well (48 feet bgs) was extended to the non-impacted zone considerably deeper than the lower limit of chloroform impacts (34 feet bgs).

Each AS well was installed using the hollow stem auger drilling techniques described above. Lithologic conditions were similarly logged. However, since the lithology had been evaluated during the installation of the adjacent SVE wells, continuous split-spoon samples were only collected between the total depth of the adjacent SVE well (approximately 25 feet bgs) and the final depth of the AS well in each Area.

Each AS well was constructed of 1-inch diameter, flush-jointed and threaded, Schedule 80, PVC riser with a 2-foot section of 0.040-inch, factory-slotted screen at the bottom. The AST Area AS well was screened from 47.5-49.5 feet bgs, and the FPP Area AS well was screened from 45.5-47.5 feet bgs. Upon reaching the desired depth, the AS well was installed and completed in the same manner as the SVE wells. Each AS well was completed with an 18-inch diameter, flush mount manhole cover that was secured in place with pre-mixed concrete.

Well construction specifications for the AS wells are provided in Table 1 and illustrated on Figure 4. Boring logs/well construction diagrams are provided in Appendix B.

VMP Construction

Three vapor monitoring probe (VMP) clusters, consisting of three VMPs each, were installed approximately 10 feet, 20 feet, and 40 feet to the south-southeast (hydraulically downgradient) of the SVE-1 well in each of the AST and FPP Areas. The locations are depicted in Figure 2. At each cluster, the three VMPs were installed to depths of 5 feet bgs (i.e., unsaturated shallow-depth zone), 15 feet bgs (i.e., unsaturated/saturated mid-point/intermediate -depth zone), and 30 feet bgs (i.e., saturated deep zone). These points were used to evaluate the ROI of the SVE well and AS well in each area and groundwater mounding caused by system operation. The deep (30-foot) VMP at each cluster location was installed prior to the intermediate (15-foot) and shallow (5-foot) VMPs, with continuous split-spoon samples collected down to depth to evaluate lithologic conditions.

Two additional VMPs were installed approximately 5 feet to the south of the SVE wells in the AST and FPP areas. At each cluster, the two VMPs were installed to depths of 15 feet bgs and 30 feet bgs. The intermediate (15-foot) VMP was installed to allow for the verification of a vacuum in the unsaturated zone during the Pilot Study. The deep (30-foot) VMP was installed to provide additional information on the ROI of the AS well, as well as groundwater mounding caused by system operation.

As depicted on Figure 2, the VMPs were labeled according to distance from the primary SVE well and depth below ground surface. The "1" Series are located 5 feet from the SVE well. The "2", "3", and "4" Series are located 10 feet, 20 feet, and 40 feet from the SVE well, respectively. Shallow (S), intermediate (I), and deep (D) points correspond to depths of 5 feet, 15 feet, and 30 feet bgs. For example, "VMP-3S" is a shallow point located 20 feet from the SVE well.

Each VMP was installed using hollow stem auger drilling techniques and was constructed of 2-inch diameter, flush-jointed and threaded, Schedule 40, PVC riser with a 3-foot section of 0.020-inch, factory-slotted screen at the bottom. Upon reaching the desired depth of each point, the VMP was installed and completed in the same manner as the SVE wells. Each VMP was completed with an 18-inch diameter, flush mount manhole cover that was secured in place with pre-mixed concrete.

Construction specifications for the VMPs are provided in Table 1 and illustrated on Figure 5. Boring logs/well construction diagrams are provided in Appendix B.

Vapor Barrier

A vapor barrier was placed over the SVE/AS study area in the AST Area to prevent short-circuiting of the system. After clearing the area of debris, a steel reinforced concrete mixture was spread over the study area to form an approximate 3- to 4-inch concrete barrier. A 2- to 3-inch concrete layer already existed in the FPP Area, therefore no additional barriers were required.

Management of Waste Residuals

Primary waste residuals included soil cuttings generated from drilling and groundwater generated from well/probe development and purging. Materials were segregated by area (AST and FPP) and matrix (solid and liquid) and containerized in 55-gallon drums. At the completion of the Pilot Study, composite samples were collected from the drums and analyzed for the Site Target

Compounds. All drums are currently staged on-site in each area, pending arrangements for their appropriate disposal.

Personal protective equipment and general refuse/debris (i.e., plastic, cardboard, etc.) were disposed off-site in a non-hazardous landfill.

2.3.2 SVE/AS System Equipment

As illustrated on Figure 6, the key components of the SVE/AS system were:

- Collection piping and manifold, including sample ports;
- Manual bleeder valve (dilution valve);
- Air/water separator and associated filters and positive displacement pump;
- Vacuum centrifugal blower;
- Discharge stack;
- Air compressor and associated filters; and
- Instrumentation such as a weather station, vacuum and pressure gauges, flow meters, and pressure regulators.

The well head of each SVE well was connected to a manifold system that led to an enclosed treatment trailer located on an adjacent property. This mobile trailer housed the blower and associated equipment. Each SVE well head included a vacuum gauge; sample ports for measuring organic vapors, collecting soil-gas samples, and measuring air velocity; and a control valve to throttle the vacuum applied to the well. Each VMP was equipped with a vacuum gauge, while each AS well was fitted with a pressure indicator. Compressed air was injected into each AS well via a 5 HP air compressor and 1/4-inch diameter, flexible tubing. Soil vapor was vacuum-extracted using a Rotron 5 HP EN6F72L regenerative blower. The maximum flow and vacuum of the blower are 225 standard cubic feet per minute (scfm) and 7.3 inches mercury (in Hg). The blower intake line was equipped with a flame arrestor and in-line air filter. The blower was also equipped with an air dilution valve, or bleeder, in order to maximize the operating range of the blower for SVE and to ensure compliance with VOC emission rate limits. Vapors were directed through an underground 2-inch diameter, PVC pipe to the trailer. A 10-gallon air/water separator and 55 gallon storage drum were provided in order to collect any entrained water. However, during the Pilot Study, no excess water accumulated in the separator.

2.4 Experimental Design

The Pilot Study was conducted in a phased approach, with results from each phase used to determine specific operating parameters for subsequent phases. The three phases included:

- *Phase I (SVE Testing)* – one SVE well was tested in each area (AST and FPP);
- *Phase II (SVE/AS Testing)* – one SVE well and one AS well were tested in each area; and
- *Extended Phase II (SVE/AS Testing)* – a comprehensive test including all SVE and AS wells simultaneously (one SVE well and one AS well in the FPP Area, plus six SVE wells and one AS well in the AST Area).

The specific sequence of events was as follows:

- Initial baseline monitoring event;
- Phase I step rate test;
- Phase I constant rate test;
- Post-Phase I monitoring event / Phase II baseline event;
- Phase II step rate test;
- Phase II constant rate test;
- Post-Phase II monitoring event / Extended Phase II baseline event;
- Extended Phase II constant rate test; and
- Post-Extended Phase II monitoring event.

Baseline Monitoring Event

The Pilot Study commenced with the collection of baseline samples/measurements in the AST and FPP Areas to evaluate conditions prior to Phase I testing. Specifically, the baseline monitoring included:

- Depth to water measurements in all on-site monitoring/production wells, GMPs, and VMPs (if water was present);
- Static vacuum pressure measurements from the VMPs in each area;
- Weather conditions from the on-site station;
- Soil-gas samples from the SVE well and VMPs in each area;
- Groundwater samples from monitoring wells MW-1, MW-6, MW-8, MW-10, and the deep VMPs (i.e., 30-foot depth) in the AST Area using a low flow purging technique with a purge rate of about 0.5 liters/minute; and
- Groundwater samples from monitoring wells MW-2, MW-3, MW-7, and the deep VMPs in the FPP Area.

In addition, ambient air readings were taken regularly with a portable organic vapor monitor (OVM) in the breathing zone downwind of the trailer throughout the pilot testing.

Phase I Step Rate Test

A step rate test was conducted using one SVE well in each area, to determine the optimal vacuum for the constant rate test. The step test was conducted by initializing the blower at a low vacuum and then increasing the vacuum at pre-determined intervals. Based on the observed ROI and extraction efficiency at the initial position, the next testing condition (i.e., vacuum) was determined. The test was conducted on March 21, 2000. The vacuums tested, in order, were 1.5 inches mercury ("Hg), 3 "Hg, and 5 "Hg measured at the blower.

The influence of the different extraction rates on the ROI was monitored through the reading of vacuum gauges installed at the VMPs in each area. Additionally, vacuum and air flow rate measurements were collected at the SVE well in each area. System measurements consisted of air flow rate, vacuum pressure (intake and exhaust points), exhaust temperature, weather conditions, and ambient air concentrations (breathing zone) at a point downwind of the system discharge stack. Constituent removal rates were evaluated during the step test through the analysis of soil-gas samples and OVM readings taken at the SVE well in each area, select VMPs in each area, inlet to the SVE system (i.e., "V-1" as shown on Figure 6), and exhaust manifold (i.e., "V-2" as shown on Figure 6). Depth to water measurements were collected at the GMP in each area to evaluate mounding effects due to vacuum suction and air sparging.

Phase I Constant Rate Test

After evaluating the results from the step rate test, it was determined in the field that a vacuum of 5"Hg (at the blower) would be the optimum operating condition for the constant rate test. This test was initiated on March 23, 2000 and continued through March 26, 2000 for a total testing period of approximately 72 hours. The same parameters measured during the step rate test were monitored during the course of the constant rate test. The frequency of measurement collection was higher in the beginning of the testing period (i.e., every 1 to 2 hours), when the operating parameters were most variable. By the conclusion of the test, operating parameters reached stabilization, as indicated by the vacuum pressures and SVE air flow rate approaching constant values with minimal variation between successive measurements.

Post-Phase I Monitoring Event

Upon completion of the Phase I test, the system was turned off and a round of samples/measurements was collected to evaluate the efficiency of the SVE process in addressing the impacts in each area. Samples/measurements were identical to that collected during the initial baseline monitoring event. This event also served as a baseline for Phase II testing.

Phase II Step Rate Test

Phase II testing was initiated following the collection of post-Phase I samples/measurements. A step rate test was conducted prior to the Phase II test, during which one SVE well and one AS well in each area were on-line. With field concurrence from EPA's oversight contractor, CDM Federal Programs Corporation (CDM Federal), the Phase II step rate test focused on AS only since operating conditions for SVE were determined during the Phase I test. This test was conducted in each area to determine the optimal flow rate for the constant rate test and was implemented by initializing the air compressor at a low flow rate and then increasing the flow at pre-determined intervals. Based on the observed ROI at the initial position, the subsequent testing condition (i.e., flow rate) was determined.

The AST Area step test was conducted on April 8, 2000 and began at a pressure of 45 pounds per square inch (psi) at the AS well (at a corresponding air flow rate of 0.8 to 0.9 standard cubic feet per minute [scfm]). Subsequent steps of 55 psi (2.6 to 2.7 scfm) and 64 psi (3.9 to 4.2 scfm) were tested. The FPP Area step test was conducted during the period April 4 through 7, 2000 and consisted of five different steps in order: 17 to 22 psi at the AS well (0.6 scfm), 16 to 19 psi (1.25 scfm), 20 psi (2.5 scfm), 21 to 23 psi (4.5 scfm), and 25 to 29 psi (7.2 scfm).

The influence of the different flow rates on the sparging ROI were monitored through the collection of air pressure, depth to water, and dissolved oxygen (DO) measurements at the SVE well and VMPs in each area. Additionally, air pressure and flow rate measurements were collected at the AS well in each area. System measurements consisted of air pressure at the compressor and weather conditions. Constituent removal rates were evaluated during the step test through OVM readings taken at the SVE well and select VMPs in each area. Water levels were collected from the GMPs, and water levels and DO were collected at existing groundwater monitoring wells located in each area.

Phase II Constant Rate Test

After evaluating the results from the step rate test, it was determined that a pressure of approximately 50 psi, corresponding to a flow rate of 3.4 scfm, for the AST Area, and approximately 33 psi (7.2 scfm) for the FPP Area would be the optimum operating conditions for the constant rate test. Operating points for the constant rate test were generally determined by the most steady and distant responses at the monitoring points observed during step testing. The points were selected with field concurrence by CDM Federal. The SVE portion of the system was run at a vacuum of 5 "Hg (at the blower), as determined during Phase I testing. The Phase II test was initiated on April 14, 2000 and continued through April 16, 2000 for a total testing period of approximately 48 hours. The same parameters measured during the AS step rate test and the Phase I test were monitored during the course of the Phase II constant rate test. The frequency of measurement collection was higher in the beginning of the testing period, when operating conditions were most variable. Additionally, groundwater samples were collected from select monitoring wells/VMPs in each area during the test. However, holding times were exceeded due to FedEx customs issues and the samples were not analyzed. The Phase II test was concluded once stabilization was attained.

Post-Phase II Monitoring Event

Upon completion of the Phase II test, the system was turned off and a round of samples/measurements was collected to evaluate the efficiency of the SVE/AS process in addressing the impacts in each area. Samples/measurements were similar to those collected during the initial baseline monitoring event. This event also served as a baseline for extended Phase II testing.

Extended Phase II Constant Rate Test

To evaluate the effectiveness of the potential full-scale system in the AST Area, an extended Phase II constant rate test was conducted as the final step in the Pilot Study. This test was similar to the Phase II test, except that all six SVE wells in the AST Area were utilized. The extended test was initiated on April 27, 2000 and continued through April 30, 2000 for a total testing period of approximately 72 hours. The same parameters measured during the Phase II constant rate test were monitored during the course of the extended Phase II test. Additionally, groundwater samples were collected from select monitoring wells/VMPs in each area during the test period. The extended Phase II test was concluded once stabilization was attained.

Post-Extended Phase II Monitoring Event

Upon completion of the extended Phase II test, the system was turned off and a round of samples/measurements was collected to evaluate the efficiency of the SVE/AS process, specifically the potential full-scale SVE system in the AST Area. Samples/measurements were similar to that collected during the initial baseline monitoring event.

2.5 Data Management***Field Data***

All raw field data and notes during the Pilot Study were recorded in field logbooks and sampling forms, signed by field personnel. The field data were later tabulated and reviewed for quality control. A summary of the test conditions described above and associated sampling is included in Table 2. Tables 3 through 15 provide the tabulated field data for each phase of testing. These data include weather conditions (i.e., temperature, wind speed, wind direction, relative humidity, barometric pressure, and van temperature³), pressure/vacuum measurements, water levels, dissolved oxygen (DO), and OVM readings. SVE/AS system measurements include: SVE air flow, air velocity, system vacuums (locations depicted on Figure 2), exhaust temperature, and compressed air pressure and flow.

Chemistry Data

As discussed above, groundwater, waste residual soil, and soil-gas samples were collected during the Pilot Study. Groundwater sampling forms are provided in Appendix C. (Groundwater sampling forms for the initial baseline sampling event in March 2000 were provided in the RI Addendum (Golder, 2000). Groundwater and soil samples were analyzed off-site by Pace Analytical Laboratory (Pace) of St. Rose, Louisiana. Groundwater samples were analyzed for the Site Target Compounds (acetone, chloroform, methylene chloride, ethylbenzene, toluene, and xylenes) using Contract Laboratory Program (CLP) methodology (i.e., Statement of work for Organic Analysis, Multi-Concentration, Document OLM03.1, USEPA CLP, most current version). Additionally, samples were analyzed on-site with a Chemetrics field test kit for carbon dioxide (CO₂). Soil samples were analyzed for waste classification purposes.

³ The van temperature was considered to be more accurate than the ambient air temperature, which was measured via a weather station on top of the trailer and was biased high due to radiative heat effects during sunlight hours.

In order to expedite characterization and optimization of testing parameters, a PhotoVac gas chromatograph (GC) was utilized for on-site analysis of soil-gas samples using Method TO-14. The PhotoVac was equipped with a 10.6 eV photoionization detector (PID) lamp, capable of detecting toluene, ethylbenzene, and total xylenes (TEX) at relatively low concentrations (10 to 20 parts per billion [ppb] range). However, this instrument could not easily detect the remaining Site Target Compounds (acetone, chloroform, and methylene chloride) at an adequate concentration range. Therefore, soil-gas samples were additionally analyzed off-site for the Site Target Compounds by Microseeps Laboratories (Microseeps) of Pittsburgh, Pennsylvania using Method AM 4.03. All soil-gas samples collected from the FPP Area were analyzed off-site by Microseeps. Samples collected in the AST Area were analyzed on-site with the PhotoVac, with a percentage of the total number of collected samples analyzed off-site by Microseeps (to confirm the PhotoVac results and to determine concentrations of remaining Site Target Compounds).

All laboratory chemical analyses were conducted in accordance with the Draft Final Treatability Study Workplan (M/H, 1999); USEPA Region II's CERCLA Quality Assurance Manual, Revision I (USEPA 1989); and other applicable EPA requirements (Level I through Level IV), including data validation and quality assurance/quality control (QA/QC). Chain-of-custody records for the samples collected during the Pilot Study are provided in Appendix D. The laboratory analytical Form I's are provided in Appendix E. Data validation summaries are presented in Appendix E.

Quality Assurance/Quality Control

The primary objective in instituting QC procedures during the Pilot Study was to promote uniformity, consistency, and accuracy in data collection and recording, so that the data could be evaluated and interpreted with greater reliability.

In order to collect and record data in a uniform manner, controlling documents that described and specified QA/QC procedures for the Pilot Study were used. The documents used to guide and direct procedures throughout the study included:

- *Draft Final Treatability Study Workplan* (McLaren/Hart 1999);
- *Region II CERCLA Quality Assurance Manual, Revision 1* (EPA 1989);
- *Guide for Conducting Treatability Studies under CERCLA, Final* (EPA 1992); and

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- *Guide For Conducting Treatability Studies Under CERCLA: Soil Vapor Extraction, Interim Guidance* (EPA 1991).

The EPA-approved Draft Final Treatability Study Workplan specified and described all QA, QC, analytical, data management, and reporting procedures for the Pilot Study. Additionally, data quality objectives (DQOs) were established for field and analytical data using the DQO levels defined by EPA. By providing a framework for sample collection, decontamination, field QC, sample identification, chain-of-custody, and sample handling procedures, the controlling documents helped to ensure that high quality data were collected and that data comparability was enhanced.

All data were collected as specified in the EPA-approved workplan. Field measurements were performed in accordance with procedures outlined in this plan. All monitoring instruments were calibrated either before each use, at the beginning of each field day, or at the frequency specified for each procedure. All sampling equipment that came in contact with sample media was decontaminated (unless disposable equipment was used), as specified in the workplan, before each sample was collected.

All sample collection, chain-of-custody, and sample shipping procedures were carried out as specified in the workplan. As part of the sample collection and analysis effort, field QC samples were prepared to monitor the performance of the analytical laboratories (both on-site and off-site), and to check on field sampling procedures.

Data validation was performed by ALPHA Environmental Consultants, Inc. of Latham, New York for all groundwater data under contract to McLaren/Hart. Data validation packages were evaluated by Golder to ensure that data was qualified in accordance with USEPA Region II protocols. The validation process involved review for compliance with holding times, instrument calibration, method and laboratory blanks, instrument tuning and performance data, and constituent quantification. Results of duplicate, matrix spike, and other QC samples were used to assess precision and accuracy of the analytical data and potential matrix effects. Data qualifiers were applied, where required, so that the qualitative and/or quantitative reliability of the results could be assessed. Validation findings are included in Appendix E as part of the data validation package for each sample delivery group.

3.0 RESULTS AND DISCUSSION

3.1 Physical Data

Borehole logs are included in Appendix B. Boring logs from the SVE well installations and VMP installations revealed a significant sandy layers exists in the AST Area. The layers range in thickness from 4 feet to 8 feet, and occurs at depths from 6 feet to 20 feet below ground surface. The shallow probes are screened at 5 feet (i.e., above the sandy layer), the intermediate probes at 15 feet (i.e., within the sandy layer), and the deep probes at 30 feet (i.e., below the sandy layer).

In the FPP Area, the boring logs also indicate a sandy layer or layers although it is not as extensively as in the AST Area. Based on the VMP-2D log, the sandy layer in the vicinity of that probe only occurs from 6 feet to 8 feet bgs. In the SVE well log and the VMP-3D and -4D logs, the sandy layer ranges from 4 feet to 8 feet thick and occurs at 10' to 20' below ground surface.

Table 1 provides a summary of the well and probe construction data, as discussed in Section 2. Table 2 provides a summary of all of the field sampling conducted during the Pilot Study. Tables 3 through 17 generally provides results of the field data collected throughout each phase of the Pilot Study. Individual tables are referenced as appropriate in the subsequent sections.

3.2 Chemical Data

Soil gas laboratory analytical data from the Phase I Constant Rate Test are shown in Table 6. Similar data from the Phase II Extended Test are shown in Table 16, and Phase II field analytical data are shown in Table 17. A comparison of the laboratory and field soil gas data from the Phase II Extended Test is presented in Table 18. More discussion of these results is included in the discussion of mass removal rates later in this section.

The validated and qualified laboratory results for the various rounds of groundwater sampling during the Pilot Study are shown in Tables 23, 24 and 25. Natural attenuation parameters, which were measured at the time of certain groundwater sampling rounds, are included in these tables for completeness, but their discussion is beyond the scope of this Report. A detailed discussion of natural attenuation and the associated Site-specific parameters is presented in the FS Report (Golder, 2000).

3.3 Methods of Analysis

This section describes the methods of analysis that were used to interpret the physical and chemical data from the Pilot Study to evaluate the SVE/AS system performance. The following is a brief review of the analytical methods used. Generally, the results of these evaluations are discussed in the following sections that are specific to each phase of the Pilot Study.

SVE Performance Indicators

Flow versus Vacuum Analysis

The performance of an SVE system can be measured in a step test by plotting the measured flow rates versus applied SVE well pressures. This analysis provides information for determining optimal operating conditions and indicates the potential viability of a site for SVE.

Plan View Vacuum Contour Plots

To view the measured responses in the field utilizing the SVE well data in addition to VMP responses, two-dimensional plots of vacuum contours were constructed using SURFER contouring software. Since the SVE wells were screened from approximately 5-20' bgs, the intermediate-depth probes (i.e., screened from 13-15' bgs) were selected for plotting purposes. These plots reveal the areal extent of the SVE influence.

Radius of Influence (ROI) Analysis

Two analyses were performed to assess the ROI of the SVE wells. Distance-drawdown plots were constructed which plot measured vacuum at the VMPs versus distance from the SVE well on semi-log axes. Regression lines are fit to the data and the point at which the lines cross the x-axis (i.e., ambient atmospheric pressure) indicates the ROI.

An analytical estimate of the ROI from test data was also performed. The analytical solution for ROI is based on the radial steady-state relationship (USACOE, 1995) as follows:

$$R_I = R_w \exp \{ [(P_A^2 - P_w^2) \ln(r/R_w)] / [P_r^2 - P_w^2] \}$$

where:

R_w = radius of the extraction well

P_A = absolute atmospheric pressure

P_w = absolute pressure at the extraction well

-
- $r =$ radial distance of the VMP from the extraction well
 $P_r =$ absolute pressure at radial distance r from the extraction well.

It is not appropriate to use the measured vacuums in the extraction well in the calculation of radius of influence, or in air permeability calculations, due to the head losses exhibited between the well and its packing. The extraction well pressure, P_w , was therefore calculated using the steady-state pressures at two monitoring points within the radius of influence of the well (USACOE, 1995):

$$P_w^2 = \left[\frac{\ln(r_2 / R_w) P_{r1}^2 - \ln(r_1 / R_w) P_{r2}^2}{\ln(r_2 / r_1)} \right]$$

where:

- $P_{r1} =$ absolute pressure at monitoring point 1
 $P_{r2} =$ absolute pressure at monitoring point 2
 $r_1 =$ radial distance of the monitoring point 1 to extraction well
 $r_2 =$ radial distance of the monitoring point 2 to extraction well.

The values obtained for P_w from the above equation were compared to the actual pressures or vacuums observed at the gas extraction well. The ratios of predicted P_w to actual P_w provide an estimate of the overall average well efficiency. A low well efficiency indicates a high amount of head loss in the well (e.g., through the well screen).

Air Permeability

Air permeability (k_a) is a measure of the ability of vapor to flow through the air-filled pore space of a medium such as soil. It is a critical parameter to determining the viability of an SVE or SVE/AS system. To calculate k_a , which incorporates the estimated radius of influence (ROI), the following steady state radial flow equation was used (Pederson and Curtis, 1991):

$$k_a = Q \mu \ln(R_w/R_l) / \{ [H \pi P_w] [1 - (P_{atm}/P_w)^2] \}$$

where:

- $Q =$ volumetric flow rate
 $\mu =$ vapor viscosity
 $R_w =$ radius of extraction well
 $R_l =$ estimated radius of influence

H = length of extraction well screened through vadose zone

P_w = pressure at extraction well

P_{atm} = atmospheric pressure.

Once again the effective P_w calculated using steady-state pressures at two monitoring points was used, as described above.

Determination of Flow Rate and Velocity

System flow rates and velocities were determined by two primary means. A flow meter located on the suction side of the blower (Figure 6) measured flow in standard cubic feet per minute (scfm) for the whole system (i.e., AST and FPP areas together). Partitioning of flow rates between the AST and FPP areas was determined by using hand-held anemometers at the SVE well heads through measuring ports (Figure 3). Table 3 compares flow rates determined from velocity measurements and from the flow rate gauge. The results show that velocity measurements in the earlier tests were likely biased low, but measurement accuracy improved markedly in the later tests. Velocity measurements generally were not considered accurate in earlier tests due to inappropriate calibration procedures. Individual flow rates based on the velocity measurements were used minimally in this report (see section 3.2.5), whereas the flow gauge located at the blower was typically used for total system flow rate data. In the future, accurate velocity measurements at individual SVE well heads would be useful in determining the mass removal rates at each SVE well.

Air Sparging Performance Indicators

Flow versus Pressure Analysis

Similar to the flow versus vacuum analysis, this relationship yields information on the optimal operating condition for the sparge system, and indicates the potential viability of AS at a site.

Distance-Pressure Analysis

Similar to distance-drawdown analysis, this relationship provides one method for analyzing the areal influence of the sparge system. Pressures measured at monitoring probes are plotted versus distance from the sparge well on semi-log axes, and a regression line drawn to the data. The point at which the regression line intersects the x-axis (i.e., ambient atmospheric pressure) serves as an indicator of the ROI.

Dissolved Oxygen

Dissolved oxygen (DO) is the most common parameter used for estimating air sparging influence (Marley and Bruell, 1995). After only a few hours of sparging, groundwater DO levels may be observed to increase significantly at one or more monitoring points around the sparge well. The use of DO data is limited, however, in that an observed DO increase may reflect a localized increase in the vicinity of a preferred air channel, resulting in falsely high estimations of ROI. Conversely, DO uptake may occur by abiotic (e.g., oxidation of metals) or biotic (e.g., biodegradation of organics) processes, giving falsely low estimations of sparge influence. Despite these limitations, DO is regarded as an important parameter for the design and monitoring of an air sparging system.

Groundwater Mounding

In some instances, the groundwater table is observed to "mound"; that is, the water table rises in the vicinity of the sparge well in response to the added volume of injected air. This is sometimes used as an indicator of sparge radius of influence; however, it can overpredict the actual ROI depending on soil conductivity, as mounding may spread laterally beyond the true ROI. Also, concerns have been raised on the validity of measuring mounding in monitoring points open to the atmosphere, as they are thought to exaggerate the effect (Marley and Bruell, 1995). Several monitoring wells were used in the pilot test to record groundwater mounding.

Mass Removal Rates

The ultimate performance measure of an SVE/AS system is the ability to remove volatile contaminants from the subsurface. Analytical chemistry data is combined with airflow rates developed by the SVE system to quantify mass fluxes and total mass removal. Mass removal rate is calculated from the product of concentration and airflow rate as follows:

Mass removal rate [lb/day] =

$$\text{Conc [ppmv]} * \text{MW}/24.5 * (\text{P}/\text{Po}) * (\text{To}/\text{T}) * \text{Q [ft}^3/\text{min]} * 28.32 \text{ L/ft}^3 * 1440 \text{ min/day} * 2.2\text{e-}9 \text{ lb/ug}$$

where MW = molecular weight of compound;
 P = Pressure of extracted air;
 Po = Standard pressure (1 atm = 407 "H₂O);
 T = Temperature of extracted air;
 To = Standard temperature (298.15 K); and,
 Q = air flow rate.

The cumulative mass removed is obtained by first calculating the mass removed over the sampling intervals. The mass removal rate is assumed to be constant for the time interval bounded by the halfway points between successive samples. For example, if samples were taken at 5, 11 and 15 hours after the start of the test, the time interval representative of the 11-hour sample would be from 8 to 13 hours, or 5 hours total. The mass removal rate calculated at the 11-hour sample is assumed to be constant over this time interval. The cumulative mass removed is determined by summing the masses removed over all sampling intervals.

Trends in extraction rates over time and cumulative extraction rates were evaluated in order to determine the success of the pilot-scale SVE/AS system and to estimate a future sustainable mass removal rate. Also, the extraction rates were compared to the emission rate stipulated in the air permit (VIDPNR "Permit to Operate" Permit Number: STX-559-A-99-PO) of 13.62 lb/day total VOCs.

3.4 Phase I SVE Step Test

The SVE step test provided information to determine the relationship of flow rate to applied vacuum. The flow rates for each area were calculated by apportioning the total system flow, measured at the inlet to the blower, between the AST and FPP Areas. The ratio of AST flow to FPP flow was determined by averaging the velocity measurements taken at the AST and FPP SVE wells over the duration of the test. This procedure resulted in a four to one ratio of AST flow to FPP flow. The data collected during the test is presented in Table 4.

Figure 7 shows the flow rate-vacuum data for the AST and FPP areas from the Phase I Step Test. In both Areas, the flow-vacuum relationship is inverted to that which would be normally expected in that the SVE flow rate is lower at higher applied vacuums. Normally, a higher vacuum would be expected to induce a greater flow rate. In the subsequent constant rate test, the flow-vacuum relation was inverted also, with the vacuum level decreasing over the course of the test while the flow rate increased. The levels of vacuum and flow rate achieved were similar in the two tests, as applied vacuums of 5 in Hg induced 90-100 scfm of flow, and 3-3.3 in Hg induced 135-136 scfm of flow. In the Phase II extended test, different operating points were used, so a direct comparison of values is not appropriate, but similar results were obtained in that SVE well head and the blower intake pressures decreased significantly over the course of the test, while flow

rates increased moderately. Blower intake pressures decreased because the dilution valve at the blower was being opened during the course of this test.

An inverted flow vs. applied vacuum relationship is possible in an SVE system. This effect is typically due to expansion of the saturated zone caused by the induced vacuum. The expansion causes the saturated zone to expand above the natural water table and results in restricted flow to the SVE well. Another explanation for this effect is that leaks may be present in the system, or that higher applied vacuums caused the movement of silts or other fine particles into the screen of the SVE well.

The flow rates achieved in the FPP area (i.e., 20-30 scfm) were significantly lower than in the AST Area (i.e., 80-120 scfm), for the same applied pressures. This indicates that the subsurface of the AST Area exhibits a greater air permeability than the FPP Area, probably as a result of the permeable sandy layer that was evident in the soil boring logs.

Summary

The Phase I Step Rate test resulted in a flow vs. vacuum curve that exhibited an inverted relationship. The test results indicate that the subsurface in the AST Area is generally less resistant to air flow, i.e., more permeable, than the FPP Area.

3.5 Phase I SVE Constant Rate Test

The SVE constant rate test provided several important system performance parameters including SVE radius of influence, air permeability, and mass removal estimation from SVE alone. Table 5 presents the data collected during the test.

Radius of Influence Analysis

Two analyses were performed to assess the ROI of the SVE wells in the AST and FPP areas. Distance-drawdown plots were constructed and an analytical estimate of the ROI from test data was also made.

Observed vacuum responses at the VMPs were moderately variable over time. In the AST Area, VMP vacuum levels tended to increase with time, whereas the system vacuum levels decreased with time. In VMP-II, for example, the initial vacuum was 0.8 "H₂O; it decreased to 0.5 "H₂O after 5 hours, then increased to 0.8-0.9 "H₂O after 11 hours, and increased again to 1.2-1.3 "H₂O

after 48 hours. VMP-2I exhibited similar results, increasing over the duration of the test. No or poor response (i.e., less than 0.1" vacuum) was observed in the VMP-3 and VMP-4 series probes in the AST Area.

Figures 8 and 9 present distance-drawdown data for the intermediate VMPs in the AST and FPP Areas. Data is plotted for steady-state conditions only, represented by the beginning of the third day of the test (March 25, 2000) at 0730. The data are shown in Table 5. The data are presented with logarithmic regression lines fit to each round of measurements. The greatest and most consistent responses were, by a large margin, measured in the intermediate probes VMP-1I and -2I (5' and 10' from SVE-1) in the AST area, compared with all other VMPs in the AST or FPP areas. Figure 8, which shows the data for the intermediate probes in the AST area, reveals a steady decreasing trend in vacuum response from the 5 foot to 20 foot probes. The regression line crosses the x-axis (i.e., atmospheric pressure) at 30 feet. Assuming that the effective ROI is more likely represented by vacuum readings of 0.1-inch or greater, the plot indicates that the ROI would be about 25 feet. Given the observed responses, the true expected ROI in the AST Area is probably between 20-25 feet. Given the local variability in geology, the ROI for some wells may be greater (e.g. AST-SVE-2).

Pressure measurements were taken at the other SVE wells during the test, and these responses are shown along with the VMP-I probes in Figure 10 a contour plot of vacuum levels. The plot represents time after steady state has been reached. A response is measured at SVE-2 but not at SVE-3 or SVE-4, revealing a non-uniform response in different directions from the SVE well. This is indicative of anisotropy within the horizontal plane of the subsurface.

In the FPP Area, no consistently strong vacuum responses were obtained in any of the VMPs with the exception of VMP-1I and VMP-2D. Figure 9 shows that the magnitude of the responses in the FPP area were significantly less than in the AST area. VMP-1I showed responses up to 0.165 "H₂O, but no significant responses were ever recorded at VMP-2I, indicating an ROI of less than 10 feet. VMP-2D, which is 10 feet from the SVE well, showed responses up to 0.25 "H₂O, despite the general lack of measurable responses at VMP-1D, which is 5 feet from the SVE well. Because the deep VMPs were screened below the water table, much weaker or no vacuum responses would be expected at these probes during SVE operation.

In using the analytical prediction method for ROI, a sampling point was chosen after the system reached steady state. One data point for the FPP Area was analyzed since the vacuum response was greater than 0.1 "H₂O for only a brief period during the test. The results are presented in Table 7. The calculated ROI values for the AST Area range from 15 to 22 feet, and a value of 10 feet is calculated for the FPP Area. In addition, the comparison of the predicted vacuum at the SVE well to the actual vacuum of the SVE well in each area shows about a 34% well efficiency in the AST Area, which is in the expected range for a typical SVE well. The well efficiency in the FPP Area is less than 1%, which indicates extreme head loss in the SVE well, and suggests that analytical results may be of questionable value.

Air Permeability

The results of the air permeability calculations are shown in Table 7. The air permeability calculated for the AST area was approximately 10^{-7} - 10^{-6} cm². A value of approximately 10^{-6} cm² was calculated for the FPP Area, but is questionable accuracy given the poor performance of the extraction well and very limited responses at monitoring points.

Mass Removal Estimation

Estimates of the mass removal of ethylbenzene, total xylenes and chloroform are presented in Table 6b, using the Microseeps analytical data presented in Table 6a. The data from the Intake port was used in the calculations. Figure 11 shows the extraction rates of individual and total COCs at various points throughout the Phase I constant rate test. As expected, the initial mass removal rates were large, followed by a decline. However, the extraction rates increased at the end of the test. Figure 12 shows the cumulative mass removed for the COCs during the Phase I constant rate test. The total mass removed over the 72-hour test was about 3.05 lbs.

Summary

The Phase I Constant Rate test resulted in strong pressure responses in the intermediate vapor probes in the AST Area. This was supported analytically by high estimates of air permeability. The estimated ROI for SVE wells is about 20 feet to 25 feet. The pressure responses in the FPP Area were much lower in magnitude and extent than in the AST Area, and the estimated ROI for an SVE well is less than 10 feet.

3.6 Phase II AS Step Test

The Phase II AS Step Tests provided performance information on the flow-pressure relationships and operating set points for the AST and FPP Areas. The AST and FPP sites were tested separately, based on the available equipment, and the field data are presented in Tables 8 and 9.

Flow-Pressure Data

The sparge flow versus pressure data is presented in Figure 13. The data show a positive relationship between flow and pressure, as flow increases by increasing the pressure from the air compressor. The measured pressures required in the FPP area were significantly lower than in the AST area, and flows achieved were apparently higher as well.

The sparge pressure required to initiate air sparging in the AST area can be predicted as follows (Marley and Bruell, 1995, and Nyer and Suthersan, 1993):

- Depth of sparge point = 48 ft (top of well screen)
- Depth to water = 15 ft
- Specific gravity of sediments = 2.7
- Porosity = 0.35
- Pressure of soil at sparge point = $(48 \text{ ft})(1-0.35)(2.7 \times 62.4 \text{ lb/ft}^3)(\text{ft}^2/144 \text{ in}^2) = 36.5 \text{ psi}$
- Pressure of water at sparge point = $(48-15 \text{ ft})(0.35)(62.4 \text{ lb/ft}^3)(\text{ft}^2/144 \text{ in}^2) = 5.0 \text{ psi}$
- Release pressure = 1 psi for every 3 ft of depth = $48/3 = 16.0 \text{ psi}$
- Total pressure = $36.5 + 5.0 + 16.0 = 57.5 \text{ psi}$

The release pressure accounts for both frictional losses in the system and the capillary entry pressure required to displace the pore water (Nyer and Suthersan, 1993). The calculation indicates that 57.5 psi is required to overcome the pressures at a depth of 50 feet to initiate sparging. The sparge point in the FPP area is 46 feet below ground surface, and the total pressure required to initiate sparging is 55 psi. These predicted values compare favorably with the pressures measured in the sparge test for the AST area, but not in the FPP area (Tables 8 and 9). There is no ready explanation for this difference. A possibility is that air channeling or short-circuiting (such as along the well annulus) occurred, which would result in higher flows with lower pressures in the FPP area. For example, there may have been channeling via the nearby Central Storm Drain. In later tests, significant bubbling occurred within MW-2, a shallow well

near the FPP sparge well, indicating the interception of an air channel. However, bubbling was not observed during the step test.

Dissolved Oxygen (DO)

DO data for the test are plotted in Figures 14 and 15 for the AST and FPP Areas, respectively. Figure 14 shows that DO increases to saturation levels for AST-VMP-1D, -2D, and MW-1. MW-1 is located approximately 28' from the sparge well, indicating a significant influence. AST-VMP-3D (which is 20 feet from the sparge well) was only moderately affected, indicating the heterogeneous nature of the Site.

The magnitude and breadth of the sparging influence in the FPP Area was not as significant as in the AST Area, even though the test was run for over 72 hours (albeit not continuously), compared with 9.5 hours for the AST Area test (see Figure 15). In the closest probe to the sparge well, FPP-VMP-1D, DO reached a maximum of 3.0 mg/L. A greater response was seen in FPP-VMP-2D, which attained a maximum DO of almost 7 mg/L (compared to 20 mg/L in the AST area), but this level was not sustained.

Summary

Flow-pressure plots revealed that a normal relationship was observed between flow and applied pressure in both the AST and FPP areas. The analytically predicted pressure agreed with the level attained in the AST area, but was significantly higher than in the FPP area. This indicates that sediment fracturing or short-circuiting may have occurred.

In the AST Area, saturated dissolved oxygen levels were measured at a 10 foot radius in the vapor probes, and at 28 feet away in MW-1. The DO results in the FPP Area showed much less effect, as the probes 5 feet and 10 feet from the sparge well attained only 3 mg/L and 7 mg/L, respectively.

3.7 Phase II SVE/AS Test

The Phase II SVE/AS Test provided information on combined air sparge and SVE performance, and confirmatory information on ROI, air permeability, and DO influence. Field data from this test are presented in Tables 10 to 12.

Distance-Drawdown Data (SVE Effects)

Vacuum responses were measured in the shallow and intermediate probes, and positive pressures measured in the deep probes. Distance-drawdown data for the intermediate probes in the AST Area during steady state are presented in Figure 16, with regression lines fit to the data. Steady state response was determined from system pressure and flow rate data using the April 15, 2000 data point at 6:15 am. The distance-drawdown plot, in conjunction with the test observations, confirms that the ROI lies between 20-25 feet.

In the FPP Area, the VMPs indicated vacuum responses only at the shallow probes, as positive pressures were recorded in the intermediate and deep probes. Furthermore, the responses at the shallow VMPs were very low, achieving a maximum of only 0.03 "H₂O. These results confirm the weak influence of the SVE system in the FPP Area.

Air Permeability

The results of the air permeability calculations are shown in Table 7. The calculated air permeability in the AST area was approximately 10^{-7} - 10^{-6} cm², consistent with the calculations based on the Phase I test data.

Distance-Pressure Data (Sparging Effects)

In the AST Area, positive pressures were recorded only at the deep VMPs, reflecting the sparge gas entering the vadose zone from the water table. Data points after 11:25 on April 15, 2000 were used to represent steady-state conditions, which are plotted in Figure 17. VMP-1D recorded the highest pressures, while VMP-3D consistently recorded the second highest pressures, and VMP-2D recorded mostly zero pressure. The same trend occurred in the AS/SVE Extended test, in which VMP-2D recorded lower, but detectable pressures, compared with VMP-3D. Based on these results, there appears to be a preferential air flow pathway in the area of AST-VMP-3D.

In the FPP Area, positive pressures were recorded in the deep and intermediate probes. Pressure is distributed among the VMPs fairly uniformly, but the magnitudes are very low (<0.1 "H₂O), and a ROI based on this parameter was not discernible.

Dissolved Oxygen

Figures 18 and 19 show the dissolved oxygen measurements in the AST and FPP Areas, respectively. In the AST Area, saturated or near-saturated conditions were attained at VMP-1D, -

2D, and MW-1 (28 feet from the sparge well), and significant increases were attained in MW-6 (11 feet from the sparge well). Bubbling was observed in VMP-1D, -2D, MW-1, and MW-6, indicating sparge air conduits had been intercepted. No significant increases were measured in VMP-3D or -4D, and no significant increases had been measured in the Phase II Step Test. The DO data reveals significant heterogeneity in the sediments, as VMP-3D (20' from the sparge well) showed no appreciable DO increase, yet bubbling was observed in a monitoring well 28' from the sparge well.

In the FPP Area, inconsistent results were obtained. DO levels were initially high in VMP-3D and MW-2, potentially due to migration of previously sparge-affected water. These DO levels remained high throughout the test. In MW-2 (16' from the sparge well) bubbling was observed during the test, indicating a conduit of sparge air was intercepted. DO increased significantly in VMP-4D, which is the most distant probe from the sparge well, while little or no increases were measured in VMP-1D and -2D, which are more proximate to the AS well.

Summary

The pressure responses in the VMPs confirmed results from the prior tests. The AST Area showed consistent, significant response to the SVE and AS systems, whereas the FPP Area responses were weak and unpredictable. The analytical ROI calculations for SVE are consistent with the estimates from the previous test.

In the AST Area, DO results were similar to the AS Step test results in that points within 10 feet and at 28 feet from the AS well exhibited significant DO concentrations and bubbling, while points at 20 feet and 40 feet from the AS well showed no increases. This revealed the heterogeneous nature of the sediments at the site. DO results in the FPP Area were inconsistent, where increases were measured in the two distant probes, but not in the two closest probes. Overall, the response to air sparging in the FPP Area was weak.

3.8 Phase II SVE/AS Extended Test

The Phase II SVE/AS Test provided information on combined air sparge and SVE performance, including areal coverage of the SVE system in the AST area with all six SVE wells operating. Also, the sparge influence via DO measurements and mass removal rates are assessed from this test. Field data from this test are presented in Tables 13 to 15.

Areal Pressure Plots

Contour plots of vacuum of the AST Area are presented in Figure 20. The vacuum drawn by each of the SVE wells can be seen as well as the vacuums invoked at each of the intermediate VMPs. The plot shows that at a point nearly equidistant from the SVE wells -- VMP-3I -- a substantial vacuum occurred (0.2 "H₂O). VMP-4I (i.e., the farthest probe from SVE-1) was evidently influenced by both SVE-4 and SVE-1, demonstrated by a strong vacuum of 1.2 "H₂O. This test confirms that the SVE well spacing in the existing pilot-scale system is expected to provide adequate vacuum coverage over the impacted zone at the AST Area. Responses of the probes to sparging were similar to the SVE/AS test, where VMP-1D exhibited the highest response followed by VMP-3D and VMP-2D, reflective of the heterogeneous nature of the sediments at the Site.

Vacuum responses in the FPP Area were very low and inconsistent at each probe. Only the shallow probes recorded vacuums, and the highest value recorded vacuum was only 0.05 "H₂O. Pressure responses due to sparging were relatively high at the end of the test as VMP-2D, -3D, and -4D all recorded greater than 0.25 "H₂O. At the end of the earlier SVE/AS test, VMP-2D had recorded greater than 0.25 "H₂O, consistent with these results. These high responses are unexpected in light of the low sparge pressures required for flow. It is possible that air was following a preferential pathway or conduit.

Dissolved Oxygen

Figures 21 and 22 show the dissolved oxygen measurements in the AST and FPP areas, respectively. The data are more scattered than previous tests, most likely reflecting flow-through of pockets of previously sparge-affected water. However, the same basic results are evident, namely that VMP-1D and -2D became heavily saturated with oxygen while VMP-3D and -4D were generally unaffected. MW-1 (28 feet from AST-AS-1) and MW-6 (11 feet from AST-AS-1) both started out relatively highly saturated and remained so throughout the test. Bubbling within wells was either not observed or not recorded.

The DO data in the FPP Area is inconclusive as all VMPs and MW-2 (which is 15 feet from FPP-AS-1) started out nearly fully saturated and remained so throughout the test. MW-3 (which is 90 feet from FPP-AS-1) was distant enough to be unaffected by sparging. Initial DO levels at MW-3 were low and remained low (i.e., less than 1.0 mg/L) throughout the test.

Mass Removal Performance

The mass removal rates were calculated from several sampling ports using the on-site and off-site analytical data as described in Section 2. The laboratory data from Microseeps is presented in Table 16 and the Photovac Field GC data is presented in Table 17. These data were not validated, as quality control data were limited. Table 18 presents a comparison of samples taken from the same ports at approximately the same time between the laboratory (Microseeps) data and the field GC (Photovac) data. The relative percent difference between two sets of data, termed "Data1" and Data2", is calculated by the following:

$$\text{Relative percent difference} = (\text{Data1} - \text{Data2}) / (\text{Average of Data1 and Data2})$$

The maximum difference that can exist is 200%. As shown in Table 18, there are many cases in which the relative percent differences are greater than 100%. In 48 instances the lab data values were lower than the corresponding field data; in 38 instances, the field data were lower. Therefore, there is no definitive trend to these differences.

Two sampling ports used for sampling data that could be used in calculating mass removal. The "Intake" port was located on the suction side of the blower, and the "Exhaust" port was located on the discharge side of the blower. The following describes the four tables presenting the mass removal calculations according to the lab data and sampling location used:

- Table 19 - Microseeps (laboratory) data and the Intake port;
- Table 20 - Photovac (field GC) data and the Intake port;
- Table 21 - Microseeps data and the Exhaust port; and,
- Table 22 - Photovac data and the Exhaust port.

The total cumulative mass removed results are shown in Figure 23. The estimates for total mass removal of ethylbenzene and xylene combined using the Lab data and the Photovac data at the Intake port are 88 lbs and 7 lbs, respectively. At the Exhaust port, the calculated removals are 60 lbs and 113 lbs, respectively. Chloroform and toluene do not account for a significant amount of mass, consistent with minimal source concentrations observed in baseline (pre-test) sampling. The mass removal estimates based on the Photovac results for ethylbenzene at the intake port are clearly inconsistent with the other estimates.

The calculated extraction rates over the course of the test were plotted for the four combinations of sampling port and analytical data, as shown in Figures 24 to 27. The Intake and Exhaust Microseeps data (i.e., Figures 24 and 26) both show results typical of SVE/AS operations, where higher VOC mass removal rates were obtained early in the test. These rates decline and remain low in the second half of the test. Typically, a sustainable contaminant concentration in the extracted gas is expected to be 1 to 10 percent of the initial concentrations (USACE, 1995). The Photovac data however, as shown in Figure 20, suggests relatively high rates of removal throughout the test, and the final three samples exhibit three of the four highest removal rates. These trends suggest that the Photovac data may be less reliable. The variability of the data precludes an exact determination of total mass removal..

The mass removal calculations also indicate that combined SVE/AS is more efficient at mass removal than SVE alone. The total mass extracted on a per-SVE well basis from the Phase II SVE/AS Extended test was more than double the 3.05 pounds removed in the Phase I Constant Rate test (i.e., SVE only) over the same duration (i.e., 72 hours). The mass removal rates (i.e., gas phase) during the steady-state portion of each test show that about 1-2 lb/day of VOCs were removed per SVE well during the Phase II Extended Test, and about 0.5 lb/day of VOCs were removed during the Phase I Test. Note, these mass removal rates do not include the reduction in mass that would result from enhanced biodegradation in soil and groundwater, due to SVE/AS activities.

Groundwater Mounding

Depths to groundwater measurements were continually made during the test. The results show that no significant mounding was observed in the vapor probes, GMP wells, or monitoring wells.

Summary

The results of the test in the AST Area show that the existing network of six SVE wells provided adequate vacuum coverage over the impacted area. Responses of the probes in the FPP Area were low and irregular, confirming a weak overall response to SVE. Pressure responses to sparging were in agreement with previous tests, with diffuse responses measured at all four probes. Dissolved oxygen results in the AST Area were essentially the same as in previous tests: high DO in the two closest probes and in MW-1 and MW-6, and little response in the two distant probes. In the FPP Area, DO results indicated that the groundwater was oxygen saturated,

however, increases were not observed, only that concentrations began high and remained high throughout the test, therefore these results are inconclusive.

The mass removal calculations showed that significant mass was removed from the AST Area, probably about 70-80 lbs ethylbenzene and total xylenes. This rate is likely significantly higher than would be achieved by SVE alone. In the FPP Area, significant rates of chloroform removal were not achieved. However, unlike the AST Area, a significant mass of chloroform does not exist in the FPP Area soils or groundwater and thus, significant removal rates would not be expected regardless of SVE/AS efficacy.

3.9 Groundwater Analytical Results

Sampling of the groundwater from monitoring wells and deep vapor monitoring probes occurred according to the schedule outlined in Table 2. Analytes included VOCs and natural attenuation parameters. The results are presented in Tables 23 and 24 for the AST and FPP areas, respectively. Table 25 lists the quality control sample results.

In the AST Area, there was a marked decrease in concentrations of ethylbenzene and xylene in groundwater between the March 30, 2000 and May 3, 2000 groundwater sampling events, when air sparging was being conducted. These decreases were exhibited most dramatically in AST-VMP-2D. These reductions are likely due to a combination of stripping of VOCs and aerobic biodegradation due to the introduction of compressed air.

In the FPP Area, no appreciable changes were seen in groundwater conditions for chloroform in the immediate area of the SVE/AS system throughout the course of pilot testing. The minor fluctuations in levels indicate that the groundwater was not significantly affected by the operation of the SVE/AS system. This is supported by the low mass removal rates of chloroform in the extracted soil vapor during combined SVE/AS tests. However, it is again noted that the residual source mass of chloroform in both soils and groundwater in the FPP Area was already very low prior to the commencement of pilot testing. Therefore, mass removal rates in the FPP Area are not considered as good an indicator of system performance as in the AST Area.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

4.1.1 Comparison to Objectives and Applicability as Potential Remedial Technology

The objectives of the Pilot Study included:

- Verification that SVE and SVE/AS are viable potential remedial technologies for source control of VOCs in subsurface soil and groundwater; and,
- Development of design, performance, and cost data for efficient operation of a full-scale system in one or both of the impacted areas.

The Pilot Study demonstrated that SVE or SVE/AS in combination can effectively remove VOCs from the AST Area at this Site. The soil vapor chemistry data indicate that significant mass removals for ethylbenzene and xylene can be sustained over longer-term operation. A secondary evidence of successful demonstration is the decrease in concentrations of Site contaminants in groundwater between the March 30, 2000 and May 3, 2000 sampling events, when air sparging was being conducted. These decreases were exhibited most dramatically in AST-VMP-2D. These reductions are likely due to a combination of stripping of VOCs and aerobic biodegradation due to the introduction of compressed air. Sufficient radii of influence and air permeability were exhibited such that SVE (with or without AS enhancement for groundwater) could provide adequate coverage for the impacted vadose zone in the AST Area.

SVE and SVE/AS results were less conclusive for VOC removal in the FPP Area. In the FPP Area, SVE/AS system responses during pilot testing were generally weaker. Field data indicated that the subsurface in the FPP Area is generally less permeable such that good air flow distribution via SVE and AS is not expected. The total mass removal of chloroform over the three-day extended SVE/AS test in the FPP Area was estimated at 11 grams, which is not insubstantial given the very low residual source concentrations of chloroform in the FPP Area soils and groundwater.. However, no appreciable changes were seen in groundwater conditions for chloroform in the immediate area of the SVE/AS system throughout the course of pilot testing. It is concluded that implementation of an SVE or SVE/AS system in the FPP Area is not warranted due to the very low mass of residual chloroform present in soils and groundwater (i.e. generally below MCLs). Also, chloroform primarily biodegrades anaerobically and natural attenuation parameters measured during the Pilot Study and the RI (Golder, 2000) indicate that natural attenuation processes are important in degrading chloroform in groundwater. Therefore,

operation of AS in the FPP area may inhibit existing anaerobic natural attenuation processes, which are addressing residual low-level concentrations that are currently near or below MCLs.

The step tests and constant rate tests for SVE and AS, and SVE/AS in combination, yielded important information for the potential future full-scale design. The information suggests that the existing system in the AST Area could readily transition into a full-scale SVE system with few modifications. However, based on the highly variable pressure and velocity measurements observed during the pilot study, further operation of the existing-pilot scale system is warranted in order to verify system responses and SVE/AS well efficiencies. These parameters affect the operational pressures, sizing of the blower and air compressor, as well as the layout of the well network and any additional monitoring points.

4.1.2 Data Limitations and Uncertainties

Much of the limitations and uncertainties associated with the field data presented and interpreted in this Report stem from issues associated with equipment and instrumentation. In addition, many of the field parameters have inherent limitations in terms of reliability as indicator parameters of radius of influence. For example, dissolved oxygen levels may experience competitive effects due to aerobic biodegradation processes. Such limitations have been discussed in Sections 2 and 3. This section summarizes the limitations and uncertainties that are most critical to data interpretation to evaluate system performance and future design parameters.

Several issues are inherent to site conditions and the limitations associated with a pilot-scale system. For example, lithologic information from the boring logs in both the FPP and AST Areas reveal the presence of sandy lenses or layers of higher permeability than the surrounding soil. As expected, this heterogeneity affected the responses observed in the probe clusters, with probes screened in the sandy layers generally exhibiting stronger responses.

There is a high degree of uncertainty in the velocity and flow measurements due to inappropriate zeroing procedures at the start of pilot testing. Also, constant flutter in the gauge inhibited accurate readings. It is expected that velocity/flow measurements were under-reported in the earlier phases of testing. Soil vapor flows from the AST and FPP Area SVE wells were not measured directly; rather, they were apportioned in a 4:1 ratio based on relative velocity measurements in each area. During the SVE tests, an inverted relationship between applied vacuum and flows was observed at the SVE wells. During the SVE/AS tests, the flow remained

fairly uniform despite increases in pressure. An inverted relationship may result from the expansion of the saturated zone above the water table that is induced by the vacuum at the SVE well. The saturated zone may expand enough to restrict air flow into the SVE well screen. Also, higher applied vacuums may cause silts or sands to accumulate on the well screen and restrict air flow into the SVE well. There were also large discrepancies between flows measured at the blower and the sum of individual flows measured at the active SVE wells. In light of these uncertainties, the use of flow data was generally limited to calculations of mass removal rates, whereas pressure data were more relied upon to evaluate system response, radii of influence, and air permeability. Thus, the uncertainties exhibited by the flow data did not preclude the detailed evaluation of SVE/AS system performance in each Area.

The uncertainties in the airflow rates also affect the calculated mass removal rates, since mass removals are calculated using constituent concentrations and volumetric flow rates. Additional uncertainties are inherent in the mass removal rates based on the chemistry data. The on-site (PhotoVac) and off-site (Microseeps) analytical data for the constituents of concern were not comparable, as discussed in Section 3. A small difference would be expected since each of the corresponding on-site and off-site air samples was taken at a slightly different time, so these samples are not true split samples. Also sample procedures different for each type of sample (i.e., Tedlar bag versus syringe/vial). Typically, air samples other than Summa canisters do not transport well in airplanes due to pressure changes in flight. It is possible that leaks occurred in the Microseeps samples, although the inconsistency of the relative differences between the on-site and off-site sample concentrations suggests that other factors were involved. These factors are likely related to sampling procedures and/or differences in analytical instrumentation. Regardless, the use of either set of chemistry data clearly indicates that significant mass removal of VOCs could be achieved by SVE alone and SVE/AS in combination, notably in the AST Area.

4.2 Recommendations

4.2.1 Additional Testing / Monitoring

Should SVE or SVE/AS be selected as the remedial technology for one or both source areas, additional investigations would be conducted prior to the final operation of the full-scale system, including any modifications to the existing SVE/AS system.

Prior to running the system, a full leak-check of the system piping and connections should be performed. Pressure gauges at the wellheads and at the blower can be used to evaluate actual versus expected head losses in the piping. A pilot test on the order of several weeks would assist in the estimation of sustainable mass removal rates over longer term operation. This, in part, would be used to evaluate the need for any off-gas emission controls. Additional soil vapor samples would be taken during this time. Summa canisters are recommended for any air samples that are sent off-site. In the same vein, a longer-term pilot study would allow the operation and monitoring of the system at steady state rather than transient conditions. Since the water table was at a relatively high level during the Spring 2000 Pilot Study, continuous operation at low water levels would yield important information as to the design operating limits of a final system.

For any future tests involving air sparging, longer recovery times are recommended to avoid interference by residual dissolved oxygen levels in groundwater from previous tests.

Other tests that could be performed in order to design and optimize a full-scale system include cycling the air sparge wells only or cycling the entire SVE/AS system. This would enable a decision as to whether to add controls (e.g. timers) to the air compressor and/or blower to cycle the system automatically during long-term operation, and determine optimal frequency of cycling.

The most beneficial source of additional information on long-term SVE/AS system performance would be gained simply by resumed operation of the system on a continuous basis. Since the SVE/AS system was not decommissioned after the pilot study, the entire system or portions thereof (i.e., SVE only or certain wells only) can be placed on-line at any time, provided that the appropriate federal and territorial approvals are obtained.

4.2.2 Long Term Operation

The extended SVE/AS test in the AST Area indicated that the existing network of SVE wells provides substantial coverage of the vadose zone. Should air sparging be included as a component of the selected final remedy, additional sparge wells may be considered for installation. The air sparge wells should be installed within the zone of capture of the SVE well network, but the air sparge wells themselves need not provide overlapping coverage of the impacted groundwater area in the same manner as the SVE wells. Sparge wells can be placed such that groundwater will eventually migrate into the capture zone of an AS well.

The long-term operation of an SVE or SVE/AS system at this Site necessitates careful consideration of operations and maintenance requirements. The system should be designed to operate for periods of regular unattended operation. Alarms with telecommunications would be considered, if needed, to alert a designated local operator of system failure (e.g., motor failure, power outages). Automation and control systems would be considered in a final design for long-term operation. Long-term operation would require an operator to visit the site periodically for monitoring purposes. Vacuum/pressure measurements and flow rates would be monitored at each SVE/AS well and at monitoring probes and system balancing may be needed occasionally to ensure coverage of the impacted area. Also, a monitoring program would include vapor concentrations taken at the wellheads, blower, and after any control device with a portable meter, as well as periodic gas-samples for laboratory analysis. These data would be used to evaluate system performance in terms of VOC mass removal and compliance with air permit requirements.

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Table 1
Specifications for Pilot Study Wells and Monitoring Points
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Well ID	Completion Date	Total Depth (feet bgs)	Construction Material	Screen Interval (feet bgs)	Screen Slot Size (inches)	Diameter (inches)	Design Reference
<i>AST Area</i>							
SVE-1	08-Feb-00	24.5	304 Sch 5 SS	4.5 - 19.5	0.020	2	Figure 3
SVE-2	11-Feb-00	24.5	304 Sch 5 SS	4.5 - 19.5	0.020	2	Figure 3
SVE-3	09-Feb-00	24.5	304 Sch 5 SS	4.5 - 19.5	0.020	2	Figure 3
SVE-4	10-Feb-00	24.5	304 Sch 5 SS	4.5 - 19.5	0.020	2	Figure 3
SVE-5	10-Feb-00	24.5	304 Sch 5 SS	4.5 - 19.5	0.020	2	Figure 3
SVE-6	10-Feb-00	24.5	304 Sch 5 SS	4.5 - 19.5	0.020	2	Figure 3
GMP-1	24-Feb-00	30	Sch 40 PVC	28.85 - 29.85	0.020	1	NA
AS-1	22-Feb-00	50	Sch 80 PVC	47.5 - 49.5	0.040	1	Figure 4
VMP-II	17-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-1D	14-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5
VMP-2S	17-Feb-00	5	Sch 40 PVC	2.55 - 4.25	0.020	2	Figure 5
VMP-2I	17-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-2D	16-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5
VMP-3S	18-Feb-00	5	Sch 40 PVC	2.55 - 4.25	0.020	2	Figure 5
VMP-3I	18-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-3D	23-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5
VMP-4S	18-Feb-00	5	Sch 40 PVC	2.55 - 4.25	0.020	2	Figure 5
VMP-4I	18-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-4D	23-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5
<i>FPP Area</i>							
SVE-1	01-Feb-00	26.5	304 Sch 5 SS	6.5 - 21.5	0.020	2	Figure 3
GMP-1	24-Feb-00	30	Sch 40 PVC	28.85 - 29.85	0.020	1	NA
AS-1	21-Feb-00	48	Sch 80 PVC	45.5 - 47.5	0.040	1	Figure 4
VMP-II	21-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-1D	07-Feb-00	29.75	Sch 40 PVC	27.30 - 29.00	0.020	2	Figure 5
VMP-2S	21-Feb-00	5	Sch 40 PVC	2.55 - 4.25	0.020	2	Figure 5
VMP-2I	21-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-2D	04-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5
VMP-3S	21-Feb-00	5	Sch 40 PVC	2.55 - 4.25	0.020	2	Figure 5
VMP-3I	21-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-3D	03-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5
VMP-4S	22-Feb-00	5	Sch 40 PVC	2.55 - 4.25	0.020	2	Figure 5
VMP-4I	22-Feb-00	15	Sch 40 PVC	12.55 - 14.25	0.020	2	Figure 5
VMP-4D	03-Feb-00	30	Sch 40 PVC	27.55 - 29.25	0.020	2	Figure 5

bgs: below ground surface

NA: not applicable

Sch: Schedule

PVC: polyvinyl chloride

SS: stainless-steel

304896

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Phase I (SVE Testing)

Area of Concern	Chronology	Number of Samples	Matrix	Analysis	Laboratory
FPP Area	Baseline Monitoring (Pre-Phase I)	1 SVE Well and 11 VMPs	Soil-Gas	Site Target Compounds Vacuum Pressure	MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells 1 GMP and 11 VMPs	Groundwater	Depth to Water	Field Instrument
		3 Monitoring Wells (MW-2, MW-3, MW-7) 4 Deep VMPs	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kits/Field Instruments
	Step Rate Test	1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate (SVE well only)	Field Gauge Readings
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors Site Target Compounds	Field Instrument MicroSeeps
		SVE System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Flow Rate/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		1 GMP (on a regular basis)	Groundwater	Depth to Water	Field Instrument
	Constant Rate Test	1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate (SVE well only)	Field Gauge Readings
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors Site Target Compounds	Field Instrument MicroSeeps
		SVE System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Flow Rate/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		1 GMP (on a regular basis)	Groundwater	Depth to Water	Field Instrument
	Post-Phase I Monitoring	1 SVE Well and 11 VMPs	Soil-Gas	Site Target Compounds Vacuum Pressure	MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells 1 GMP and 11 VMPs	Groundwater	Depth to Water	Field Instrument
		3 Monitoring Wells (MW-2, MW-3, MW-7) 4 Deep VMPs (if water is present)	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments

304897

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

AST Area	Baseline Monitoring (pre-Phase I)	1 SVE Well and 11 VMPs	Soil-Gas	TEX /Site Target Compounds (confirmation) Vacuum Pressure	PhotoVac/MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells 1 GMP and 11 VMPs	Groundwater	Depth to Water	Field Instrument
		4 Monitoring Wells (MW-1, MW-6, MW-8, MW-10) 4 Deep VMPs	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kits/Field Instruments
	Step Rate Test	1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate (SVE well only)	Field Gauge Readings
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors TEX/Site Target Compounds	Field Instrument PhotoVac/MicroSeeps
		SVE System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Flow Rate/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		1 GMP (on a regular basis)	Groundwater	Depth to Water	Field Instrument
	Constant Rate Test	1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate (SVE well only)	Field Gauge Readings
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors TEX/Site Target Compounds	Field Instrument PhotoVac/MicroSeeps
		SVE System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Flow Rate/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		1 GMP (on a regular basis)	Groundwater	Depth to Water	Field Instrument
	Post-Phase I Monitoring	1 SVE Well and 11 VMPs	Soil-Gas	TEX /Site Target Compounds (confirmation) Vacuum Pressure	PhotoVac/MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells 1 GMP and 11 VMPs	Groundwater	Depth to Water	Field Instrument
		4 Monitoring Wells (MW-1, MW-6, MW-8, MW-10) 4 Deep VMPs	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kits/Field Instruments

304898

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Phase II (SVE/AS Testing)

Area of Concern	Chronology	Number of Samples	Matrix	Analysis	Laboratory
FPP Area	Baseline Monitoring (Pre-Phase II)	Transition from Phase I to Phase II was continuous; therefore, post-Phase I monitoring represented baseline monitoring for pre-Phase II testing.			
	Step Rate Test	1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Air Pressure/Depth to Water/DO	Field Gauge Readings/Field Instruments
		1 AS Well (on a regular basis)	Soil-Gas	Air Pressure/Flow Rate	Field Gauge Readings
		AS System - Trailer (on a regular basis)	Various	Air Pressure (compressor)/Weather Conditions	Field Gauge Readings/Weather Station
		1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Organic Vapors	Field Instrument
		1 GMP and Nearby Monitoring Wells (on a regular basis)	Groundwater	Depth to Water/DO	Field Instruments
	Constant Rate Test	1 SVE Well (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate	Field Gauge Readings
		1 AS Well (on a regular basis)	Soil-Gas	Air Pressure/Flow Rate	Field Gauge Readings
		11 VMPs (on a regular basis)	Soil-Gas	Pressure (vacuum or air)	Field Gauge Readings
			Groundwater	Depth to Water/DO	Field Instruments
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors Site Target Compounds	Field Instrument MicroSeeps
		SVE/AS System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Air Pressure (compressor)/Flow Rates/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		Select VMPs and/or Nearby Monitoring Wells	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments
		1 GMP and Nearby Monitoring Wells (on a regular basis)	Groundwater	Depth to Water/DO	Field Instruments
	Post-Phase II Monitoring	1 SVE Well and 11 VMPs	Soil-Gas	Site Target Compounds Vacuum Pressure	MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells	Groundwater	Depth to Water	Field Instrument
		1 GMP and 11 VMPs			
		3 Monitoring Wells (MW-2, MW-3, MW-7)	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments
		4 Deep VMPs (if water is present)			

304899

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

AST Area	Baseline Monitoring (pre-Phase II)	<i>Transition from Phase I to Phase II was continuous; therefore, post-Phase I monitoring represented baseline monitoring for pre-Phase II testing.</i>			
	Step Rate Test	1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Air Pressure/Depth to Water/DO	Field Gauge Readings/Field Instruments
		1 AS Well (on a regular basis)	Soil-Gas	Air Pressure/Flow Rate	Field Gauge Readings
		AS System - Trailer (on a regular basis)	Various	Air Pressure (compressor)/Weather Conditions	Field Gauge Readings/Weather Station
		1 SVE Well and 11 VMPs (on a regular basis)	Soil-Gas	Organic Vapors	Field Instrument
		1 GMP and Nearby Monitoring Wells (on a regular basis)	Groundwater	Depth to Water/DO	Field Instruments
	Constant Rate Test	1 SVE Well (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate	Field Gauge Readings
		1 AS Well (on a regular basis)	Soil-Gas	Air Pressure/Flow Rate	Field Gauge Readings
		11 VMPs (on a regular basis)	Soil-Gas	Pressure (vacuum or air)	Field Gauge Readings
			Groundwater	Depth to Water/DO	Field Instruments
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors TEX/Site Target Compounds	Field Instrument PhotoVac/MicroSeeps
		SVE/AS System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Air Pressure (compressor)/Flow Rates/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		Select VMPs and/or Nearby Monitoring Wells	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments
		1 GMP and Nearby Monitoring Wells (on a regular basis)	Groundwater	Depth to Water/DO	Field Instruments
	Post-Phase II Monitoring	1 SVE Well and 11 VMPs	Soil-Gas	TEX /Site Target Compounds (confirmation) Vacuum Pressure	PhotoVac/MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells	Groundwater	Depth to Water	Field Instrument
		1 GMP and 11 VMPs			
		4 Monitoring Wells (MW-1, MW-6, MW-8, MW-10) 4 Deep VMPs	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kits/Field Instruments

304900

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Extended Phase II (SVE/AS Testing)

Area of Concern	Chronology	Number of Samples	Matrix	Analysis	Laboratory
FPP Area	Baseline Monitoring (Pre-Extended Phase II)	<i>Transition from Phase II to Extended Phase II was continuous; therefore, post-Phase II monitoring represented baseline monitoring for pre-Extended Phase II testing.</i>			
	Constant Rate Test	1 SVE Well (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate	Field Gauge Readings
		1 AS Well (on a regular basis)	Soil-Gas	Air Pressure/Flow Rate	Field Gauge Readings
		11 VMPs (on a regular basis)	Soil-Gas	Pressure (vacuum or air)	Field Gauge Readings
			Groundwater	Depth to Water/DO	Field Instruments
		1 SVE Well, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors Site Target Compounds	Field Instrument MicroSeeps
		SVE/AS System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Air Pressure (compressor)/Flow Rates/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		Select VMPs and/or Nearby Monitoring Wells	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments
		1 GMP and Nearby Monitoring Wells (on a regular basis)	Groundwater	Depth to Water/DO	Field Instruments
	Post-Extended Phase II Monitoring	1 SVE Well and 11 VMPs	Soil-Gas	Site Target Compounds Vacuum Pressure	MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells	Groundwater	Depth to Water	Field Instrument
		1 GMP and 11 VMPs			
		3 Monitoring Wells (MW-2, MW-3, MW-7)	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments
		4 Deep VMPs (if water is present)			

304901

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

AST Area	Baseline Monitoring (pre-Extended Phase II)	<i>Transition from Phase II to Extended Phase II was continuous; therefore, post-Phase II monitoring represented baseline monitoring for pre-Extended Phase II testing.</i>			
	Constant Rate Test	6 SVE Wells (on a regular basis)	Soil-Gas	Vacuum Pressure/Flow Rate	Field Gauge Readings
		1 AS Well (on a regular basis)	Soil-Gas	Air Pressure/Flow Rate	Field Gauge Readings
		11 VMPs (on a regular basis)	Soil-Gas	Pressure (vacuum or air)	Field Gauge Readings
			Groundwater	Depth to Water/DO	Field Instruments
		6 SVE Wells, VMPs, System Intake, Exhaust Manifold, Downwind of System (on a regular basis)	Soil-Gas	Organic Vapors TEX/Site Target Compounds	Field Instrument PhotoVac/MicroSeeps
		SVE/AS System - Trailer (on a regular basis)	Various	Vacuum Pressure (intake/exhaust)/Air Pressure (compressor)/Flow Rates/Exhaust Temperature/Weather Conditions	Field Gauge Readings/Weather Station
		Select VMPs and/or Nearby Monitoring Wells	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kit/Field Instruments
		1 GMP and Nearby Monitoring Wells (on a regular basis)	Groundwater	Depth to Water/DO	Field Instruments
	Post-Phase II Monitoring	1 SVE Well and 11 VMPs	Soil-Gas	TEX/Site Target Compounds (confirmation) Vacuum Pressure	PhotoVac/MicroSeeps Field Gauge Readings
		All On-Site Monitoring/Production Wells	Groundwater	Depth to Water	Field Instrument
		1 GMP and 11 VMPs			
		4 Monitoring Wells (MW-1, MW-6, MW-8, MW-10)	Groundwater	Site Target Compounds/CO ₂ /Field Parameters	Pace/Field Test Kits/Field Instruments
		4 Deep VMPs			

304902

September 2000

Table 2
System Testing Field Sampling Summary
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

003-6016

Notes:

Site Target Compounds: acetone, methylene chloride, chloroform, toluene, ethylbenzene, and total xylenes

Field Parameters: temperature, pH, conductivity, dissolved oxygen (DO), oxidation/reduction potential, and turbidity

TEN: toluene, ethylbenzene, and total xylenes

SVE: soil vapor extraction

AS: air sparging

AST: aboveground storage tank

FPP: former process pit

VMP: vapor monitoring point

CO₂: carbon dioxide

Automatic water level monitoring devices (Telogs or equivalent) were placed in monitoring wells MW-6 and MW-8 at the beginning of Phase I testing.

304903

Table 3
Comparison of Calculated and Measured SVE Flow Rates
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Test	Area	(1)	Measured Velocity fpm	Calculated Flow Rate cfm	Calculated Total Flow Rate cfm	Measured System Flow Rate scfm
Phase I Step	AST	average	730	15.9		
	FPP	average	170	3.7	19.6	135-150
	AST	max	1100	24.0		
	FPP	max	180	3.9	27.9	135-150
Phase I Constant	AST	average	2000	43.6		
	FPP	average	533	11.6	55.3	90-95
	AST	max	2000	43.6		
	FPP	max	900	19.6	63.3	90-95
Phase II	AST	average	6000	130.9		
	FPP	average	977	21.3	152.2	126-135
	AST	max	6000	130.9		
	FPP	max	4000	87.3	218.2	126-135
Phase II Extended	AST	average of 6 wells	268	35.1		
	FPP	average	1064	23.2	58.3	95-168
	AST	avg of max of 6 wells	533	69.8		
	FPP	max	6000	130.9	200.7	95-168

Notes:

(1) column denotes average of all data in test, or maximum reading.

fpm = feet per minute; cfm = cubic feet per minute; scfm = standard cfm

304904

Table 4
Phase I Step Test Results
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00	21-Mar-00
Time:	1248	1442	1500	1537	1550	1619	1645	1706	1725	1745	1810	1832	1857	1916	1933	2022	2100	2145
Stage:	Step 1	Step 1	Step 1	Step 1	Step 1	Step 2	Step 2	Step 2	Step 2	Step 2	Step 2	Step 2	Step 3	Step 3	Step 3	Step 3	Step 3	Step 3
AST Area (inches H₂O)																		
AST-SVE-1	0	20	20	20	20	40	40	40	40	40	40	67	66	66	65	64	64	64
AST-VMP-1I	0	0.2	0.2	0.2	0.02	0.35	0.4	0.4	0.4	0.4	0.4	0.55	0.55	0.5	0.5	0.5	0.5	0.5
AST-VMP-1D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0275	0.03	0.01
AST-VMP-2S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-VMP-2I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.055	0.05	0.05
AST-VMP-2D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-VMP-3S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-VMP-3I	0	0	0.005	0	0	0.01	0.01	0.01	0.15	0.01	0.01	0.015	0.015	0.015	0.0125	0.015	0.15	0.015
AST-VMP-3D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-VMP-4S	0	0.005	0.01	0.01	0.01	0.01	0.01	0	0.01	0.01	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
AST-VMP-4I	0	0	0	0	0.005	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-VMP-4D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-SVE-2	0	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.025	0.025	0.02	0.03	0.0325	0.0275	0.03	0.0325	0.03	0.03
AST-SVE-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-SVE-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AST-GMP-1 (feet)	14.47	14.48	14.48	14.51	14.5	14.44	14.46	14.4	14.43	14.42	14.4	14.34	14.37	14.37	14.31	14.28	14.27	14.27
FPP Area (inches H₂O)																		
FPP-SVE-1	0	20	20	20	20	40	40	40	40	40	40	68	66	66	66	66	64	64
FPP-VMP-1I	0	0	0.005	0.005	0.005	0.02	0.15	0.15	0.15	0.15	0.01	0.0275	0.0275	0.0275	0.0275	0.0275	0.0275	0.0275
FPP-VMP-1D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-2S	0	0	0	0.005	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-2I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-2D	0	0	0	0	0	0.01	0.05	0.23	0.05	0.02	0.005	0.0075	0.0125	0.01	0.0025	0.0125	0.005	0
FPP-VMP-3S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-3I	0	0	0	0	0.005	0	0	0.005	0.02	0	0.005	0.01	0.0075	0.005	0.0075	0.0025	0.0025	0.0025
FPP-VMP-3D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-4S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-4I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-VMP-4D	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FPP-GMP-1 (feet)	15.16	15.14	15.13	15.13	15.13	15.14	15.13	15.17	15.17	15.14	15.17	15.17	15.17	15.16	15.15	15.17	15.15	15.17
SVE System																		
Ambient Temp. (degrees F)	80	--	89	--	91	86	--	86	--	87	78	--	77	--	71	--	74	--
Wind Speed (mph)	2	--	1	--	6	7	--	3	--	2	3	--	2	--	0	--	1	--
Wind Direction	N	--	NW	--	SE	SE	--	N	--	NW-W	N-NE	--	N-NW	--	--	--	W	--
Humidity (%)	52	--	56	--	57	55	--	58	--	59	58	--	61	--	67	--	71	--
Bar. Pressure (inches)	29.93	--	29.89	--	29.89	29.89	--	29.89	--	29.9	29.9	--	29.9	--	29.91	--	29.93	--
Air Flow (SCFM)	0	--	152	--	152	135	--	136	--	136	136	--	95	--	100	--	100	--
Velocity @ AST-SVE-1 (fpm)	--	--	360	--	--	--	--	1100	--	--	--	--	--	--	--	--	--	--
Velocity @ FPP-SVE-1 (fpm)	--	--	160	--	--	--	--	180	--	--	--	--	--	--	--	--	--	--
System Vacuum 1 (" Hg)	0	--	1.5	--	1.5	3	--	3	--	3	3	--	4.9	--	4.9	--	4.8	--
System Vacuum 2 (" Hg)	0	--	2.1	--	2.1	3.5	--	3.5	--	3.5	3.5	--	5.2	--	5.2	--	5.1	--
Exhaust Temp. (degrees F)	80	--	130	--	130	145	--	150	--	150	145	--	185	--	182	--	178	--
OVM Downgrad. (ppm)	0	--	--	--	--	--	--	2.4	--	--	--	--	--	--	--	--	--	--

304905

Table 5
Phase I Constant Rate Test Results
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

	23-Mar-00																24-Mar-00								25-Mar-00								26-Mar-00	
Date:																																		
Time:	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	0130	0430	0630	0830	1030	1230	1430	1630	1830	0730	0930	1130	1330	1530	1730	1840	0730	
AST Area - Vacuum (inches H2O)																																		
AST-SVE-1	67	64	68	64	60	62	58	60	59	59	54	50	45	42	40	40	35	35	34	32	31	30	30	30	30	28	29	29	28	28	28	26	25	
AST-SVE-2	0.045	0.045	0.055	0.05	0.035	0.038	0.033	0.045	0.04	0.03	0.04	0.45	0.05	0.05	0.045	0.047	0.042	0.047	0.058	0.05	0.1	0.05	0.05	0.06	0.065	0.095	0.093	0.1	0.08	0.1	0.11	0.11	0.125	
AST-SVE-3	<0	<0	PL	<0	PL	PL	<0	<0	<0	<0	PL	PL	PL	PL	PL	PL	PL	PL	PL	<0	PL	PL	PL	<0	PL	<0	<0	<0	PL	<0	<0	PL	PL	
AST-SVE-4	<0	<0	0	<0	PL	PL	<0	<0	<0	PL	<0	<0	PL	PL	PL	PL	PL	PL	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0		
AST-VMP-II	0.8	0.8	0.925	0.8	0.8	0.45	0.45	0.5	0.5	0.45	0.55	0.8	0.83	0.85	0.85	0.87	0.83	0.82	0.85	0.9	0.9	0.9	0.9	0.95	0.975	1.25	1.35	1.35	1.3	1.27	1.33	1.33	1.45	
AST-VMP-1D	0	0.013	0.013	PH	0.1	1.35	0	<0	PL	PL	<0	1.255	0.1	0	0	0	<0	0	0.05	0.075	0.15	0	<0	0.05	0	0.005	0	<0	<0	0	0.05	0.05	PL	
AST-VMP-2S	<0	0	0	<0	0	<0	0	0	<0	0	0	0	<0	0	0	0	0	<0	<0	0	<0	<0	<0	0	<0	<0	0	0	0	0	0	<0		
AST-VMP-2I	0.125	0.135	0.16	0.15	0.195	0.23	0.125	0.135	0.135	0.13	0.125	0.24	0.235	0.245	0.245	0.26	0.245	0.246	PH	0.26	0.27	0.32	0.32	0.32	0.3	0.48	0.5	0.48	0.48	0.49	0.5	0.5	0.6	
AST-VMP-2D	<0	<0	0	0.015	0	0.02	<0	0	PL	PL	<0	<0	PL	PL	PL	PL	PL	PL	<0	<0	0	PL	PL	<0	PL	<0	<0	<0	<0	<0	<0	PL	PL	
AST-VMP-3S	0	0.03	0.02	0.02	0.01	0	0	0	0	0	0	0.03	0.015	0.02	0.02	0.02	<0	<0	<0	0	<0	<0	<0	0	<0	<0	0	0	0	0	0	<0		
AST-VMP-3I	0.03	0.028	0.033	0.03	0.03	0.02	0.025	0.025	0.02	0.02	0.02	0.015	0.01	0.015	0.015	0.015	0.01	0.013	0.02	0.02	0.025	0.025	0.015	0.025	0.025	0.045	0.055	0.045	0.05	0.045	0.055	0.05	0.06	
AST-VMP-3D	0.035	0.033	0.035	0.035	0.035	0.03	0.04	0.035	0.03	0.03	0.03	0.025	0.028	0.025	0.025	0.025	0.025	0.025	0.028	0.028	0.025	0.025	0.025	0.028	0.025	0.025	0.025	0.025	0	<0	0	0		
AST-VMP-4S	PL	0.005	0.005	0.01	0.01	<0	0	0.005	0.005	0	0.003	PL	PL	0.01	0.01	0.015	0.01	0.015	0.02	0.015	0.02	0.015	0.015	0.02	0.023	0.03	0.04	0.04	0.035	0.035	0.04	0.04	0.04	
AST-VMP-4I	0.0025	0.005	0	0.01	0.005	0	<0	<0	0	0	0	<0	<0	0.01	0.01	0.01	0.007	0.01	0.013	0.015	0.02	0.01	0.015	0.02	0.015	0.02	0.025	0.025	0.02	0.03	0.025	0.025	0.025	
AST-VMP-4D	<0	<0	0	0.01	0.005	PL	<0	0.005	<0	0.003	0.008	<0	PL	PL	PL	PL	PL	PL	<0	PL	<0	PL	PL	<0	PL	PL	<0	<0	PL	PL	<0	PL	PL	
AST-GMP-1 (feet)	14.5	14.56	14.57	14.62	14.67	14.71	14.72	14.79	14.68	14.56	14.56	14.52	14.45	14.45	14.45	14.47	14.35	14.31	14.31	14.38	14.44	14.51	14.56	14.6	14.57	14.67	14.7	14.71	14.71	14.69	14.7	14.7	14.7	
FPP Area (inches H2O)																																		
FPP-SVE-1	66	--	66	63	64	61	59	62	61	58	56	50	48	46	42	42	39	37	36	36	35	35	35	34	33	32	32	32	32	32	32	30		
FPP-VMP-II	0.025	0.033	0.035	0.03	0.04	0.03	0.033	0.035	0.038	0.03	0.028	0.04	0.038	0.035	0.03	0.03	0.022	0.022	0.02	0.02	0.045	0.09	0.09	0.05	0.02	0.165	0.145	0.025	0.025	0.015	0.025	0.027	0.017	
FPP-VMP-1D	PL	<0	<0	<0	<0	PL	PL	<0	<0	<0	<0	<0	<0	PL	PL	PL	PL	PL	PL	<0	PL	<0	<0	<0	<0	<0	<0	0	PL	<0	<0	<0	0.015	
FPP-VMP-2S	<0	0	0	0	<0	<0	<0	0	<0	<0	<0	<0	<0	<0	<0	PL	<0	PL	<0	<0	<0	<0	<0	<0	<0	<0	<0	0.003	<0	<0	<0	<0	<0	
FPP-VMP-2I	<0	0	0	0	0	<0	<0	0	<0	<0	<0	<0	<0	<0	<0	PL	PL	<0	<0	<0	<0	<0	<0	<0	<0	<0	0.003	0	<0	<0	<0	<0		
FPP-VMP-2D	<0	PL	PL	<0	<0	PH	PL	<0	0	0.005	0.005	0.13	0.033	0.035	0.055	0.05	PL	0	0.083	0.045	0.225	0.125	PL	0.035	0.105	PH	0	PL	<0	PL	0.15	0.16	0.12	
FPP-VMP-3S	<0	<0	<0	<0	PL	<0	<0	<0	<0	<0	PL	0	0	0	0	0	PL	PL	PL	<0	<0	<0	PL	<0	<0	<0	<0	<0	<0	PL	PL	PL	PL	
FPP-VMP-3I	0.01	0.15	0.01	0	0.005	<0	<0	<0	<0	PL	<0	<0	<0	<0	PL	PL	PL	PL	PL	PL	<0	PL	PL	<0	PL	<0	<0	<0	PL	PL	PL	PL	<0	
FPP-VMP-3D	<0	0	<0	0	<0	<0	<0	0	0	<0	<0	<0	PL	<0	PL	<0	<0	PL	<0	<0	<0	<0	<0	0	<0	<0	0.003	<0	<0	<0	<0	<0		
FPP-VMP-4S	0	0.005	<0	0	0	0	0	0	0	<0	<0	0	0	<0	0	0	<0	<0	<0	0	<0	<0	<0	<0	<0	0	0	0.003	0	0	0	<0	<0	
FPP-VMP-4I	<0	<0	<0	PL	PL	PL	PL	<0	PL	PL	PL	PL	PL	PL	PL	PL	PL	PL	PL	<0	PL	PL	PL	PL	PL	<0	<0	<0	PL	PL	PL	PL	PL	
FPP-VMP-4D	<0	<0	<0	<0	<0	<0	<0	0	0	PL	PL	PL	PL	PL	PL	PL	PL	PL	PL	<0	PL	PL	PL	PL	PL	PL	<0	<0	<0	<0	<0	PL	PL	
FPP-GMP-1 (feet)	15.17	15.19	15.19	15.18	15.17	15.17	15.18	15.2	15.17	15.17	15.18	15.19	15.2	15.17	15.21	15.2	15.2	15.2	15.19	15.2	15.19	15.19	15.19	15.19	15.19	15.2	15.2	15.2	15.21	15.19	15.2	15.21	15.22	
SVE System																																		
Air Flow (SCFM)	90	95	95	95	95	95	101	99	95	98	99	108	118	122	127	127	122	127	127	127	128	126	126	126	126	134	135	134	135	135	135	135	135	
Velocity @ AST-SVE-1 (fpm)	2000	2000	2000	2500	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Velocity @ FPP-SVE-1 (fpm)	300	900	400	50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Velocity @ INTAKE (fpm)	2750	2800	2000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Velocity @ EXHAUST (fpm)	3250	4000	3750	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
PID @ AST-SVE-1 (ppm)	--	212	--	--	24	--	--	52	10	--	--	--	--	--	--	--	--	--	--	--	--	128	--	123	128	--	--	219	237	--	203	--	--	
PID @ FPP-SVE-1 (ppm)	--	9	--	--	4	--	--	4	6	--	--	--	--	--	--	--	--	--	--	--	5	--	8	6	--	--	12	14	--	8	--	--	--	
PID @ INTAKE (ppm)	--	256	--	--	232	--	--	181	159	--	--	--	--	--	--	--	--	--	--	--	--	135	--	97	97	--	--	264	252	--	136	--	--	--
PID @ EXHAUST (ppm)	--	175	--	--</																														

Table 6a
Phase I Constant Rate Test
Soil-Gas Analytical Laboratory Results
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Client ID:	FPP-SVE-1	FPP-SVE-1	FPP-SVE-1	FPP-SVE-1	FPP-SVE-1	FPP-SVE-1	FPP-SVE-1	FPP-SVE-1	FPP-VMP-11	FPP-VMP-11
Testing Period/Time:	Phase I/1210	(duplicate)	Phase I/1814	Phase I/0648	Phase I/1741	Phase I/0748	Phase I/1742	(duplicate)	Phase I/1215	Phase I/1819
Lab ID	B26 376	B26 377	B26 387	B26 395	W97 97	W97 101	W97 105	W97 106	B26 378	B26 388
Date Sampled:	23-Mar-00	23-Mar-00	23-Mar-00	24-Mar-00	24-Mar-00	25-Mar-00	25-Mar-00	25-Mar-00	23-Mar-00	23-Mar-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	5.516	6.91	13.112	26.321	5.85	16.69	9.98	10.17	2.313	0.432
Ethylbenzene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Methylene chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	0.8	0.45	0.48	0.33	0.19	0.12	0.22	0.12	0.23	0.16
m&p-Xylene	0.18	0.15	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
o-Xylene	0.09	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07

Client ID:	AST-SVE-1	AST-SVE-1	AST-SVE-1	AST-SVE-1	AST-SVE-1	AST-SVE-1	AST-SVE-1
Testing Period/Time:	Phase I/1230	Phase I/1800	Phase I/0635	Phase I/1733	(duplicate) *	Phase I/0739	Phase I/1749
Lab ID	B26 372	B26 391	B26 394	W97 95	W97 96	W97 100	W97 107
Date Sampled:	23-Mar-00	23-Mar-00	24-Mar-00	24-Mar-00	24-Mar-00	25-Mar-00	25-Mar-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<4	<2	<2
Chloroform	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
Ethylbenzene	12.73	3.69	3.58	1.98	2.02	2.58	6.94
Methylene chloride	<2	<2	<2	<2	<4	<2	<2
Toluene	5.9	2.51	2.11	1.36	1.17	2.19	3.58
m&p-Xylene	48.79	12.52	12.35	6.31	6.74	8.44	26.14
o-Xylene	5.64	1.55	1.59	0.82	0.89	1.07	3.16

304907

Table 6a
Phase I Constant Rate Test
Soil-Gas Analytical Laboratory Results
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Client ID:	AST-VMP-11	AST-VMP-11	AST-VMP-21	AST-VMP-21	AST-VMP-31	AST-VMP-41
Testing Period/Time:	Phase I/1233	Phase I/1749	Phase I/1239	Phase I/1756	Phase I/1243	Phase I/1248
Lab ID	B26 373	B26 392	B26 381	B26 393	B26 374	B26 375
Date Sampled:	23-Mar-00	23-Mar-00	23-Mar-00	23-Mar-00	23-Mar-00	23-Mar-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2
Chloroform	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.1	0.13	0.1	<0.07	<0.07	<0.07
Methylene chloride	<2	<2	<2	<2	<2	<2
Toluene	0.17	0.2	0.23	0.17	0.23	0.25
m&p-Xylene	0.39	0.52	0.45	<0.07	0.98	<0.07
o-Xylene	<0.07	<0.07	0.08	<0.07	0.11	<0.07

*: Sample vial received with less than 3 psi positive pressure. Vial was repressurized with nitrogen, resulting in a dilution of 2.

Client ID:	INTAKE	INTAKE	INTAKE	INTAKE	INTAKE	INTAKE
Testing Period/Time:	Phase I/1255	Phase I/1842	Phase I/0654	Phase I/1800	Phase I/0756	Phase I/1807
Lab ID	B26 379	B26 389	B26 396	W97 99	W97 103	W97 109
Date Sampled:	23-Mar-00	23-Mar-00	24-Mar-00	24-Mar-00	25-Mar-00	25-Mar-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2
Chloroform	0.244	0.162	0.107	0.091	0.036	0.079
Ethylbenzene	13.02	3.53	2.84	2.29	2.93	5.94
Methylene chloride	<2	<2	<2	<2	<2	<2
Toluene	5.83	2.68	2.06	1.64	2.06	3.24
m&p-Xylene	49.67	11.58	9.04	7.43	9.46	21.57
o-Xylene	5.72	1.42	1.16	0.98	1.2	2.68

Client ID:	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	EXHAUST	DOWNGRAD	DOWNGRAD
Testing Period/Time:	Phase I/1257	Phase I/1845	Phase I/0657	Phase I/1756	Phase I/0753	Phase I/1810	Phase I/0655	Phase I/0800
Lab ID	B26 380	B26 390	B26 397	W97 98	W97 102	W97 110	B26 398	W97 104
Date Sampled:	23-Mar-00	23-Mar-00	24-Mar-00	24-Mar-00	25-Mar-00	25-Mar-00	24-Mar-00	25-Mar-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	0.144	0.158	0.103	0.083	0.034	0.072	<0.005	<0.005
Ethylbenzene	4.49	5.32	6.1	2.26	2.93	4.13	<0.07	<0.07
Methylene chloride	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	2.78	2.88	2.81	1.49	1.93	2.53	0.34	0.09
m&p-Xylene	15.28	18.93	22.81	7.43	9.64	14.54	<0.07	<0.07
o-Xylene	1.85	2.34	2.74	0.98	1.23	1.85	<0.07	<0.07

304908

Table 6b
Phase I Constant Rate Test
Mass Removal Calculations
Virgin Islands Chemical Site
St. Croix, U.S. Virgin Islands

Sample Port	Sample Date Time	Compound	Molecular Weight	Concentration [ppmv] (1)	Concentration [ug/L]	Flow Rate [ft3/min]	Pressure [in. H ₂ O]	Mass Removal Rate [lb/day]	Time from start of test [hours]	Time Over Interval [hours]	Mass Removed Over Interval [lb]	Cumulative Mass Removed [lb]
Start of Test	3/23/00 0730								0			
Intake	3/23/00 1255	Ethylbenzene	106.2	13.02	57.52	95	-62	0.42	5.5	8.4	0.14	0.14
		m&p-Xylene	106.2	49.67	219.42	95	-62	1.59	5.5	8.4	0.55	0.55
		o-Xylene	106.2	5.72	25.27	95	-62	0.18	5.5	8.4	0.06	0.06
		Chloroform	119.35	0.244	1.21	95	-62	0.009	5.5	8.4	0.003	0.003
Intake	3/23/00 1842	Ethylbenzene	106.2	3.53	15.59	108	-50	0.13	11.2	9.0	0.05	0.19
		m&p-Xylene	106.2	11.58	51.16	108	-50	0.43	11.2	9.0	0.16	0.71
		o-Xylene	106.2	1.42	6.27	108	-50	0.05	11.2	9.0	0.02	0.08
		Chloroform	119.35	0.162	0.80	108	-50	0.007	11.2	9.0	0.003	0.006
Intake	3/24/00 654	Ethylbenzene	106.2	2.84	12.55	127	-34	0.13	23.5	11.7	0.06	0.26
		m&p-Xylene	106.2	9.04	39.94	127	-34	0.42	23.5	11.7	0.20	0.92
		o-Xylene	106.2	1.16	5.12	127	-34	0.05	23.5	11.7	0.03	0.11
		Chloroform	119.35	0.107	0.53	127	-34	0.006	23.5	11.7	0.003	0.008
Intake	3/24/00 1800	Ethylbenzene	106.2	2.29	10.12	126	-30	0.11	34.5	12.5	0.06	0.31
		m&p-Xylene	106.2	7.43	32.82	126	-30	0.34	34.5	12.5	0.18	1.10
		o-Xylene	106.2	0.98	4.33	126	-30	0.05	34.5	12.5	0.02	0.13
		Chloroform	119.35	0.091	0.45	126	-30	0.005	34.5	12.5	0.002	0.011
Intake	3/25/00 756	Ethylbenzene	106.2	2.93	12.94	134	-28	0.14	48.5	12.0	0.07	0.39
		m&p-Xylene	106.2	9.46	41.79	134	-28	0.47	48.5	12.0	0.23	1.33
		o-Xylene	106.2	1.2	5.30	134	-28	0.06	48.5	12.0	0.03	0.16
		Chloroform	119.35	0.036	0.18	134	-28	0.002	48.5	12.0	0.001	0.012
Intake	3/25/00 1807	Ethylbenzene	106.2	5.94	26.24	135	-26	0.30	58.5	18.5	0.23	0.61
		m&p-Xylene	106.2	21.57	95.29	135	-26	1.08	58.5	18.5	0.83	2.16
		o-Xylene	106.2	2.68	11.84	135	-26	0.13	58.5	18.5	0.10	0.27
		Chloroform	119.35	0.079	0.39	135	-26	0.004	58.5	18.5	0.003	0.015
End of Test	3/26/00 0730								72		Grand Total:	3.06

Notes:

- (1) Concentration data from Microseeps Lab analyses
(2) Negative pressure indicates vacuum

304909

September 2000

Table 7
Analytical Determination of Well Efficiency,
Radius of Influence (ROI), and Air Permeability
Intermediate VMPs
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

TEST	Time of Readings	Area	Barometric Pressure, in Hg	r1 ID	r1, ft	r2 ID	r2, ft	Predicted Pw, in w.c. gauge	Actual "Pw", in w.c. gauge	ROI, ft	k, cm2
SVE Only	3/25/00 9:30	AST	29.98	1I	5	2I	10	-6.4	-29	15	1.05e-6
	3/25/00 9:30	AST	29.98	2I	10	3I	20	-3.6	-29	22	2.05e-6
	3/23/00 14:30	FPP	29.83	1I	5	2I	10	-0.2	-62	10	4.69e-6
AS/SVE	4/16/00 7:30	AST	30.14	1I	5	2I	10	-19.3	-21	12	4.15e-7
	4/16/00 7:30	AST	30.14	2I	10	3I	20	-4.6	-21	22	1.98e-6
	4/15/00 15:05	FPP	30.13	1I	5	2I	10	-0.2	-28	10	2.18e-6

Notes:

ID = identification number

in w.c. = inches water column

ROI = radius of influence

See text for equations used in calculations

304910

Table 8
Phase II Step Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	05-Apr-00	06-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00
Time:	1630	1149	1200	1330	1500	1530	1600	1630	1745	1815	1900	1930
Stage:	Baseline		Step 1	Step 1	Step 2	Step 2	Step 2	Step 2	Step 3	Step 3	Step 3	Step 3
<i>AST Area - Pressure (inches H₂O)</i>												
AST-SVE-1	--	--	0.005	0.01	0.02	0	0.1	0.01	0.005	0.01	0.005	0.005
AST-SVE-2	--	--	0.04	0.04	0.04	0.035	0.035	0.035	0.055	0.075	0.09	0.1
AST-SVE-3	--	--	0.01	0.02	0	<0	PL	<0	PL	PL	PL	PL
AST-SVE-4	--	--	0.005	0.005	0	<0	<0	<0	<0	>0	PL	PL
AS-1 (psig)	--	--	45	45	58 (@1435)	--	55 (@1615)	54	--	64	64	63
AST-GMP-1 (feet)	--	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1I	--	--	0	0.075	0.075	0.075	0.22	0.075	0.05	0.05	0.05	0.1
AST-VMP-1D	--	--	0	0.05	0.075	0.075	0.21	0.05	0.05	0.05	0.05	0.025
AST-VMP-2S	--	--	0	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0
AST-VMP-2I	--	--	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.03	0.02	0.02
AST-VMP-2D	--	--	0	0	0.03	0.03	0.03	0.035	0.015	0.02	0.11	0.065
AST-VMP-3S	--	--	0	0.02	0	0	<0	0	0	0	0	0
AST-VMP-3I	--	--	0.005	0.005	0.015	0.015	0.01	0.015	<0	0	<0	<0
AST-VMP-3D	--	--	0.03	0.115	0.01	0.015	0.01	0.01	0.05	0.05	0.03	0.03
AST-VMP-4S	--	--	0.015	0	0.1	0.01	0.01	0.005	0	0.005	0	0.005
AST-VMP-4I	--	--	0.01	0.02	<0	0.005	0.005	0	0.01	0.01	0.01	0.075
AST-VMP-4D	--	--	0.01	0.06	0.03	0.02	0.015	0.015	0.035	0.035	0.03	0.03
Compressor (psig)	--	--	45	45	70 (@1435)	--	65 (@1615)	70	--	100	100	100
<i>Flow (SCFM)</i>												
AST-AS-1	--	--	0.9	0.8	2.0	--	2.6	2.7	--	4.2	4.0	3.9
<i>Weather Conditions</i>												
Temp. (degrees F)	100	95	94	97	--	--	--	85	--	80	--	--
Wind Speed (mph)	3	5	10	22	--	--	--	8	--	4	--	--
Wind Direction	SE	N-NE	E	E-SE	--	--	--	E	--	N	--	--
Humidity (%)	56	55	56	53	--	--	--	55	--	66	--	--
Bar. Pressure (inches)	29.97	30.06	30.06	30.03	--	--	--	30	--	30.02	--	--
Van Temperature (°F)	--	--	84	84	--	--	--	81	--	--	--	--
<i>Depth to Water (feet below TIC)</i>												
AST-VMP-1I	--	--	13.12	13.22	--	--	--	13.06	--	13.12	--	13.25
AST-VMP-1D	14.44	14.52	13.69	13.52	--	--	--	12.97	--	12.45	--	12.41
AST-VMP-2I	--	--	13.61	12.61	--	--	--	13.62	--	13.65	--	13.65
AST-VMP-2D	14.55	14.84	13.09	12.82	--	--	--	13.12	--	12.9	--	12.74
AST-VMP-3I	--	--	13.81	13.83	--	--	--	13.82	--	13.83	--	13.81
AST-VMP-3D	14.72	14.81	14.21	14.11	--	--	--	13.73	--	13.32	--	13.29
AST-VMP-4I	--	--	14.09	14.28	--	--	--	13.28	--	14.16	--	14.25
AST-VMP-4D	14.73	14.8	14.26	14.18	--	--	--	13.73	--	13.4	--	13.34
AST-GMP-1	15.07	15.24	14.64	14.45	--	--	--	13.81	--	13.47	--	13.27
SVE-1	13.4	13.55	13.57	13.5	--	--	--	13.33	--	13.32	--	13.31
MW-1	15.95	16.11	15.62	15.48	--	--	--	15.01	--	14.7	--	14.48
MW-6	16.41	16.58	16.55	16.51	--	--	--	16.48	--	16.47	--	16.47

Table 8
Phase II Step Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	05-Apr-00	06-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00	08-Apr-00
Time:	1630	1149	1200	1330	1500	1530	1600	1630	1745	1815	1900	1930
Stage:	Baseline		Step 1	Step 1	Step 2	Step 2	Step 2	Step 2	Step 3	Step 3	Step 3	Step 3
<i>Dissolved Oxygen (mg/L)</i>												
AST-VMP-1I	--	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1D	0.59	0.84	0.2	0.51	--	--	--	8.99	--	11.82	--	12.73
AST-VMP-2I	--	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-2D	1.15	0.86	0.27	0.91	--	--	--	15.75	--	>20	--	15.73
AST-VMP-3I	--	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-3D	1.38	1.22	0.21	0.98	--	--	--	1.74	--	2.01	--	1.6
AST-VMP-4I	--	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-4D	0.88	1.19	0.26	1.8	--	--	--	1.48	--	2.58	--	0.97
SVE-1	8.9	0.63	0.33	0.5	--	--	--	1.19	--	1.42	--	0.99
MW-1	1	0.52	0.27	2	--	--	--	3.86	--	6.05	--	9.85
MW-6	0.86	1.01	0.24	2.25	--	--	--	5.78	--	1.86	--	2.55
MW-8	--	--	--	--	--	--	--	--	--	--	--	--
MW-10	--	--	--	--	--	--	--	--	--	--	--	--
<i>OM Readings (ppmv)</i>												
AST-SVE-1	--	--	572	>1,000	--	--	--	175	--	>212	--	>212
AST-SVE-2	--	--	>1,000	???	--	--	--	7212	--	>212	--	>212
AST-SVE-3	--	--	7.4	22.6	--	--	--	22	--	19	--	17
AST-SVE-4	--	--	4.9	31.6	--	--	--	25	--	22.6	--	19
AST-SVE-5	--	--	--	--	--	--	--	--	--	--	--	--
AST-SVE-6	--	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1I	>440	1,002	>1,000	>1,000	--	--	--	>212	--	>212	--	>212
AST-VMP-1D	48.8	23	93.8	38	--	--	--	17	--	11.3	--	14
AST-VMP-2S	12.2	13.5	16.4	20.1	--	--	--	11	--	11	--	8.5
AST-VMP-2I	170	209.7	268	442	--	--	--	>212	--	>212	--	>212
AST-VMP-2D	8.1	11.8	26.6	17.3	--	--	--	>212	--	>212	--	>212
AST-VMP-3S	2.6	1.2	9.3	14.2	--	--	--	17	--	11	--	11
AST-VMP-3I	3	7.4	8	7.4	--	--	--	5	--	5	--	5
AST-VMP-3D	17.9	27.2	39.3	50	--	--	--	14.1	--	11.5	--	11
AST-VMP-4S	2.6	11.2	8.2	10.2	--	--	--	8	--	8.5	--	5.6
AST-VMP-4I	6.4	7.2	6.1	2.8	--	--	--	5	--	5.6	--	5.6
AST-VMP-4D	2	10.4	48.3	5.6	--	--	--	5	--	5.6	--	5.8

Notes:

PL = Pegged Low <0 = Slight positive pressure
 PH = Pegged High -- = Not Measured

Table 9
Phase II Step Test Results - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	03-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	04-Apr-00	05-Apr-00	05-Apr-00	05-Apr-00	05-Apr-00	05-Apr-00	05-Apr-00	05-Apr-00	07-Apr-00	07-Apr-00	07-Apr-00	07-Apr-00	07-Apr-00	07-Apr-00
Time:	1150	0900/0930	1000/1015	1100/1115	1200/1215	1300/1315	1400/1415	1500/1515	1600/1615	1700/1715	1800/1815	1900/1915	2000/2015	2100/2115	2200/2215	0730/0745	0830/0845	0930/0945	1030/1045	1130/1145	1230/1245	1330/1345	0830	0930	1030	1130	1250	1300	
Stage:	Baseline	Step 1	Step 1	Step 1	Step 1	Step 2	Step 2	Step 2	Step 2	Step 2	Step 3	Step 3	Step 3	Step 3	Step 3	Step 4	Step 4	Step 4	Step 4	Step 4	Step 4	Step 4	Step 5	Step 5	Step 5	Step 5	Step 5	Step 5	
Pressure (inches H2O)																													
FPP-AS-1 (psi)	--	22	19.5	17	17	19	18	17	17	16	21	20	20	20	20	23	22	22	21	21	21	21	25	29	29	27	28	--	
FPP-VMP-1I	--	0	0.015	0.015	0.01	0.0125	0.015	0.015	0.015	0	0	0	0	0	0	0.005	0.005	<0	0.005	0.0025	0.0025	0.01	0	0.0025	0.01	0	0.015	--	
FPP-VMP-1D	--	0.01	<0	0	PL	PL	<0	0.005	PL	0	PL	0	0.005	0	<0	0	0.005	0.005	0.01	0.01	0.01	0.005	0	0.015	<0	0	0.04	--	
FPP-VMP-2S	--	0.01	0.01	0.01	0.01	0.0075	0.01	0.01	0.01	0.0025	<0	<0	<0	<0	<0	0	0	0	0	0.005	0.005	0.005	0	0	0	0.015	0.01	--	
FPP-VMP-2I	--	<0	PL	PL	<0	<0	0	<0	<0	<0	PL	<0	PL	<0	<0	<0	0	0	0	0.01	0.01	0.01	0.005	0.0075	0.01	0.01	0.005	--	
FPP-VMP-2D	--	0	<0	<0	<0	<0	<0	0	<0	0	0	0.13	0	<0	<0	<0	0	0	<0	0	0	0	0	0	0	0	0	--	
FPP-VMP-3S	--	0	0.005	0.01	0.01	0.01	0	0	<0	0.005	0.005	0.0025	0.005	0	0.0025	0.005	0.01	0.015	0.01	0.02	0.005	0.01	0	0.0025	0	0.01	0.005	--	
FPP-VMP-3I	--	<0	<0	0.01	0	0	0.005	<0	<0	<0	PL	<0	<0	<0	<0	<0	0	0.005	0.0075	0.0175	0.005	0.02	PL	0.01	0.005	0.02	0.015	--	
FPP-VMP-3D	--	<0	PL	<0	0.005	<0	0	<0	<0	0	<0	PL	<0	<0	PL	<0	<0	0	<0	0.005	0	<0	PL	<0	0.005	0	0.005	--	
FPP-VMP-4S	--	0	0.0025	0.005	0	0.0025	0.005	0.005	0	0	0	0	<0	0	<0	0	0.005	0.005	0.005	0.01	0.01	0.01	0.0075	0.01	0.005	0.005	0.01	--	
FPP-VMP-4I	--	<0	0	0.015	<0	<0	0.01	0	<0	<0	<0	<0	<0	PL	<0	<0	0.01	0.005	0.0075	0.0175	0.015	0.02	0	PL	0.075	0	0.01	--	
FPP-VMP-4D	--	<0	0.06	0.01	0.005	<0	0.005	<0	PL	<0	PL	<0	<0	PL	PL	0.005	0	0.015	<0	0.02	0.02	0.03	0.04	--	--	<0	0.005	0	--
FPP-SVE-1	--	0	--	PL	PL	PL	PL	PL	PL	0.0025	<0	0	<0	<0	<0	0	0.015	<0	0.02	0.02	0.03	0.04	--	--	<0	0	0.105	--	
Flow (SCFM)																													
FPP-AS-1	--	0.6	0.65	0.65	0.65	1.25	1.25	1.25	1.25	1.25	2.5	2.5	2.5	2.5	2.55	4.5	4.5	4.5	4.5	4.3	4.5	4.4	5	7.2	7.2	7.2	7.3	--	
Weather Conditions																													
Temp. (degrees F)	92	90	93	96	98	97	99	99	95	--	93	80	--	--	--	84	--	100	--	--	--	105	91	--	91	103	99	--	
Wind Speed (mph)	5	6	8	4	6	8	8	6	5	--	3	4	--	--	--	5	--	5	--	--	--	4	8	--	7	7	8	--	
Wind Direction	NW	E	S-SE	SE	SE	SE	SE	SE	SE	--	E-SE	SE	--	--	--	SE	--	S-SE	--	--	--	SE	E	--	E-SE	E	SE	--	
Humidity (%)	68	62	59	58	56	48	49	51	51	--	50	55	--	--	--	72	--	60	--	--	--	59	66	--	63	58	60	--	
Bar. Pressure (inches)	29.89	30	30.01	30.01	30	29.96	29.96	29.93	29.93	--	29.95	29.96	--	--	--	29.99	--	30.02	--	--	--	29.99	30.08	--	30.08	30.07	30.06	--	
Depth to Water (feet)																													
FPP-VMP-1D	14.97	15.09	15.08	15.07	15.13	15.11	15.09	15.08	15.08	15.09	15.12	15.11	15.11	15.11	15.12	15.12	15.12	15.12	15.12	15.12	15.12	15.09	15.14	15.15	--	15.18	15.18	15.19	
FPP-VMP-2D	15.01	15.09	15.12	15.15	15.24	15.24	15.25	15.28	15.29	15.29	15.3	15.32	15.31	15.31	15.32	15.25	15.28	15.3	15.31	15.32	15.32	15.34	15.3	15.31	--	15.33	15.35	15.29	
FPP-VMP-3D	15.18	15.3	15.3	15.29	15.27	15.25	15.23	15.24	15.23	15.24	15.27	15.29	15.29	15.29	15.31	15.3	15.31	15.3	15.3	15.29	15.29	15.26	15.31	15.32	--	15.35	15.33	15.35	
FPP-VMP-4D	16.51	15.6	15.54	16.54	16.59	16.57	16.56	16.56	16.56	16.56	16.59	16.61	16.6	16.61	16.63	16.59	16.63	16.63	16.64	16.63	16.63	16.45	16.5	16.57	--	16.7	16.7	16.69	
FPP-GMP-1	15.47	15.48	15.48	15.49	15.49	15.54	15.54	15.54	15.55	15.56	15.56	15.56	15.56	15.57	15.56	15.58	15.57	15.57	15.52	15.59	15.59	15.58	15.68	15.68	--	15.7	15.74	15.61	
FPP-SVE-1	15.63	15.63	15.65	15.65	15.61	15.65	15.64	15.64	15.83	15.67	15.63	15.62	15.61	15.62	15.61	15.61	15.57	15.53	15.53	15.51	15.51	15.44	15.43	15.43	--	15.38	15.41	15.6	
MW-2	17.26	17.37	17.37	17.36	17.4	17.39	17.36	17.36	17.36	17.37	17.41	17.4	17.43	17.4	17.42	17.41	17.44	17.42	17.42	17.42	17.42	17.37	17.43	17.44	--	17.49	17.45	17.49	
Dissolved Oxygen (mg/L)																													
FPP-VMP-1D	1.68	0.69	1.34	1.5	1.06	1.21	1.1	2.02	0.87	0.94	1.14	1.25	0.9	1.19	0.92	1.66	1.66	1.31	1.39	1.5	1.65	3.08	0.38	3.2	--	0.48	1.29	0.65	
FPP-VMP-2D	1.22	1.47	1.35	2.2	1.69	2	2.42	2.39	2.61	2.97	2.99	2.9	2.62	3.03	3.02	3.75	3.1	3.69	3.85	3.2	4.22	4.58	1.87	3.1	--	2.1	6.78	2.42	
FPP-VMP-3D	1.77	1.39	1.15	0.96	0.83	1.01	1.39	0.82	0.95	1.08	1.18	1.8	1.25	1.56	0.8	0.98	1.33	1.6	1.88	1.93	1.46	1.77	0.83	1.15	--	1.28	2.9	1.11	
FPP-VMP-4D	2.28	2.05	1.84	1.81	1.54	1.86	1.81	1.81	2.26	2.12	2.84	2.18	1.92	2.63	2.43	1.73	2.64	3.02	2.91	2.49	1.95	2.7	0.52	0.72	--	0.86	3.76	1.35	
FPP-SVE-1	1.08	0.63	0.66	1.13	0.82	0.92	1.3	0.95	0.88	0.91	1.04	0.94	0.93	0.83	1.01	1.08	1.3	2.38	1.98	3.04	1.66	1.84	4.31	7	--	1	1.2	0.81	
MW-2	1.37	1.22	1.49	1.03	0.82	0.77	0.84	1.25	0.82	0.82	0.87	1.19	0.96	0.89	0.79	0.89	0.8	0.9	1.53	1.01	0.86	1.14	0.34	0.61	--	0.55	1.6	0.7	
OVM Readings (ppm)																													
FPP-VMP-1I	6.6	4	--	3.4	--	1	--	1.8	--	1	1	--	2	--	--	3	--	5.7	--	3	--	1	3	--	--	1.4	3.5	1.2	
FPP-VMP-1D	3.5	2	--	3.2	--	1	--	1	--	1	2	--	1	--	--	2	--	2	--	1	--	3	8.3	--	--	1.9	2.1	5.2	
FPP-VMP-2S	4.5	0	--	2.5	--	0	--	1	--	1	2	--	0	--	--	3	--	4.3	--	0	--	1	2	--	--	0.3	0.5	3.2	
FPP-VMP-2I	1.5	2	--	2	--	0	--	1	--	1	1	--	1	--	--	2	--	3	--	1.5	--	2	2.3	--	--	0.7	0.7	5.3	
FPP-VMP-2D	4.5	3	--	2.2	--	1	--	2	--	2	1	--	1	--	--	3	--	4.5	--	1.4	--	2	4.8	--	--	1.4	3.2	7.1	
FPP-VMP-3S	1.5	2	--	1.9	--	0	--	0	--	1	0	--	0	--	--	1	--	3.5	--	1.5	--	1	0.3	--	--	0.5	2.1	1	
FPP-VMP-3I	1.5	1	--	1.4	--	0	--	0	--	1	1	--	0	--	--	1	--	1.8	--	0	--	0	3	--	--	1.2	1.2	3.1	
FPP-VMP-3D	1.5	3	--	2.6	--	0.5	--	0	--	2	1	--	1	--	--	3	--	2	--	2.2	--	2	2.8	--	--	1	2.2	5.1	
FPP-VMP-4S	1.5	1	--	1.9	--	0	--	0	--	1	1	--	0	--	--	2	--	3.4											

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Table 10
Phase II AS/SVE Test - System and Weather Measurements
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

003-6016

Date:	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	16-Apr-00	16-Apr-00
Time:	1415	1645	1830	2115	2205	0615	1435	2010	0700	1347

SVE System

Air Flow (SCFM)	126	130	135	130	130	135	135	135	135	135
Velocity @ INTAKE (fpm)	>6,000	350	100	--	1,500	750	1,500	2,000	2,500	2,300
Velocity @ EXHAUST (fpm)	>6,000	750	600	--	1,800	2,200	750	1,200	1,800	1,500
PID @ INTAKE (ppm)	772	46	5.1	--	16.2	3.5	18	332	4.5	3.4
PID @ EXHAUST (ppm)	728	310	2	--	625	827	827	692	1,084	1,048
System Vacuum 1 (" H2O)	50	48	47 (3.4" Hg)	46	46 (3.4" Hg)	44 (3.2" Hg)	42 (3.1" Hg)	42	42	41
System Vacuum 2 (" H2O)	57	57	54 (4" Hg)	53	53	52 (3.8" Hg)	51 (3.7" Hg)	50	50	49
Exhaust Temp. (degrees F)	160	160	150	150	149	145	150	145	145	148

Weather Conditions

Temp. (degrees F)	93	84	81	79	79	77	87	79	77	92
Wind Speed (mph)	14	9	6	5	7	10	3	6	2	5
Wind Direction	E	SE	E	E-NE	E	E	E-SE	E-NE	N-NE	E
Humidity (%)	52	60	58	61	57	57	56	63	67	61
Bar. Pressure (inches)	30.11	30.09	30.11	30.15	30.15	30.14	30.13	30.15	30.14	30.11
Van Temperature (°F)	85	83	--	--	--	--	--	--	--	--
PID @ downgradient (ppm)	0	0	0	--	0	0	0	0	0	0

System Vacuum 1 (" H2O)	50	48	47	46	46	44	42	42	42	41
Air Flow (SCFM)	126	130	135	130	130	135	135	135	135	135

304914

Table 11
Phase II AS/SVE Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	16-Apr-00	16-Apr-00
Time:	1530	1725	1930	2045	1300	0750	1125	1540	1920	0730	1520
<i>Flow</i>											
AST-AS-1 (scfm)	3.4	3.7	3.8	3.8	3.8	4.4	3.5	4	3.7	3.8	4
AST-SVE-1 (fpm)	>6,000	>6,000	4,000	6,000	6,000	>6,000	>6,000	>6,000	>6,000	>6,000	>6,000
<i>Vacuum (inches H₂O)</i>											
AST-SVE-1	32	30	28	28	28	24	22	25	22	21	20
AST-SVE-2	--	--	--	0.165	0.16	0.18	0.18	0.18	0.22	0.22	0.2
AST-SVE-3	--	--	--	0.025	PL	<0	0.01	0.01	0.01	0.015	<0
AST-SVE-4	--	--	--	0	0.005	0.005	0.01	0.005	0.005	0.005	0
AST-SVE-5	--	--	--	--	--	--	--	--	--	--	--
AST-SVE-6	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1I	--	--	0.75	3.7	3.85	3.85	3.65	3.6	3.4	3.3	3.4
AST-VMP-2S	<0	0	0	0	PL	<0	<0	<0	<0	<0	PL
AST-VMP-2I	--	--	0.18	0.78	0.6	1	1.55	0.6	0.55	0.65	0.6
AST-VMP-3S	0	0	0.02	0.02	0.015	0.035	0.03	0.015	0.025	0.025	0.04
AST-VMP-3I	--	--	0.035	0.045	0.05	0.01	0.06	0.055	0.035	0.075	0.03
AST-VMP-4S	0.02	0.03	0.025	0.03	0.025	0.015	0.015	0.02	0.02	0.02	0.005
AST-VMP-4I	--	--	0.01	0.12	0.12	0.01	0.08	0.1	0.11	0.075	0.07
<i>Pressure (inches H₂O)</i>											
AST-SVE-2	--	--	--	--	--	--	--	--	--	--	--
AST-SVE-3	--	--	--	--	--	--	--	--	--	--	--
AST-SVE-4	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1I	PL	PL	--	--	--	--	--	--	--	--	--
AST-VMP-1D	0	0	0	0	0	0.05	0.1	0.12	0.18	0.11	0.1
AST-VMP-2I	PL	PL	--	--	--	--	--	--	--	--	--
AST-VMP-2D	0	0.03	0.01	0 - 0.01	0	<0	.005 - 0.03	0	0	0.005	>.25
AST-VMP-3I	PL	0	--	--	--	--	--	--	--	--	--
AST-VMP-3D	0.11	0.05	0	0.0125	0.04	0.05	0.055	0.055	0.015	0	0
AST-VMP-4I	PL	PL	--	--	--	--	--	--	--	--	--
AST-VMP-4D	0	<0	0	0.01	0.025	0.015	0.025	0.015	0.01	0.005	0.01
Compressor Pressure (psig)	150	155	150	150	150	150	--	150	150	150	150
AST-AS-1 (psi)	45	44	43	42	41	38	26	28	25	25	24
Pressure Regulator (psi)	59	59	60	59	59	60	39	36	37	36	35

304915

September 2000

Table 11
Phase II AS/SVE Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

003-6016

Date:	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	16-Apr-00	16-Apr-00
Time:	1530	1725	1930	2045	1300	0750	1125	1540	1920	0730	1520
<i>Depth to Water (feet below TIC)</i>											
AST-VMP-1I	13.48	13.64	13.51	13.51	13.5	13.52	13.57	13.54			
AST-VMP-1D	13.79	13.81	13.71 ^B	13.71 ^B	14.15	14.23 ^B	14.42	14.39			
AST-VMP-2S	--	--	--	4.53	--	4.53	dry	4.52			
AST-VMP-2I	13.91	13.93	13.93	13.96	13.94	13.93	14.01	13.95			
AST-VMP-2D	13.95	13.95	13.83 ^B	13.82 ^B	14.19	14.23 ^B	14.41	14.42			
AST-VMP-3S	--	--	--	dry	--	dry	dry	dry			
AST-VMP-3I	14.12	14.11	14.13	14.13	14.13	14.14	14.12	14.13			
AST-VMP-3D	14.48	14.3	14.21	14.24	14.59	14.78	14.79	14.74			
AST-VMP-4S	--	--	--	dry	--	dry	dry	dry			
AST-VMP-4I	14.5	14.51	14.5	14.31	14.57	14.53	14.54	14.58			
AST-VMP-4D	14.43	14.36	14.22	14.28	14.58	14.6	14.92	14.49			
AST-GMP-1	14.18	14.15	14.32	14.3	14.85	14.86	15.12	14.95			
MW-1	15.4	15.51	15.47 ^B	15.45 ^B	15.92	16.06 ^B	16.16	15.32			
MW-6	16.81	16.81	16.84 ^B	16.82 ^B	16.76	16.82 ^B	16.83	16.79			
MW-8	--	--	--	18.2	--	18.84	19.44	--			
<i>Dissolved Oxygen (mg/L)</i>											
AST-VMP-1I	--	--	--	1.97	--	--	--	--			
AST-VMP-1D	6.15	6.64	9.28	10.36	10.13	10.03	7.66	--			
AST-VMP-2I	--	--	--	--	--	--	--	--			
AST-VMP-2D	0.64	8.75	10.09	11.17	11.06	10.92	8.37	--			
AST-VMP-3I	--	--	--	--	--	--	--	--			
AST-VMP-3D	0.6	0.79	0.78	0.75	0.69	0.52	0.41	--			
AST-VMP-4I	--	--	--	--	--	--	--	--			
AST-VMP-4D	0.8	0.71	0.76	0.66	0.51	0.63	0.69	--			
MW-1	9.3	9.32	9.34	10.64	10.48	10.41	8.29	--			
MW-6	3.5	4.32	4.56	5.27	5.01	5.27	4.64	--			
MW-8	--	--	--	0.67	--	0.85	0.56	--			

304916

September 2000

Table 11
Phase II AS/SVE Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

003-6016

Date: Time:	14-Apr-00 1530	14-Apr-00 1725	14-Apr-00 1930	14-Apr-00 2045	14-Apr-00 1300	15-Apr-00 0750	15-Apr-00 1125	15-Apr-00 1540	15-Apr-00 1920	16-Apr-00 0730	16-Apr-00 1520
<i>OVM Readings (ppmv)</i>											
AST-SVE-1	3	332	269	22.6	5.3	3.5	8	3.1			
AST-SVE-2	--	--	950	666	252	314	341	294			
AST-SVE-3	--	--	--	--	--	--	--	--			
AST-SVE-4	--	--	--	--	--	--	--	--			
AST-SVE-5	--	--	--	--	--	--	--	--			
AST-SVE-6	--	--	--	--	--	--	--	--			
AST-VMP-1I	--	36.8	34	43	28.1	19.2	28.8	14			
AST-VMP-1D	--	--	--	--	57.8	63.5	130	386			
AST-VMP-2S	--	--	--	--	--	--	--	--			
AST-VMP-2I	--	203.4	147	107.5	45.7	20.2	48.8	95.7			
AST-VMP-2D	--	--	--	--	--	--	--	20			
AST-VMP-3S	--	--	--	--	--	--	--	--			
AST-VMP-3I	--	--	--	--	--	--	--	--			
AST-VMP-3D	7.3	--	--	--	--	--	--	--			
AST-VMP-4S	--	--	--	--	--	--	--	--			
AST-VMP-4I	--	--	1	--	1.2	0	--	--			
AST-VMP-4D	--	--	--	--	--	--	--	--			

Notes:

PL = Pegged Low
PH = Pegged Hight

^B - Bubbles in well

<0 = Slight positive pressure

-- = Not Measured

304917

Table 12
Phase II AS/SVE Test Results - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	16-Apr-00	16-Apr-00
Time:	1445	1630	1852	2040	2230	0700	1100	1505	1830	1125	1500
<i>Flow</i>											
FPP-AS-1 (scfm)	7.6	7.4	7.6	7.8	7.8	7.6	7.6	6.8	7.4	--	--
FPP-SVE-1 (fpm)	500	550	100	400	450	4,000	350	400	500	1,000	2,500
<i>Vacuum (inches H₂O)</i>											
FPP-SVE-1	38	38	34	33	32	30	29	28	28	23	24
FPP-VMP-1I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-2S	PL	0	0.01	0.005	0.015	0.015	0.005	0.035	0.01	0	PL
FPP-VMP-2I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-3S	0.01	0.01	0	0.005	0	0.01	0.005	PL	0	0	0.01
FPP-VMP-3I	--	PL	--	--	--	--	--	--	--	--	--
FPP-VMP-4S	0	0	0	0.005	0	0	0	0	0.005	<0	<0
FPP-VMP-4I	--	0	--	--	--	--	--	--	--	--	--
<i>Pressure (inches H₂O)</i>											
FPP-AS-1 (psi)	26	25	25	26	25	24	24	21	21	10	10
FPP-VMP-1I	0.025	0.005	0.005	0.005	0	0.01	0.005	0.01	0.02	PL	PL
FPP-VMP-1D	0.01	0.025	0.015	0 - 0.7	0.02	0.03	0.05	0.03	0.01	0.03	0.04
FPP-VMP-2I	0.075	0.005	0	0.02	0.02	0.01	0.02	0.02	0.01	0.015	0.025
FPP-VMP-2D	0.1	0.1	0.08	0.08	0.04	0.07	0.005	0	PL	PL	PL
FPP-VMP-3I	0.05	--	0.01	0.02	0.055	0.025	0.03	0.04	0.005	0.005	0.01
FPP-VMP-3D	0	PL	0	0.01	0.02	0	0.01	0	0 - 0.035	0.005	0
FPP-VMP-4I	0.02	--	0.03	<0	0	0	0	0.02	0 - 0.02	PL	0.01
FPP-VMP-4D	0.001	0.025	0.02	0.02	0.02	0.045	0.03	0.03	0.02	0.02	0.04
<i>Pressure Regulator (psi)</i>											
Pressure Regulator (psi)	59	59	59	60	60	58	57	60	60	--	--
<i>Air Compressor (psi)</i>											
Air Compressor (psi)	125	122	122	125	125	121	122	122	122	--	--
<i>Depth to Water (feet below TIC)</i>											
FPP-VMP-1I	14.17	--	14.71	--	14.7	14.73	--	14.72	14.72	14.71	14.72
FPP-VMP-1D	15.09	--	15.19	--	15.21	15.19	--	15.21	15.29	15.33	15.32
FPP-VMP-2S	--	--	--	--	--	3.98	--	--	4.7	4.38	4.48
FPP-VMP-2I	14.64	--	14.59	--	14.63	14.14	--	14.62	14.68	14.78	14.78
FPP-VMP-2D	15.3	--	15.32	--	15.33	15.13	--	15.36	15.38	15.49	15.48
FPP-VMP-3S	--	--	--	--	--	4.75	--	--	4.72	4.71	4.76
FPP-VMP-3I	dry	--	dry	--	dry	dry	--	dry	dry	dry	dry
FPP-VMP-3D	15.09	--	15.37	--	15.48	15.39	--	15.49	15.57	15.5	15.43
FPP-VMP-4S	--	--	--	--	--	4.83	--	--	4.83	4.73	4.82
FPP-VMP-4I	dry	--	15.16	--	dry	dry	--	dry	dry	dry	dry
FPP-VMP-4D	16.6	--	16.77	--	16.83	16.88	--	17.01	17.17	17	16.98
FPP-GMP-1	15.99	--	15.98	--	15.98	15.98	--	15.98	15.98	15.98	15.96
MW-2	17.39	--	17.48	--	17.47 ^B	17.45 ^B	--	17.51	17.56 ^B	17.63	17.61
MW-3	--	--	--	--	--	--	--	--	--	--	--
MW-7	18.54	--	18.03	--	17.94	18.29	--	19.34	19.31	21.17	21.1

Table 12
Phase II AS/SVE Test Results - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	14-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	15-Apr-00	16-Apr-00	16-Apr-00
Time:	1445	1630	1852	2040	2230	0700	1100	1505	1830	1125	1500
<i>Dissolved Oxygen (mg/L)</i>											
FPP-VMP-1I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-1D	4.8	--	5.1	--	5.63	5.6	--	6.93	6.67	--	--
FPP-VMP-2I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-2D	2.1	--	2.24	--	2.16	2.3	--	2.58	2.18	--	--
FPP-VMP-3I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-3D	8.3	--	9.82	--	10.77	11.7	--	12.32	11.5	--	--
FPP-VMP-4I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-4D	0.8	--	1.11	--	3.85	6.8	--	10.01	9.07	--	--
MW-2	8.58	--	8.91	--	8.56	8.3	--	9.38	8.93	--	--
MW-3	--	--	--	--	--	--	--	--	--	--	--
MW-7	--	--	--	--	--	2.8 *	--	--	3.69 *	--	--
<i>OVM Readings (ppmv) if >0.1" H₂O</i>											
FPP-SVE-1	0	--	0	--	0	0	--	0	0	--	--
FPP-VMP-1I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-1D	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-2S	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-2I	0	--	--	--	--	--	--	--	--	--	--
FPP-VMP-2D	0	--	--	--	--	--	--	--	--	--	--
FPP-VMP-3S	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-3I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-3D	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-4S	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-4I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-4D	--	--	--	--	--	--	--	--	--	--	--

Notes:

PL = Pegged Low
 PH = Pegged High

^B = bubbles in well

<0 = Slight positive pressure

-- = Not Measured

* = D/O not measured within screened interval

304919

Table 13
Phase II Extended Test Results - System and
Weather Measurements
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00
Time:	0705	0713 *	0742 **	0805	0810	0850	0945	1135	1244	1600	2000	0930	1230	2040	0908	1646	2030	0730	0950	1125
SVE System	FPP SVE-1 Only			AST Only			Start Extended Phase II Test @ 0940													
Air Flow (SCFM)	--	46	--	--	--	145	145	145	145	145	155	145	160	157	167	168	168	158	115	95
Velocity @ INTAKE (fpm)	--	3,000	--	2,500	4,000	2,250	400	600	2,500	--	1,500	1,000	1,500	1,000	1,500	1,000	1,500	1,250	700	750
Velocity @ EXHAUST (fpm)	--	2,250	--	***	1,500	2,000	1,500	1,500	1,250	--	3,000	750	1,500	1,500	2,000	1,500	1,500	1,600	3,000	1,100
PID @ INTAKE (ppm)	--	--	--	--	664	--	--	--	12	--	19	164	221	158	7.6	20.5	25	7.6	--	--
PID @ EXHAUST (ppm)	--	--	--	--	704	--	--	--	958	--	870	798	589	255	0	497	636	674	--	--
System Vacuum 1 (" H2O)	94	72	71	69	30	30	30	30	30	30	30	29	20	20	18	18	18	18	60	67
System Vacuum 2 (" H2O)	94	76	71	70	38	38	39	39	39	39	39	39	30	30	28	28	28	29	66	71
Exhaust Temp. (degrees F)	180	200	225	250	142	138	140	140	140	140	135	140	135	125	125	130	130	125	150	185
AS System																				
Air Flow (SCFM)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pressure (psig)	--	--	--	--	--	--	155	107	160	--	160	160	160	160	--	--	--	--	--	--
Weather Conditions																				
Temp. (degrees F)	--	83	--	87	--	94	--	--	--	--	82	91	102	81	85	95	76	81	94	97
Wind Speed (mph)	--	5	--	6	--	7	--	--	--	--	7	10	8	1	5	10	2	7	8	6
Wind Direction	--	E	--	E	--	E	--	--	--	--	SE	SE	SE	N	NE	E	NE	SE	E	SE
Humidity (%)	--	72	--	67	--	61	--	--	--	--	66	57	61	69	71	57	67	65	66	60
Bar. Pressure (inches)	--	30.1	--	30.12	--	30.14	--	--	--	--	30.09	30.13	30.11	30.1	30.14	30.05	30.08	30.08	30.1	30.09
Air Flow at dilution valve (fpm)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	600

* - Opened dilution valve to decr. vacuum from 1.6 " Hg to 5' Hg
** - Closed dilution valve
*** - Can't take -- too hot

304920

Table 14
Phase II Extended Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00
Time:		0930	1400	1715	1905	2115	0845	1145	1715	2045	1130
Flow	AST SVE 1 - 6 Only		Started Extended Phase II Test @ 0940								
AST-AS-1 (scfm)	--	3.5	3.4	3.6	3.9	3.6	5	3.4	3.4	3.8	4.2
AST-SVE-1 (fpm)	550	--	525	500	500	500	1000	750	750	--	750
AST-SVE-2 (fpm)	200	--	400	200	250	400	400	200	1,000	--	200
AST-SVE-3 (fpm)	175	--	75	150	200	75	100	100	300	--	200
AST-SVE-4 (fpm)	100	--	50	25	25	25	75	50	100	--	100
AST-SVE-5 (fpm)	30	--	75	100	75	75	125	150	300	--	100
AST-SVE-6 (fpm)	250	--	225	200	250	200	100	200	225	--	500
AST-AS-1 (fpm)	--	80	44	44	45	42	42	33	33	34	33
Pressure Regulator (psi)	--	64	34	34	34	34	31	23	23	23	22
Vacuum (inches H ₂ O)	in " Hg										
AST-SVE-1	0.04	10	10	10	8	8	8	6	6	6	5
AST-SVE-2	.02	8	5	4	6	5	4	3	3	2	2
AST-SVE-3	.08	9	10	10	8	8	8	6	6	5	4
AST-SVE-4	3	3.5	3.5	3	3	3.5	3	3	3	3	3
AST-SVE-5	.08	10	12	12	10	8	10	8	6	6	8
AST-SVE-6	.04	10	10	10	10	10	7	4	8	4	4
AST-VMP-1I	--	--	4	2.7	2.7	1.6	1.7	2.15	1.1	1.8	1.7
AST-VMP-2S	--	--	0	0.015	0.01	0	0	0	0	0	0.04
AST-VMP-2I	--	--	>2	3.4	3.4	3.2	3.2	3.35	3.4	3.4	3.3
AST-VMP-3S	--	--	0	0	0	0	0	0.015	0	0	0
AST-VMP-3I	--	--	0.17	>.25	0.45	0.2	0.2	0.2	0.5	0.1	0.15
AST-VMP-4S	--	--	>.25	0.2	0.15	0.25	0.25	0.15	0.2	0.12	0.15
AST-VMP-4I	--	--	>.25	0.75	0.75	0.3	0.35	1.2	0.55	0.15	0.2
Pressure (inches H ₂ O)											
AST-SVE-2	--	--	--	--	--	--	--	--	--	--	--
AST-SVE-3	--	--	--	--	--	--	--	--	--	--	--
AST-SVE-4	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1I	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-1D	--	--	0.02	0.02	0.01	0	0.02	0.02	0.02	0.03	0.26
AST-VMP-2I	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-2D	--	--	0.15	0.01	0	0.06	0.035	0.01	0	0.005	0.02
AST-VMP-3I	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-3D	--	--	0.005	0.005	0	0	0	0.04	0.04	0.06	0.06
AST-VMP-4I	--	--	--	--	--	--	--	--	--	--	--
AST-VMP-4D	--	--	0.01	0.02	0.01	0	0.01	0.02	0	0	0.005

304921

Table 14
Phase II Extended Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00
Time:	1410	1905	0850	1145	1715	1130	1345	1900	0820	0959	1135
<i>Depth to Water (feet below TIC)</i>										Post-packer pulling	
AST-VMP-1I	13.93	13.92	13.95	13.9	13.98	14.02	15.95	silt - no h2o	14.5	13.9	
AST-VMP-1D	13.95	14.36	14.48	14.84	14.93	14.94	15.72	14.91	15	15.05	
AST-VMP-2S	4.32	4.34	4.33	4.34	4.33	4.34	4.33	4.34	4.31	4.3	
AST-VMP-2I	14.33	14.35	14.41	14.41	14.42	14.45	14.49	14.48	14.51	14.5	
AST-VMP-2D	14.01	14.33	14.55	15.25	14.91	14.88	15.02	15.04	15.04	15.01	
AST-VMP-3S	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	
AST-VMP-3I	14.59	14.57	14.6	14.59	14.59	14.61	--	14.59	14.57	14.58	
AST-VMP-3D	14.69	14.61	14.93	15.27	15.3	14.24	15.29	15.53	15.31	15.33	
AST-VMP-4S	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	
AST-VMP-4I	14.69	14.69	14.69	14.69	14.7	14.69	14.7	14.69	14.69	14.69	
AST-VMP-4D	14.66	14.82	14.94	15.16	15.3	15.22	15.23	15.34	15.27	15.32	
AST-GMP-1	14.25	14.97	15.19	15.34	15.26	15.7	15.85	15.33	15.28	15.36	
MW-1	15.68	16.08	16.2	16.47	16.68	17.11	17.09	16.81	16.74	16.82	
MW-6	17.25	17.3	19.4	17.34	17.24	17.38	17.35	17.38	17.41	17.41	
MW-8	19.67	19.12	17.36	19.65	19.85	19.68	19.67	19.84	19.84	19.79	
<i>Dissolved Oxygen (mg/L)</i>											
AST-VMP-1I	--	--									
AST-VMP-1D	0.87	2.36	5.83	9.66	6.62	13.1	10.89	12.09	8.18		
AST-VMP-2I	--	--									
AST-VMP-2D	14.02	3.87	0.59	12.98	13.27	14.31	14.57	14.65	9.91		
AST-VMP-3I	--	--									
AST-VMP-3D	0.78	0.67	0.89	0.81	0.76	0.97	0.81	0.57	0.48		
AST-VMP-4I	--	--									
AST-VMP-4D	0.51	0.76	13.06	0.95	0.63	0.91	0.71	0.77	0.33		
MW-1	13.07	13.57	12.18	12.06	12.23	14.65	12.81	7.3	9.16		
MW-6	6.32	7.11	7.66	7.33	7.15	9.28	8.1	7.05	6.28		
MW-8	.59	.79	1.31	0.87	.73	1.47	0.82	7.19	0.32		

304922

Table 14
Phase II Extended Test Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date: Time:	27-Apr-00 1710	27-Apr-00 1905	28-Apr-00 0850	28-Apr-00 1145	28-Apr-00 1715	29-Apr-00 1130	29-Apr-00 1345	29-Apr-00 1900	30-Apr-00 0820	30-Apr-00 0959	30-Apr-00 1135
<i>OVM Readings (ppmv)</i>											<i>DTW (ft):</i>
AST-SVE-1	--	--									14.39
AST-SVE-2	--	--									14.54
AST-SVE-3	--	--									15.39
AST-SVE-4	--	--									15.49
AST-SVE-5	--	--									17.88
AST-SVE-6	--	--									17.34
AST-VMP-1I	3.1	--	17.7	18.3	20.6			26	19		
AST-VMP-1D	--	--				636					
AST-VMP-2S	--	--									
AST-VMP-2I	22.7	--	21.3	14.2	14.9	43.2		18	16		
AST-VMP-2D	55.2	--							113		
AST-VMP-3S	--	--									
AST-VMP-3I	2.1	--	3.2	3.6	1.5	3.5		1.2	2		
AST-VMP-3D	--	--									
AST-VMP-4S	0	--	2.2	2.1	0	1.1		.4	2		
AST-VMP-4I	0	--	0	0	0	1.2		.2	3		
AST-VMP-4D	--	--									
MW-1				20							
MW-6				65							

304923

Table 15
Phase II Extended Test Results - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00
Time:	0750	0930	1325	1710	1830	2100	0745	1856	1100	1855	1410
Flow	FPP-SVE-1 Only		Started Extended Phase II Test @ 0940								
FPP-AS-1 (scfm)	--	7	7	7.2	7	7	7	7.1	7.3	7.4	6.8
FPP-SVE-1 (fpm)	1,250	--	2,500	125	150	100	200	200	150	150	6,000
Vacuum (inches H ₂ O)											
FPP-SVE-1	6.6" Hg	12	0.15	12	10	8	10	6	6	7	5.2
FPP-VMP-1I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-2S	--	--	0.01	0.01	0.05	--	0.01	0	0.01	0.005	0
FPP-VMP-2I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-3S	--	--	0.03	0.01	0	--	0.005	0	0.02	0.02	0.005
FPP-VMP-3I	--	--	--	--	--	--	--	--	--	--	--
FPP-VMP-4S	--	--	0.03	0.01	0	--	0.02	0.02	0.03	0.03	0.02
FPP-VMP-4I	--	--	--	--	--	--	--	--	--	--	--
Pressure (inches H ₂ O)											
FPP-AS-1 (psi)	--	54	29	27	26	26	23	20	20	18	--
FPP-VMP-1I	--	--	0.025	0.03	0.02	--	0.01	0	0.01	0.03	0.02
FPP-VMP-1D	--	--	0.05	0.02	0.02	--	0.015	0.01	0.04	0.05	0.1
FPP-VMP-2I	--	--	0.04	0.03	0.02	--	0.04	0	0.02	0.025	0.22
FPP-VMP-2D	--	--	<0	<0	0	--	0.005	0	0.02	>.25	>.25
FPP-VMP-3I	--	--	0.03	0.01	0.01	--	0.04	0.05	0.14	0.095	0.17
FPP-VMP-3D	--	--	0.01	0.01	0	--	0.01	>.25	0.04	>.25	>.25
FPP-VMP-4I	--	--	<0	<0	0	--	--	0	0.02	0	0.08
FPP-VMP-4D	--	--	0.15	0.05	0.01	--	0.02	0.035	NA *	0.195	>.25
Pressure Regulator (psi)	--	100	--	100	100	100	100	100	100	100	115

* - Was being bailed; magnahelic was not in place

Date:	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00	30-Apr-00
Time:	1335	1840	0800	1915	1105	1900	1415	1745
Depth to Water (feet below TIC)								
FPP-VMP-1I	14.98	15.35	15.02	15.68	15	15.01	15.01	15.01
FPP-VMP-1D	15.1	15.01	15.64	15.01	15.72	15.87	15.9	16.21
FPP-VMP-2S	4.3	4.39	4.48	4.5	4.5	4.5	2.35	2.31
FPP-VMP-2I	14.62	14.19	14.76	14.75	14.66	14.72	14.47	14.8
FPP-VMP-2D	0.35	1.29	1.41	1.5	1.6	12.97	15.02	16.47
FPP-VMP-3S	4.72	4.73	4.74	4.69	4.76	4.72	4.71	4.73
FPP-VMP-3I	dry	dry	dry	dry	dry	dry	dry	dry
FPP-VMP-3D	12.68	14.07	15.45	15.21	14.81	14.88	14.81	17.18
FPP-VMP-4S	4.84	4.83	4.85	3.65	4.82	4.84	4.8	4.82
FPP-VMP-4I	14.8	14.77	14.8	14.73	14.8	14.76	14.73	14.72
FPP-VMP-4D	15.34	16.17	16.85	16.5	17.3	17.5	17.69	18.85
FPP-GMP-1	16.02	16.06	16.08	16.06	16.04	16.08	16.08	16.06
MW-2	15.84	--	15.85	15.81	15.38	16.21	15.62	17.44
MW-3	18.19	--	13.26	18.23	18.21	18.25	18.25	18.3
MW-7	20.08	--	18.93	20.55	20.67	20.91	21.18	21.6

304924

Table 15
Phase II Extended Test Results - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Date:	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00	30-Apr-00
Time:	1335	1840	0800	1915	1105	1900	1415	1745
<i>Dissolved Oxygen (mg/L)</i>								
FPP-VMP-1I	--	--	--	--	--	--	--	--
FPP-VMP-1D	11.46	13.41	12.83	12.47	14.49	14.67	9.57	--
FPP-VMP-2I	--	--	--	--	--	--	--	--
FPP-VMP-2D	12.7	12.05	9.06	8.22	9.03	14.12	9.58	--
FPP-VMP-3I	--	--	--	--	--	--	--	--
FPP-VMP-3D	14.27	14.17	13.68	13.46	15.41	13.63	10.35	--
FPP-VMP-4I	--	--	--	--	--	--	--	--
FPP-VMP-4D	11.31	11.74	10.86	9.14	13.13	NA **	9.35	--
MW-2	14.73	14.1	13.15	12.76	14.91	15.32	9.89	--
MW-3	--	--	.87	--	.92	.81	0.92	--
MW-7	4.74	9.14	8.29	8.09	9.15	9.55	6.15	--
<i>OVM Readings (ppmv) if >0.1" H₂O</i>								
FPP-SVE-1	--	--	--	--	--	--	--	--
FPP-VMP-1I	3.1	--	--	--	--	--	--	--
FPP-VMP-1D	7	--	--	--	--	--	--	--
FPP-VMP-2S	3	--	--	--	--	--	--	--
FPP-VMP-2I	0	--	--	--	--	--	.8	--
FPP-VMP-2D	2	--	--	--	--	1	1.1	--
FPP-VMP-3S	0	--	--	--	--	--	--	--
FPP-VMP-3I	0	--	--	--	0	--	.1	--
FPP-VMP-3D	0	--	--	--	--	.8	.5	--
FPP-VMP-4S	0	--	--	--	--	--	--	--
FPP-VMP-4I	0	--	--	--	--	--	--	--
FPP-VMP-4D	0	--	--	--	--	1.2	.5	--

-- - Not Measured

304925

Table 16
Phase II Extended Test
Soil-Gas Laboratory Analytical Data
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Client ID:	AST-SVE-4-Ext #1	FPP-SVE-1-Ext #1	AST-VMP-11-Ext #1	FPP-SVE-1 #2	AST-SVE-5 #1	FPP-SVE-1 #3	AST-SVE-2	AST-VMP-2I(Post)	AST-VMP-4I(Post)	AST-VMP-3(Post)
Testing Period/Time:	1615	1610	1620	1610	1615	1655	2050	1030	1040	1050
Lab ID	B27 232	B27 233	B27 234	B27 240	B27 241	B27 248	B27 252	B27 256	B27 257	B27 258
Date Sampled:	27-Apr-00	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	<0.005	0.977	<0.005	0.635	<0.005	0.014	0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.07	<0.07	0.09	<0.07	<0.07	<0.07	150.07	0.99	<0.07	<0.07
Methylene chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	0.2	0.19	0.18	0.18	0.33	0.1	4.96	0.83	0.27	0.24
m&p-Xylene	<0.07	<0.07	0.37	<0.07	0.17	<0.07	669.52	1.55	<0.07	<0.07
o-Xylene	<0.07	<0.07	<0.07	<0.07	0.36	<0.07	73.3	0.33	<0.07	<0.07

Client ID:	FPP-SVE-1 #4	FPP-SVE-1(Post)	FPP-VMP-1I(Post)	PP-VMP-1D(Post)	FPP-VMP-2S(Post)	FPP-VMP-2I(Post)	P-VMP-2D(Pos)	FPP-VMP-3S(Post)	FPP-VMP-3I(Post)	FPP-VMP-3D(Post)	FPP-VMP-4S(Post)	FPP-VMP-4I(Post)	FPP-VMP-4D(Post)
Testing Period/Time:	1530	1715	1703	1850	1650	1652	1655	1657	1658	1700	1702	1704	1848
Lab ID	B27 259	B27 266	B27 267	B27 268	B27 269	B27 270	B27 271	B27 272	B27 273	B27 274	B27 275	B27 276	B27 277
Date Sampled:	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00	30-Apr-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	<0.005	0.016	39.52	0.028	0.011	44.295	<0.005	0.186	42.284	0.026	1.613	14.214	0.414
Ethylbenzene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Methylene chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	0.23	0.37	0.22	0.16	0.31	0.35	0.26	0.14	0.19	0.42	0.25	0.17	0.27
m&p-Xylene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.27
o-Xylene	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07

Client ID:	Intake-Ext. #1	Intake #2	Intake #3	Intake #4
Testing Period/Time:	1503	1600	2040	0758
Lab ID	B27 229	B27 238	B27 249	B27 253
Date Sampled:	27-Apr-00	28-Apr-00	29-Apr-00	30-Apr-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2
Chloroform	0.033	0.084	0.19	0.245
Ethylbenzene	132.22	107.17	41.27	26.62
Methylene chloride	<2	<2	<2	<2
Toluene	7.14	6.09	3.47	3.07
m&p-Xylene	576.54	489.89	157.94	95.54
o-Xylene	62.58	55.3	19.85	11.33

Client ID:	Exhaust-Ext. #1	Exhaust-Ext #2	Exhaust #3	Exhaust #4	Exhaust #5	Exhaust #6	Exhaust #7	Exhaust #8
Testing Period/Time:	1500	1900	1035	1600	1212	2045	0800	1505
Lab ID	B27 230	B27 235	B27 236	B27 237	B27 247	B27 250	B27 255	B27 265
Date Sampled:	27-Apr-00	27-Apr-00	28-Apr-00	28-Apr-00	29-Apr-00	29-Apr-00	30-Apr-00	30-Apr-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2	<2	<2	<2	<2
Chloroform	0.027	0.024	0.159	0.032	0.096	0.125	0.177	0.105
Ethylbenzene	100.66	68.09	132.72	24.85	37.98	37.62	21.8	<0.07
Methylene chloride	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	5.5	4.53	7.15	1.96	2.75	2.66	2.37	0.32
m&p-Xylene	456.89	290.58	590.42	100.67	152.72	151.34	79.47	0.16
o-Xylene	50.78	33.55	65.34	12.32	19.51	19.36	9.33	<0.07

Client ID:	Downgrad-Ext. #1	Downgrad #2	Downgrad #3	Downgrad #4
Testing Period/Time:	1505	1605	2047	0805
Lab ID	B27 231	B27 239	B27 251	B27 254
Date Sampled:	27-Apr-00	28-Apr-00	29-Apr-00	30-Apr-00
Matrix:	Soil-Gas	Soil-Gas	Soil-Gas	Soil-Gas

Site Target Compounds (ppmv)

Acetone	<2	<2	<2	<2
Chloroform	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.07	<0.07	<0.07	<0.07
Methylene chloride	<2	<2	<2	<2
Toluene	0.2	0.27	0.3	0.24
m&p-Xylene	<0.07	0.08	<0.07	<0.07
o-Xylene	<0.07	<0.07	<0.07	<0.07

Table 17
Phase II Extended Test
Soil Gas Field Analytical Data
Virgin Islands Chemical Site
St. Croix, U.S. Virgin Islands

Sample ID	MB01-427	MB02-427	Intake #1	MB03-427	Exhaust #1	MB04-427	Intake #2	MB05-427	Exhaust #2	MB06-427	Exhaust #2	MB07-427
Lab ID	MB01-427.gc	MB02-427.gc	427-001.gc	MB03-427.gc	417-002.gc	MB04-427.gc	427-003.gc	MB05-427.gc	427-004.gc	MB06-427.gc	417-005.gc	MB07-427.gc
Date Collected	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00
Time Collected			8:10		8:10		12:44		12:44		12:44 (50x dil)	
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)												
Toluene	0.01238	0.01301	7.375	0.01417	8.799	0.02178	0.09927	0.009451	4.317	0.01587	0.2777	ND
Ethylbenzene	0.02626	0.03784	3.032	0.2268	3.289	0.07431	0.1328	0.0156	3.255	0.577	4.305	0.01834
m,p-Xylene	ND	0.01994	443.1	0.5945	452.5	0.5200	1.002	0.04384	580.8	0.001657	13.05	0.03996
o-Xylene	ND	ND	105	0.1067	119.2	0.2593	0.3355	ND	197.3	0.001108	4.983	ND

Sample ID	AST-SVE-1	MB08-427	AST-SVE-1	MB09-427	AST-SVE-2	MB10-427	AST-SVE-2	MB11-427	MB01-428	MB02-428	AST-SVE-3	MB03-428	AST-SVE-3	MB04-428	AST-SVE-3	MB05-428	AST-SVE-4	MB06-428	AST-SVE-4	MB07-428	AST-SVE-5	MB08-428	AST-SVE-6	MB09-428	Intake #3
Lab ID	427-006.gc	MB08-427.gc	427-007.gc	MB09-427.gc	427-008.gc	MB10-427.gc	427-009.gc	MB11-427.gc	MB01-428.gc	MB02-428.gc	428-001.gc	MB03-428.gc	428-002.gc	MB04-428.gc	428-003.gc	MB05-428.gc	428-004.gc	MB06-428.gc	428-005.gc	MB07-428.gc	428-006.gc	MB08-428.gc	428-007.gc	MB09-428.gc	428-008.gc
Date Collected	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	4/27/00	25 (50x dil)	4/27/00	4/28/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00
Time Collected	16:20		16:20 (4x dil)		16:25						16:30		16:30 (2x dil)		16:30 (10x dil)		16:35		16:35 (4x dil)		16:38		16:40		20:00
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	0.6723	0.1786	0.05809	0.01201	4.616	0.03085	0.08215	0.009488	0.003917	0.008286	0.05402	ND	0.02276	ND	0.01289	0.009082	0.03507	0.008872	0.01393	0.007695	0.06481	0.007988	0.02269	ND	0.1482
Ethylbenzene	1.339	0.1528	0.1541	0.01072	ND	0.009051	18.13	0.20250	0.0123	ND	2.046	0.7534	0.9711	0.3726	1.151	0.03539	1.054	0.1346	0.7534	0.06243	0.8182	0.02588	1.099	0.02691	5.353
m,p-Xylene	3.836	0.2603	1.223	0.03165	827.5	0.0294	49.55	0.00179	0.02332	0.01987	13.36	0.2343	5.179	0.2366	1.904	0.1035	6.131	0.07001	1.505	0.04634	1.712	0.02807	1.687	0.03194	14.61
o-Xylene	1.642	0.356	0.6564	ND	535.3	0.01116	17.29	0.002699	0.07909	0.01693	2.804	0.02136	2.112	0.02817	0.5877	0.09937	1.243	ND	0.3774	ND	0.5112	ND	0.8515	ND	1.866

Sample ID	MB10-428	Intake #3	MB11-428	Intake #3	MB12-428	Exhaust #3	MB13-428	Exhaust #3	MB14-428	Exhaust #3	MB15-428	Intake #4	MB16-428	Intake #4	MB17-428	Intake #4	MB18-428	Exhaust #4	MB19-428	Exhaust #4	MB20-428	Exhaust #5	MB21-428	Exhaust #5	MB22-428
Lab ID	MB10-428.gc	428-009.gc	MB11-428.gc	428-010.gc	MB12-428.gc	428-011.gc	MB13-428.gc	428-012.gc	MB14-428.gc	428-013.gc	MB15-428.gc	428-014.gc	MB16-428.gc	428-015.gc	MB17-428.gc	428-016.gc	MB18-428.gc	428-017.gc	MB19-428.gc	428-018.gc	MB20-428.gc	428-019.gc	MB21-428.gc	428-020.gc	MB22-428.gc
Date Collected	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/27/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00
Time Collected		20:00 (4x dil)		20:00 (10x dil)		20:05		20:05 (10x dil)		20:05 (50x dil)		9:30		9:30 (20x dil)		9:30 (50x dil)		9:30 (10x dil)		9:30 (50x dil)		12:20 (10x dil)		12:20 (50x dil)	
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	0.01156	0.05472	0.02261	0.02565	0.009074	6.951	0.07601	0.9053	0.01070	0.0806	0.01283	0.9877	0.009074	0.2315	0.008031	0.04745	ND	0.1185	ND	0.05318	ND	0.4294	ND	0.05272	ND
Ethylbenzene	0.08574	1.426	0.02135	0.3063	0.01682	2.653	3.407	33.58	0.06794	3.406	0.01917	26.02	0.01682	7.836	ND	0.2695	ND	13.21	0.01320	2.982	ND	12.17	0.01353	2.07	ND
m,p-Xylene	0.1852	3.476	0.04677	1.781	0.03077	451.9	7.637	72.68	0.1408	7.785	0.03544	46.09	0.03077	18.34	0.01448	1.206	0.009371	31.45	0.00349	7.437	20.61	31.99	0.03312	4.802	0.02006
o-Xylene	0.01934	0.5239	ND	0.3133	ND	43.42	0.910	7.287	ND	0.8796	ND	4.495	ND	1.918	ND	0.2255	ND	3.443	ND	1.258	ND	5.135	ND	0.8668	ND

304927

September 2000

003-6016

Table 17
Phase II Extended Test
Soil Gas Field Analytical Data
Virgin Islands Chemical Site
St. Croix, U.S. Virgin Islands

Sample ID	Exhaust #6	MB23-428	Exhaust #6	MB24-428	Exhaust #7	MB25-428	Exhaust #7	MB26-428	MB01-429	Exhaust #8	MB02-429	Exhaust #8	MB03-429	Exhaust #9	MB04-429	Exhaust #9	MB01-430	AST-VMP 11	MB02-430	AST-VMP 21	MB03-430	AST-VMP 31	MB04-430	AST-VMP 4S	MB05-430
Lab ID	428-021.gc	MB23-428.gc	428-022.gc	MB24-428.gc	428-023.gc	MB25-428.gc	428-024.gc	MB26-428.gc	MB01-429.gc	429-001.gc	MB02-429.gc	429-002.gc	MB03-429.gc	429-003.gc	MB04-429.gc	429-004a.gc	MB01-430.gc	430-001.gc	MB02-430.gc	430-002.gc	MB03-430.gc	430-003.gc	MB04-430.gc	430-004.gc	MB05-430.gc
Date Collected	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/28/00	4/29/00	4/29/00	4/29/00	4/29/00	4/29/00	4/29/00	4/29/00	4/29/00	4/30/00	4/27/00	4/30/00	4/27/00	4/30/00	4/27/00	4/30/00	4/27/00	4/30/00
Time Collected	16:05 (10x dil)		16:05 (50x dil)		20:40 (10x dil)		20:40 (50x dil)			9:08 (10x dil)		9:08 (50x dil)		12:12 (10x dil)		12:12 (50x dil)		16:42		16:50		16:55		17:00	
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	0.2861	ND	0.05718	ND	0.2744	ND	0.04312	NS	ND	0.6525	ND	0.1084	ND	0.7108	ND	0.1208	ND	0.1255	ND	0.1242	ND	ND	ND	ND	ND
Ethylbenzene	11.48	0.02396	2.321	ND	11.13	0.0303	2.113	NS	ND	29.69	0.1876	1.76	0.03758	34.03	0.07087	2.122	0.02688	1.021	0.02188	0.2533	ND	0.09183	ND	0.0688	ND
m,p-Xylene	29.9	0.04832	5.388	0.02059	29.82	0.05234	5.043	NS	0.0291	28.39	0.1453	3.368	0.02845	30.61	0.05085	4.055	0.01612	0.8243	0.01532	0.5108	0.01463	0.2249	0.01337	0.1757	0.01347
o-Xylene	4.285	ND	0.9411	ND	4.523	ND	0.9054	NS	ND	8.273	0.03376	1.05	0.001701	7.314	ND	4.462	ND	0.7534	ND	0.4869	ND	0.2625	ND	0.1963	ND

Sample ID	AST-VMP 4I	MB06-430	AST-SVE- 1-#2	MB07-430	AST-SVE- 1-#2	MB08-430	AST-SVE- 2-#2	MB09-430	AST-SVE- 2-#2	MB10-430	AST-SVE- 3-#2	MB11-430	AST-SVE- 3-#2	MB12-430	AST-SVE- 4-#2	MB13-430	AST-SVE- 4-#2	MB14-430	AST-SVE- 5-#2	MB15-430	AST-SVE- 5-#2	MB16-430	AST-SVE- 6-#2	MB17-430	AST-SVE- 1-#3
Lab ID	430-005.gc	MB06-430.gc	430-006.gc	MB07-430.gc	430-007.gc	MB08-430.gc	430-008.gc	MB09-430.gc	430-009.gc	MB10-430.gc	430-010.gc	MB11-430.gc	430-011.gc	MB12-430.gc	430-012.gc	MB13-430.gc	430-013.gc	MB14-430.gc	430-014.gc	MB15-430.gc	430-015.gc	MB16-430.gc	430-016.gc	MB17-430.gc	430-017.gc
Date Collected	4/27/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00
Time Collected	16:58		10:45		10:45 (2x dil)		10:48		10:48 (50x dil)		10:50		10:50		10:53		10:53 (2x dil)		10:58		10:58 (2x dil)		11:00		16:35 (2x dil)
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	0.05051	ND	0.5078	ND	0.2943	ND	18.88	0.04692	0.2294	ND	0.07557	ND	0.02889	ND	0.1601	ND	0.1	ND	0.1899	ND	0.1071	ND	0.1723	ND	0.1496
Ethylbenzene	0.1339	ND	2.266	0.03435	1.299	ND	12.14	9.116	15.27	0.1406	6.511	0.3603	1.793	0.09361	2.301	0.09724	0.6059	0.1127	2.116	0.1294	1.195	0.2874	1.467	0.1029	0.3048
m,p-Xylene	0.3212	0.01402	2.186	0.1028	1.199	0.01384	396.8	9.135	13.85	0.1250	6.339	0.2815	1.753	0.08567	2.005	0.08885	1.227	0.1008	1.662	0.1152	0.9286	0.2046	0.9649	0.08412	0.6725
o-Xylene	0.3101	ND	1.517	0.1185	0.9075	ND	507.5	6.132	8.533	0.1000	4.078	0.1868	1.568	0.06843	1.574	0.06295	0.9899	0.06364	1.92	0.1033	1.14	0.2092	1.991	0.09403	0.5597

Sample ID	MB18-430	AST-SVE- 2-#3	MB19-430	AST-SVE- 3-#3	MB20-430	AST-SVE- 3-#3	MB21-430	AST-SVE- 4-#3	MB22-430	AST-SVE- 5-#3	MB23-430	AST-SVE- 6-#3	MB24-430	AST-SVE- 1-#2D	MB25-430	AST-SVE- 6-#3D	MB26-430	AST-SVE- 1-#4	MB27-430	AST-SVE- 1-#4	MB28-430	AST-SVE- 2-#4	MB29-430	AST-SVE- 3-#4	MB30-430
Lab ID	MB18-430.gc	430-018.gc	MB19-430.gc	430-019.gc	MB20-430.gc	430-020.gc	MB21-430.gc	430-021.gc	MB22-430.gc	430-022.gc	MB23-430.gc	430-023.gc	MB24-430.gc	430-024.gc	MB25-430.gc	430-025.gc	MB26-430.gc	460-026.gc	MB27-430.gc	430-027.gc	MB28-430.gc	430-028.gc	MB29-430.gc	430-029.gc	MB30-430.gc
Date Collected	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/28/00	4/30/00	4/29/00	4/30/00	4/29/00	4/30/00	4/29/00	4/30/00	4/29/00	4/30/00
Time Collected		16:42 (50x dil)		16:43 (4x dil)		16:43 (10x dil)		16:50 (2x dil)		16:52 (2x dil)		16:54		10:45 (2x dil)		16:54		12:26 (2x dil)		12:26		12:29 (50x dil)		12:32 (4x dil)	
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	ND	0.2077	ND	0.1306	ND	0.05306	ND	0.0189	ND	0.0202	ND	0.226	ND	0.2955	ND	0.2291	ND	0.01497	ND	0.02827	ND	0.2286	ND	0.03749	ND
Ethylbenzene	0.04401	14.23	0.06832	4.064	0.04049	1.701	0.03676	0.711	0.06947	1.158	0.07188	1.472	0.03643	0.5117	0.07013	1.377	0.02808	0.1541	0.02071	0.2949	0.03342	14.31	0.03131	1.418	0.1004
m,p-Xylene	0.03561	12.63	0.05132	3.507	0.02935	1.489	0.02611	1.555	0.06210	0.9507	0.06720	0.9684	0.02805	1.167	0.06637	0.9667	0.02348	0.3755	0.01706	0.7053	0.02858	12.74	0.01873	2.482	0.08507
o-Xylene	ND	7.276	0.03422	2.643	ND	1.229	ND	1.275	0.04240	1.114	0.07518	2.014	ND	0.842	0.04226	2.263	0.03453	0.4291	ND	0.6715	ND	7.89	ND	1.969	0.05118

Sample ID	AST-SVE- 3-#4	MB31-430	AST-SVE- 4-#4	MB32-430	AST-SVE- 5-#4	MB33-430	AST-SVE- 6-#4	MB34-430	AST-SVE- 4-#4D	MB35-430	MB01-501	AST-SVE- 1-#5	MB02-501	AST-SVE- 2-#5	MB03-501	AST-SVE- 2-#5D	MB04-501	AST-SVE- 2-#5T	MB05-501	AST-SVE- 3-#5	MB06-501	AST-SVE- 3-#5	MB07-501	AST-SVE- 4-#5	MB08-501
Lab ID	430-030.gc	MB31-430.gc	430-031.gc	MB32-430.gc	430-032.gc	MB33-430.gc	430-033.gc	MB34-430.gc	430-034.gc	MB35-430.gc	MB01-501.gc	501-001.gc	MB02-501.gc	501-002.gc	MB03-501.gc	501-003.gc	MB04-501.gc	501-004.gc	MB05-501.gc	501-005.gc	MB06-501.gc	501-006.gc	MB07-501.gc	501-007.gc	MB08-501.gc
Date Collected	4/29/00	4/30/00	4/29/00	4/30/00	4/29/00	4/30/00	4/29/00	4/30/00	4/29/00	4/30/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00
Time Collected	12:32 (10x dil)		12:38 (2x dil)		12:44 (2x dil)		12:42		12:38 (2x dil)			19:49		19:54 (50x dil)		19:54 (50x dil)		19:54 (50x dil)		19:58 (4x dil)		19:58 (10x dil)		20:01 (2x dil)	
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	0.01717	ND	0.04607	ND	0.2127	ND	0.4943	ND	0.0188	ND	ND	0.01029	ND	903.7	ND	0.07131	ND	0.1017	ND	0.02577	ND	0.02797	ND	0.0312	ND
Ethylbenzene	0.565	0.02462	0.6537	0.02690	0.758	ND	1.786	0.04811	1.315	0.06072	0.02518	0.1452	ND	16.86	0.2428	7.103	0.09014	9.356	0.09531	3.102	0.0710	0.6059	0.03001	2.077	0.02990
m,p-Xylene	1.139	0.01814	1.259	0.02065	0.5482	0.01177	1.126	0.03284	1.047	0.05184	0.04333	0.9157	0.02898	43.83	0.5265	18.44	0.2038	23.73	0.1916	7.324	0.1814	3.351	0.06246	5.521	0.06927
o-Xylene	0.9468	ND	0.9553	ND	0.5971	ND	2.047	ND	0.7905	ND	ND	0.6016	ND	16.85	0.1510	5.621	ND	5.88	ND	2.823	0.1473	1.504	ND	2.211	ND

Table 17
Phase II Extended Test
Soil Gas Field Analytical Data
Virgin Islands Chemical Site
St. Croix, U.S. Virgin Islands

Sample ID	AST-SVE-4-#5	MB09-501	AST-SVE-5-#5	MB10-501	AST-SVE-6-#5	MB11-501	AST-SVE-6-#5	MB12-501	Exhaust #11	MB13-501	Intake #11	MB14-501	AST-SVE-1-Post	MB15-501	AST-SVE-1-Post	MB16-501	AST-SVE-2-Post	MB17-501	AST-SVE-3-Post	MB18-501	AST-SVE-3-Post	MB19-501	AST-SVE-4-Post	MB20-501	AST-SVE-4-Post
Lab ID	501-008.gc	MB09-501.gc	501-009.gc	MB10-501.gc	501-010.gc	MB11-501.gc	501-011.gc	MB12-501.gc	501-012.gc	MB13-501.gc	501-013.gc	MB14-501.gc	501-014.gc	501-015.gc	501-016.gc	501-017.gc	501-018.gc	501-019.gc	501-020.gc	501-021.gc	501-022.gc	501-023.gc	501-024.gc	501-025.gc	501-026.gc
Date Collected	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/29/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	5/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00
Time Collected	20:01 (5x dil)		20:05 (2x dil)		20:07		20:07 (4x dil)		7:30 (50x dil)		7:35		10:50 (2x dil)		10:50 (50x dil)		10:55 (50x dil)		11:00 (50x dil)		11:00 (10x dil)		11:05 (10x dil)		11:05 (25x dil)
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	ND	ND	0.1358	ND	0.2666	ND	0.08624	ND	0.07114	ND	0.05197	NS	7.663	0.04683	0.1706	ND	0.1157	ND	0.00894	ND	0.03943	ND	0.008868	ND	ND
Ethylbenzene	0.3323	ND	1.242	0.05881	1.884	0.05373	0.2202	ND	2.968	ND	0.2027	NS	71.64	0.001182	2.669	0.03456	15.19	0.05835	0.1435	0.01948	0.1735	ND	0.7845	0.01742	3248
m,p-Xylene	2.098	0.02455	3.151	0.1587	4.38	0.1186	1.493	0.03928	7.821	0.03414	2.103	NS	187.1	0.003017	6.449	0.08782	42.1	0.1374	0.4983	0.04912	1.904	0.04617	5.376	0.04376	2.238
o-Xylene	1.14	ND	1.753	ND	4.43	ND	2.127	0.08924	4.824	0.1501	3.194	NS	113	0.003021	4.731	ND	21.79	ND	0.29	ND	1.877	ND	3.761	ND	1.708

Sample ID	MB21-501	AST-SVE-5-Post	MB22-501	AST-SVE-5-Post	MB23-501	AST-SVE-6-Post	MB24-501	AST-VMP-11-Post	MB25-501	AST-VMP-11-Post	MB26-501	AST-VMP-1D-Post	MB27-501	AST-VMP-1D-Post	MB28-501	AST-VMP-2S-Post	MB29-501	AST-VMP-1D-Post	MB30-501	AST-VMP-2S-Post	MB31-501	AST-VMP-2I-Post	MB01-502	AST-VMP-2I-Post	MB02-502
Lab ID	MB21-501.gc	501-021.gc	MB22-501.gc	501-022.gc	MB23-501.gc	501-023.gc	MB24-501.gc	501-024.gc	MB25-501.gc	501-025.gc	MB26-501.gc	501-026.gc	MB27-501.gc	501-027.gc	MB28-501.gc	501-028.gc	MB29-501.gc	501-029.gc	MB30-501.gc	501-030.gc	MB31-501.gc	502-001.gc	MB01-502.gc	502-002.gc	MB02-502.gc
Date Collected	5/1/00	5/1/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/1/00	4/30/00	5/2/00	4/30/00	5/2/00
Time Collected		11:08 (10x dil)		11:08 (4x dil)		11:10 (4x dil)		14:30 (4x dil)		14:30 (50x dil)		14:35		14:35 (20x dil)		14:38		14:35 (50x dil)		14:38 (10x dil)		14:40		14:40 (4x dil)	
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	NS	0.04593	ND	0.06373	ND	0.08508	ND	27.61	0.08534	1.229	0.02722	0.7449	ND	0.02238	ND	0.04899	ND	0.02238	ND	0.00731	ND	0.07666	NS	0.04514	ND
Ethylbenzene	NS	0.2363	0.02806	0.4584	ND	1.03	0.02758	9.842	0.004362	22.6	0.4250	29.95	0.3663	0.7767	0.08124	2.779	0.1328	0.4057	0.02695	0.1512	0.02201	2.405	NS	1.087	ND
m,p-Xylene	NS	0.6405	0.07033	1.387	0.0430	2.728	0.06583	851.4	0.01032	52.76	0.002448	59.27	0.7546	4.285	0.2047	5.981	0.3042	2.435	0.06410	1.032	0.07939	3.056	NS	1.574	0.02068
o-Xylene	NS	0.573	ND	1.387	ND	2.881	ND	400.3	0.005053	19.55	0.0103	29.47	0.3434	8.518	ND	9.886	0.1514	5.586	ND	6.111	ND	4.21	NS	3.608	ND

Sample ID	AST-VMP-2D-Post	MB03-502	AST-VMP-3S-Post	MB04-502	AST-VMP-3I-Post	MB05-502	AST-VMP-3D-Post	MB06-502	AST-VMP-4S-Post	MB07-502	AST-VMP-4I-Post	MB08-502	AST-VMP-4D-Post	MB09-502											
Lab ID	502-003.gc	MB03-502.gc	502-004.gc	MB04-502.gc	502-005.gc	MB05-502.gc	502-006.gc	MB06-502.gc	502-007.gc	MB07-502.gc	502-008.gc	502-009.gc	502-010.gc	MB09-502.gc											
Date Collected	4/30/00	5/2/00	4/30/00	5/2/00	4/30/00	5/2/00	4/30/00	5/2/00	4/30/00	5/2/00	4/30/00	5/2/00	4/30/00	5/2/00											
Time Collected	14:45 (10x dil)		14:50		14:53 (2x dil)		14:55 (2x dil)		14:58		15:00		15:03 (2x dil)												
Matrix	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas	soil-gas
VOCs (ppm)																									
Toluene	0.03691	ND	1.521	ND	0.1184	ND	0.0183	ND	0.08027	ND	0.01386	ND	0.01035	ND											
Ethylbenzene	0.1726	ND	1.462	0.03885	2.25	0.07816	0.2033	ND	0.2706	0.03232	0.5051	0.02753	0.1993	0.04625											
m,p-Xylene	0.4527	0.01761	1.563	0.05286	1.596	0.06959	0.5146	0.01933	0.797	0.03827	0.4542	0.03262	0.4527	0.05049											
o-Xylene	1.843	ND	2.346	ND	1.748	ND	1.396	ND	1.522	ND	0.235	ND	1.087	ND											

NS - Not Saved
ND - Not Detected

Table 18
Comparison of Laboratory and Field GC Analytical Data
Phase II Extended Test

LAB DATA				FIELD DATA											
Client ID:	AST-SVE-4-Ext #1	AST-SVE-4	Relative	AST-VMP-11-Ext #1	AST-VMP-11	Relative	AST-SVE-5 #1	AST-SVE-5	Relative	AST-SVE-2	AST-SVE-2-#5	Relative			
Testing Period/Time:	1615	428-004.gc	Percent	1620	430-001.gc	Percent	1615	428-006.gc	Percent	2050	501-002.gc	Percent			
Lab ID	B27 232	4/27/00	Difference	B27 234	4/27/00	Difference	B27 241	4/27/00	Difference	B27 252	4/29/00	Difference			
Date Sampled:	27-Apr-00	16:35	(%)	27-Apr-00	16:42	(%)	28-Apr-00	16:38	(%)	29-Apr-00	19:54	(%)			
Matrix:	Soil-Gas	soil-gas		Soil-Gas	soil-gas		Soil-Gas	soil-gas		Soil-Gas	soil-gas				
Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)			
Toluene	0.2	0.03507	140	0.18	0.1255	36	0.33	0.06481	134	4.96	45185	-200			
Ethylbenzene	<0.07	1.054	-175	0.09	1.021	-168	<0.07	0.8182	-168	150.07	843	-140			
m&p-Xylene	<0.07	6.131	-195	0.37	0.8243	-76	0.17	1.712	-164	669.52	2191.5	-106			
o-Xylene	<0.07	1.243	-179	<0.07	0.7534	-166	0.36	0.5112	-35	73.3	842.5	-168			
LAB DATA				FIELD DATA				LAB DATA				FIELD DATA			
Client ID:	AST-VMP-21(Post)	AST-VMP-21-Post	Relative	AST-VMP-41(Post)	AST-VMP-41-Post	Relative	AST-VMP-3(Post)	AST-VMP-31-Post	Relative						
Testing Period/Time:	1030	502-001.gc	Percent	1040	502-008.gc	Percent	1050	502-005.gc	Percent						
Lab ID	B27 256	4/30/00	Difference	B27 257	4/30/00	Difference	B27 258	4/30/00	Difference						
Date Sampled:	30-Apr-00	14:40	(%)	30-Apr-00	15:00	(%)	30-Apr-00	14:53	(%)						
Matrix:	Soil-Gas	soil-gas		Soil-Gas	soil-gas		Soil-Gas	soil-gas							
Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)			
Toluene	0.83	0.07666	166	0.27	0.01386	180	0.24	0.2368	1						
Ethylbenzene	0.99	2.405	-83	<0.07	0.5051	-151	<0.07	4.50	-194						
m&p-Xylene	1.55	3.056	-65	<0.07	0.4542	-147	<0.07	3.192	-191						
o-Xylene	0.33	4.21	-171	<0.07	0.235	-108	<0.07	3.496	-192						
LAB DATA				FIELD DATA				LAB DATA				FIELD DATA			
Client ID:	Intake-Ext. #1	Intake #2 (1)	Relative	Intake #2	Intake #4 (1)	Relative	Intake #3	No	Relative	Intake #4	Intake #11	Relative			
Testing Period/Time:	1503	427-003.gc	Percent	1600	428-014.gc	Percent	2040	Concurrent	Percent	0758	501-013.gc	Percent			
Lab ID	B27 229	4/27/00	Difference	B27 238	4/28/00	Difference	B27 249	Sample	Difference	B27 253	4/30/00	Difference			
Date Sampled:	27-Apr-00	12:44	(%)	28-Apr-00	9:30	(%)	29-Apr-00		(%)	30-Apr-00	7:35	(%)			
Matrix:	Soil-Gas	soil-gas		Soil-Gas	soil-gas		Soil-Gas			Soil-Gas	soil-gas				
Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)			
Toluene	7.14	0.046	197	6.09	0.9877	144	3.47		100	3.07	0.05197	193			
Ethylbenzene	132.22	ND	-	107.17	26.02	122	41.27		100	26.62	0.2027	197			
m&p-Xylene	576.54	1.275	199	489.89	46.09	166	157.94		100	95.54	2.103	191			
o-Xylene	62.58	0.466	197	55.3	4.495	170	19.85		100	11.33	3.194	112			
LAB DATA				FIELD DATA				LAB DATA				FIELD DATA			
Client ID:	Exhaust-Ext. #1	Exhaust #2	Relative	Exhaust-Ext #2	Exhaust #3	Relative	Exhaust #3	Exhaust #5	Relative	Exhaust #4	Exhaust #6	Relative			
Testing Period/Time:	1500	427-004.gc	Percent	1900	428-011.gc	Percent	1035	428-019.gc	Percent	1600	428-021.gc	Percent			
Lab ID	B27 230	4/27/00	Difference	B27 235	4/27/00	Difference	B27 236	4/28/00	Difference	B27 237	4/28/00	Difference			
Date Sampled:	27-Apr-00	12:44	(%)	27-Apr-00	20:05	(%)	28-Apr-00	12:20	(%)	28-Apr-00	16:05	(%)			
Matrix:	Soil-Gas	soil-gas		Soil-Gas	soil-gas		Soil-Gas	soil-gas		Soil-Gas	soil-gas				
Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)			
Toluene	5.5	4.317	24	4.53	6.951	-42	7.15	4.294	50	1.96	2.861	-37			
Ethylbenzene	100.66	3.255	187	68.09	2.653	185	132.72	121.7	9	24.85	11.48	74			
m&p-Xylene	456.89	580.8	-24	290.58	451.9	-43	590.42	319.9	59	100.67	29.9	108			
o-Xylene	50.78	197.3	-118	33.55	43.42	-26	65.34	5.135	171	12.32	4.285	97			
LAB DATA				FIELD DATA				LAB DATA				FIELD DATA			
Client ID:	Exhaust #5	Exhaust #9	Relative	Exhaust #6	No	Relative	Exhaust #7	Exhaust #11	Relative	Exhaust #8	No	Relative			
Testing Period/Time:	1212	429-003.gc	Percent	2045	Concurrent	Percent	0800	501-012.gc	Percent	1505	Concurrent	Percent			
Lab ID	B27 247	4/29/00	Difference	B27 250	Sample	Difference	B27 255	4/30/00	Difference	B27 265	Sample	Difference			
Date Sampled:	29-Apr-00	12:12	(%)	29-Apr-00		(%)	30-Apr-00	7:30	(%)	30-Apr-00		(%)			
Matrix:	Soil-Gas	soil-gas		Soil-Gas			Soil-Gas	soil-gas		Soil-Gas					
Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)				Site Target Compounds (ppmv)			
Toluene	2.75	7.108	-88	2.66		100	2.37	3.557	-40	0.32		100			
Ethylbenzene	37.98	340.3	-160	37.62		100	21.8	148.4	-149	<0.07		100			
m&p-Xylene	152.72	306.1	-67	151.34		100	79.47	391.05	-132	0.16		100			
o-Xylene	19.51	73.14	-116	19.36		100	9.33	241.2	-185	<0.07		100			

Notes:

1. See text for description of laboratory and field data sources
2. Some samples concurrent only to within 6.5 hours but data presented for informative purposes.

Table 19
Phase II Extended Test Mass Removal Calculations
Laboratory Analytical Data at the Intake Pert
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Sample Port	Sample Date Time	Compound	Molecular Weight	Concentration [ppmv] (1)	Concentration [ug/L]	Flow Rate [ft3/min]	Pressure [in. H ₂ O]	Mass Removal Rate [lb/day]	Time from start of test [hours]	Time over interval [hours]	Mass removed over interval [lb]	Cumulative Mass Removed [lb]
Start of test	4/27/00 940								0			
Intake	4/27/00 1503	Ethylbenzene	106.2	132.22	584.10	145	-30	7.0	5.4	17.9	5.2	5.2
		m&p-Xylene	106.2	576.54	2546.94	145	-30	30.7			22.9	22.9
		o-Xylene	106.2	62.58	276.46	145	-30	3.3			2.5	2.5
		Chloroform	119.35	0.033	0.16	145	-30	0.002			0.001	0.001
Intake	4/28/00 1600	Ethylbenzene	106.2	107.17	473.44	160	-20	6.5	30.4	26.85	7.2	12.5
		m&p-Xylene	106.2	489.89	2164.16	160	-20	29.5			33.0	55.9
		o-Xylene	106.2	55.3	244.30	160	-20	3.3			3.7	6.2
		Chloroform	119.35	0.084	0.42	160	-20	0.006			0.006	0.008
Intake	4/29/00 2040	Ethylbenzene	106.2	41.27	182.32	168	-18	2.6	59.1	20	2.2	14.7
		m&p-Xylene	106.2	157.94	697.72	168	-18	10.1			8.4	64.3
		o-Xylene	106.2	19.85	87.69	168	-18	1.3			1.1	7.3
		Chloroform	119.35	0.19	0.94	168	-18	0.014			0.011	0.019
Intake	4/30/00 758	Ethylbenzene	106.2	26.62	117.60	158	-60	1.4	70.4	7.45	0.4	15.1
		m&p-Xylene	106.2	95.54	422.06	158	-60	5.1			1.6	65.9
		o-Xylene	106.2	11.33	50.05	158	-60	0.6			0.2	7.5
		Chloroform	119.35	0.245	1.22	158	-60	0.015			0.005	0.024
End of test	4/30/00 950								72.2		Grand Total:	88.5

(1) Samples collected by McLaren/Hart

(2) Concentration data from Microseeps Lab analyses

304931

September 2000

Table 20
Phase II Extended Test
Mass Removal Calculations
Field GC Analytical Data at the Intake Port
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Sample Port	Sample Date Time	Compound	Molecular Weight	Concentration [ppmv] (1)	Concentration [ug/L]	Flow Rate [ft3/min]	Pressure [in. H2O]	Mass Removal Rate [lb/day]	Time from start of test [hours]	Time over interval [hours]	Mass removed over interval [lb]	Cumulative Mass Removed [lb]
Start of test	4/27/00 940								0			
Intake	4/27/00 1244	Ethylbenzene	106.2	0.133	0.59	145	-30	0.007	3	6.65	0.002	0.002
		m&p-Xylene	106.2	1.002	4.43	145	-30	0.053			0.015	0.015
		o-Xylene	106.2	0.3355	1.48	145	-30	0.018			0.005	0.005
Intake	4/27/00 2000	Ethylbenzene	106.2	5.353	23.65	160	-30	0.314	10.3	10.5	0.138	0.140
		m&p-Xylene	106.2	14.61	64.54	160	-30	0.858			0.375	0.390
		o-Xylene	106.2	1.866	8.24	160	-30	0.110			0.048	0.053
Intake	4/28/00 930	Ethylbenzene	106.2	26.02	114.95	168	-29	1.609	24	29.85	2.001	2.141
		m&p-Xylene	106.2	46.09	203.61	168	-29	2.850			3.545	3.935
		o-Xylene	106.2	4.495	19.86	168	-29	0.278			0.346	0.399
Intake	4/30/00 735	Ethylbenzene	106.2	0.202	0.89	158	-60	0.011	70	25.2	0.011	2.152
		m&p-Xylene	106.2	2.103	9.29	158	-60	0.112			0.118	4.053
		o-Xylene	106.2	3.194	14.11	158	-60	0.171			0.179	0.578
End of test	4/30/00 950								72.2		Grand Total:	6.8

Notes:

(1) Concentration data from Photovac Field GC analyses

304932

Table 21
Phase II Extended Test Mass Removal Calculations
Laboratory Analytical Data at the Exhaust Port
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Sample Port	Sample Date Time	Compound	Molecular Weight	Concentration [ppmv] (1)	Concentration [ug/L]	Flow Rate [ft3/min]	Pressure [in. H ₂ O]	Press. Corr'n	Temp [F]	Temp [C]	Temp Corr'n	Mass Removal Rate [lb/day]	Time from start of test [hours]	Time over interval [hours]	Mass removed over interval [lb]	Cumulative Mass Removed [lb]
Start of test	4/27/00 940												0			
Exhaust	4/27/00 1500	Ethylbenzene	106.2	100.66	444.68	145	39	1.096	140	60	0.895	5.7	5.4	7.4	1.7	1.7
		m&p-Xylene	106.2	456.89	2018.37	145	39	1.096	140	60	0.895	25.8			7.9	7.9
		o-Xylene	106.2	50.78	224.33	145	39	1.096	140	60	0.895	2.9			0.9	0.9
		Chloroform	119.35	0.027	0.13	145	39	1.096	140	60	0.895	0.002			0.001	0.001
Exhaust	4/27/00 1900	Ethylbenzene	106.2	68.09	300.80	155	39	1.096	135	57	0.902	4.1	9.4	9.75	1.7	3.4
		m&p-Xylene	106.2	290.58	1283.68	155	39	1.096	135	57	0.902	17.7			7.2	15.1
		o-Xylene	106.2	33.55	148.21	155	39	1.096	135	57	0.902	2.0			0.8	1.7
		Chloroform	119.35	0.024	0.12	155	39	1.096	135	57	0.902	0.002			0.001	0.001
Exhaust	4/28/00 1035	Ethylbenzene	106.2	132.72	586.31	145	39	1.096	140	60	0.895	7.5	24.9	10.5	3.3	6.7
		m&p-Xylene	106.2	590.42	2608.26	145	39	1.096	140	60	0.895	33.3			14.6	29.7
		o-Xylene	106.2	65.34	288.65	145	39	1.096	140	60	0.895	3.7			1.6	3.3
		Chloroform	119.35	0.159	0.79	145	39	1.096	140	60	0.895	0.010			0.004	0.006
Exhaust	4/28/00 1600	Ethylbenzene	106.2	24.85	109.78	160	30	1.074	135	57	0.902	1.5	30.4	12.85	0.8	7.5
		m&p-Xylene	106.2	100.67	444.72	160	30	1.074	135	57	0.902	6.2			3.3	33.0
		o-Xylene	106.2	12.32	54.43	160	30	1.074	135	57	0.902	0.8			0.4	3.7
		Chloroform	119.35	0.032	0.16	160	30	1.074	135	57	0.902	0.002			0.001	0.007
Exhaust	4/29/00 1212	Ethylbenzene	106.2	37.98	167.78	167	28	1.069	125	52	0.918	2.5	50.6	14.35	1.5	9.0
		m&p-Xylene	106.2	152.72	674.66	167	28	1.069	125	52	0.918	9.9			5.9	38.9
		o-Xylene	106.2	19.51	86.19	167	28	1.069	125	52	0.918	1.3			0.8	4.5
		Chloroform	119.35	0.096	0.48	167	28	1.069	125	52	0.918	0.007			0.004	0.011
Exhaust	4/29/00 2045	Ethylbenzene	106.2	37.62	166.19	168	28	1.069	130	54	0.910	2.4	59.1	9.9	1.0	10.0
		m&p-Xylene	106.2	151.34	668.57	168	28	1.069	130	54	0.910	9.8			4.0	43.0
		o-Xylene	106.2	19.36	85.53	168	28	1.069	130	54	0.910	1.3			0.5	5.0
		Chloroform	119.35	0.125	0.62	168	28	1.069	130	54	0.910	0.009			0.004	0.015
Exhaust	4/30/00 800	Ethylbenzene	106.2	21.8	96.30	158	29	1.071	125	52	0.918	1.3	70.4	7.45	0.4	10.4
		m&p-Xylene	106.2	79.47	351.07	158	29	1.071	125	52	0.918	4.9			1.5	44.5
		o-Xylene	106.2	9.33	41.22	158	29	1.071	125	52	0.918	0.6			0.2	5.2
		Chloroform	119.35	0.177	0.88	158	29	1.071	125	52	0.918	0.012			0.004	0.019
													72.2		Grand Total:	60.1

(1) Concentration data from Microseeps Lab analyses

Notes:

Samples taken upstream of blower at unknown location

Flow rate measured upstream of blower at unknown location

Table 22
Phase II Extended Test
Mass Removal Calculations
Field GC Analytical Data at the Exhaust Port
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Sample Port	Sample Date	Compound	Molecular Weight	Concentration [ppmv] (1)	Concentration [ug/L]	Flow Rate [ft3/min]	Pressure [in. H2O]	Press Corr'n	Temp. [F]	Temp. [C]	Temp Corr'n	Mass Removal Rate [lb/day]	Time from start of test [hours]	Time over interval [hours]	Mass removed over interval [lb]	Cumulative Mass Removed [lb]
Start of test	4/27/00 940												0			
Exhaust	4/27/00 1244	Ethylbenzene	106.2	3.255	14.38	145	39	1.096	140	60	0.895	0.183	3	6.65	0.051	0.05
		m&p-Xylene	106.2	580.8	2565.76	145	39	1.096	140	60	0.895	32.734			9.070	9.07
		o-Xylene	106.2	197.3	871.60	145	39	1.096	140	60	0.895	11.120			3.081	3.08
Exhaust	4/27/00 2005	Ethylbenzene	106.2	2.653	11.72	155	39	1.096	135	57	0.902	0.161	10.3	10.4	0.070	0.12
		m&p-Xylene	106.2	451.9	1996.33	155	39	1.096	135	57	0.902	27.455			11.897	20.97
		o-Xylene	106.2	43.42	191.81	155	39	1.096	135	57	0.902	2.638			1.143	4.22
Exhaust	4/28/00 930	Ethylbenzene	106.2	132.1	583.57	145	39	1.096	140	60	0.895	7.445	23.8	10.05	3.118	3.24
		m&p-Xylene	106.2	314.5	1389.35	145	39	1.096	140	60	0.895	17.725			7.422	28.39
		o-Xylene	106.2	34.43	152.10	145	39	1.096	140	60	0.895	1.940			0.813	5.04
Exhaust	4/28/00 1605	Ethylbenzene	106.2	114.8	507.14	159	30	1.074	130	54	0.910	7.070	30.4	5.6	1.650	4.89
		m&p-Xylene	106.2	299	1320.87	159	30	1.074	130	54	0.910	18.413			4.296	32.69
		o-Xylene	106.2	42.85	189.30	159	30	1.074	130	54	0.910	2.639			0.616	5.65
Exhaust	4/28/00 2040	Ethylbenzene	106.2	111.3	491.68	157	30	1.074	125	52	0.918	6.826	35	8.5	2.417	7.31
		m&p-Xylene	106.2	298.2	1317.34	157	30	1.074	125	52	0.918	18.288			6.477	39.16
		o-Xylene	106.2	45.23	199.81	157	30	1.074	125	52	0.918	2.774			0.982	6.63
Exhaust	4/29/00 908	Ethylbenzene	106.2	296.9	1311.60	167	28	1.069	125	52	0.918	19.279	47.4	7.7	6.185	13.49
		m&p-Xylene	106.2	283.9	1254.17	167	28	1.069	125	52	0.918	18.435			5.915	45.08
		o-Xylene	106.2	82.73	365.47	167	28	1.069	125	52	0.918	5.372			1.724	8.36
Exhaust	4/29/00 1212	Ethylbenzene	106.2	340.3	1503.32	167	28	1.069	125	52	0.918	22.097	50.4	11.15	10.266	23.76
		m&p-Xylene	106.2	306.1	1352.24	167	28	1.069	125	52	0.918	19.876			9.234	54.31
		o-Xylene	106.2	73.14	323.11	167	28	1.069	125	52	0.918	4.749			2.206	10.56
Exhaust	4/30/00 730	Ethylbenzene	106.2	148.4	655.58	158	29	1.071	125	52	0.918	9.138	69.7	12.15	4.626	28.38
		m&p-Xylene	106.2	391.05	1727.52	158	29	1.071	125	52	0.918	24.079			12.190	66.50
		o-Xylene	106.2	241.2	1065.53	158	29	1.071	125	52	0.918	14.852			7.519	18.08
End of test	4/30/00 950												72.2		Grand Total:	113.0

(1) Concentration data from Photovac field gc analyses

Table 23
Groundwater Analytical Results - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Client ID:	AST-VMP-1D	AST-VMP-1D	AST-VMP-1D	AST-VMP-1D	AST-VMP-2D	AST-VMP-2D (duplicate)	AST-VMP-2D	AST-VMP-2D	AST-VMP-3D	AST-VMP-3D	AST-VMP-3D	AST-VMP-4D	AST-VMP-4D	AST-VMP-4D
Sample Depth:														
Lab ID	2010021	2011123	2014007	2014130	2010022	2010023	2011124	2014465	2010024	2011125	2014131	2010025	2011117	2014132
Date Sampled:	13-Mar-00	30-Mar-00	29-Apr-00	01-May-00	13-Mar-00	13-Mar-00	30-Mar-00	03-May-00	13-Mar-00	30-Mar-00	01-May-00	13-Mar-00	30-Mar-00	01-May-00
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Site Target Compounds (ug/L)														
Acetone	2000 U	1000 U	1000 U	1000 U	1000 U	1000 U	500 U	40 U	1000 U	1000 U	1000 U	10 U	10 U	10 U
Chloroform	2000 U	1000 U	1000 U	1000 U	1000 U	1000 U	500 U	40 U	1000 U	1000 U	1000 U	1.9 J	2.4 J	2.1 J
Ethylbenzene	8510	11100	6150	4290	5490	4390	3170	401	7540	6850	6750	10 U	1.3 J	35.5
Methylene chloride	2000 U	1000 U	1000 U	1000 U	1000 U	1000 U	500 U	40 U	1000 U	1000 U	1000 U	10 U	10 U	10 U
Toluene	2000 U	1000 U	1000 U	1000 U	1000 U	1000 U	500 U	40 U	1000 U	1000 U	1000 U	10 U	10 U	10 U
Xylene (total)	31900	34100	26300	15300	24500	21300	12600	907	38000	35900	24200	10 U	10 U	307
Natural Attenuation Parameters (mg/L)														
Ammonia	--	--	--	--	5.9	--	--	--	--	--	--	--	--	--
Dissolved oxygen	--	--	--	--	8.2/14.7/15.8	--	--	--	5	--	--	0	--	--
Iron	--	--	--	--	7.3	--	--	--	--	--	--	--	--	--
Nitrate	--	--	--	--	0.1	--	--	--	--	--	--	--	--	--
Nitrite	--	--	--	--	0.435	--	--	--	--	--	--	--	--	--
Sulfate	--	--	--	--	122	--	--	119	--	--	--	--	--	--
Sulfide	--	--	--	--	0.61	--	--	--	--	--	--	--	--	--
SVE/AS System Parameter (mg/L)														
Carbon Dioxide	40	--	--	--	58	--	--	--	60	--	--	50	--	--

Client ID:	MW-1	MW-1	MW-1	MW-1	MW-6	MW-6	MW-6	MW-8	MW-8 (duplicate)	MW-8	MW-8	MW-10	MW-10
Sample Depth:													
Lab ID	209600	2011120	2014006	2014461	209599	2011128	2014462	209596	209597	2011122	2014463	209594	2011121
Date Sampled:	09-Mar-00	29-Mar-00	29-Apr-00	03-May-00	09-Mar-00	29-Mar-00	03-May-00	08-Mar-00	08-Mar-00	29-Mar-00	03-May-00	07-Mar-00	30-Mar-00
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Site Target Compounds (ug/L)													
Acetone	5000 U	2500 U	500 U	1000 U	4000 U	1000 U	1000 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	5000 U	2500 U	500 U	1000 U	4000 U	1000 U	1000 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	19600	21600	1040	7680	12400	12400	14500	10 U	10 U	2.7 J	10 U	10 U	10 U
Methylene chloride	5000 U	2500 U	500 U	1000 U	4000 U	1000 U	1000 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5000 U	463 J	500 U	155 J	4000 U	146 J	131 J	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	89000	108000	8700	40100	60700	60600	63000	10 U	10 U	11.6	10 U	10 U	10 U
Natural Attenuation Parameters (mg/L)													
Ammonia	1.1	--	--	--	0.7	--	--	0	--	--	--	0.4	--
Dissolved oxygen	0	--	--	--	0	--	--	0	--	--	--	0	--
Iron	0.9	--	--	--	3.1	--	--	0	--	--	--	0.1	--
Nitrate	0	--	--	--	0.04	--	--	0.65	--	--	--	0.5	--
Nitrite	0	--	--	--	0	--	--	0.01	--	--	--	0.005	--
Sulfate	10 U	--	--	25	47.4	--	66.3	74.6	--	--	84.9	286	--
Sulfide	0.51	--	--	--	0.11	--	--	0	--	--	--	0	--
SVE/AS System Parameter (mg/L)													
Carbon Dioxide	68	--	--	--	100	--	--	40	--	--	--	80	--

U: Not detected below method detection limit
J: Estimated value

Table 24
Groundwater Analytical Results - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Client ID:	FPP-VMP-1D	FPP-VMP-1D	FPP-VMP-1D	FPP-VMP-1D	FPP-VMP-1D	FPP-VMP-2D	FPP-VMP-3D	FPP-VMP-3D	FPP-VMP-3D	FPP-VMP-4D	FPP-VMP-4D	FPP-VMP-4D	FPP-VMP-4D
Sample Depth:			(duplicate)										
Lab ID	2010029	2011237	2011238	2014010	2014014	2014011	209852	2011115	2014015	209853	2011241	2014009	2014013
Date Sampled:	14-Mar-00	30-Mar-00	30-Mar-00	30-Apr-00	01-May-00	01-May-00	10-Mar-00	30-Mar-00	01-May-00	10-Mar-00	31-Mar-00	30-Apr-00	01-May-00
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Site Target Compounds (ug/L)													
Acetone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	39.8	25.6	25.5	81.6	137	3.7 J	11.5	7.3 J	9.8 J	33.9	19.8	12.1	20.2
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	3.4 J	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	2.1 J	3.1 J	10 U	10 U	10 U	15.3	10 U	10 U	10 U	10 U	10 U	10 U
Natural Attenuation Parameters (mg/L)													
Ammonia	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved oxygen	0	--	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfide	--	--	--	--	--	--	--	--	--	--	--	--	--
SVE/AS System Parameter (mg/L)													
Carbon Dioxide	65	--	--	--	--	--	70	--	--	40	--	--	--

Client ID:	MW-2	MW-2	MW-2	MW-2	MW-2	MW-3	MW-3	MW-7	MW-7	MW-7
Sample Depth:			(duplicate)		(duplicate)					
Lab ID	209595	2011239	2011240	2014469	2014470	209592	2011244	209593	2011242	2014464
Date Sampled:	08-Mar-00	31-Mar-00	31-Mar-00	04-May-00	04-May-00	08-Mar-00	31-Mar-00	08-Mar-00	31-Mar-00	03-May-00
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Site Target Compounds (ug/L)										
Acetone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	37	40.7	38.6	16.7	21.1	10 U	10 U	1.5 J	1.9 J	1.4 J
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	1.4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Natural Attenuation Parameters (mg/L)										
Ammonia	0.7	--	--	--	--	0.4	--	0.3	--	--
Dissolved oxygen	1	--	--	--	--	0.7	--	0.7	--	--
Iron	0	--	--	--	--	4.6	--	0	--	--
Nitrate	0.46	--	--	--	--	0.02	--	1.71	--	--
Nitrite	0.01	--	--	--	--	0	--	0.015	--	--
Sulfate	151	--	--	149	179	194	--	195	--	206
Sulfide	0.02	--	--	--	--	0	--	0	--	--
SVE/AS System Parameter (mg/L)										
Carbon Dioxide	65	--	--	--	--	50	--	70	--	--

Client ID:	MW-11	MW-12	MW-13	MW-14	MW-15
Sample Depth:					
Lab ID	209590	209850	209421	209851	209420
Date Sampled:	08-Mar-00	10-Mar-00	07-Mar-00	10-Mar-00	07-Mar-00
Matrix:	Water	Water	Water	Water	Water
Site Target Compounds (ug/L)					
Acetone	10 U	10 U	10 U	10 U	10 U
Chloroform	40.4	10 U	10 U	10 U	9.4 J
Ethylbenzene	10 U	10 U	10 U	10 U	10 U
Methylene chloride	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U
Natural Attenuation Parameters (mg/L)					
Ammonia	0.1	0.4	0	0	0
Dissolved oxygen	0	0	0	0.5	0
Iron	0	0	0	0	0
Nitrate	0.55	1.05	2.73	2.81	1.48
Nitrite	0.01	0.01	0	0.015	0.02
Sulfate	243	194	182	207	186
Sulfide	0	0	0	0	--
SVE/AS System Parameter (mg/L)					
Carbon Dioxide	75	35	50	50	26

U: Not detected below method detection limit
J: Estimated value

Table 25
Groundwater Analytical Results - Trip and Field Blanks
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

Client ID:	TB030700	TB030800	TB031000	TB031300	TB033000	TB033100	TB042900	TB050200	TB050400	TB050400
Sample Depth:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lab ID	209419	209591	209848	2010020	2011127	2011235	2014008	2014133	2014467	2014471
Date Sampled:	07-Mar-00	08-Mar-00	10-Mar-00	13-Mar-00	30-Mar-00	31-Mar-00	29-Apr-00	02-May-00	04-May-00	04-May-00
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water

Site Target Compounds (ug/L)

Acetone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	1.9 J	1.5 J	2.1 J	4.6 J	1.4 J	4.3 J	10 U	1.8 J	1.6 J	1.9 UJ
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Client ID:	FB030800	FB030900	FB031000	FB031400	FB032900	FB033000	FB033000A	FB033100A	FB033100B	FB050100	FB050300	FB050400
Sample Depth:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lab ID	209598	209846	209849	2010026	2011119	2011126	2011236	2011245	2011243	2014129	2014466	2014468
Date Sampled:	08-Mar-00	09-Mar-00	10-Mar-00	14-Mar-00	29-Mar-00	30-Mar-00	30-Mar-00	31-Mar-00	31-Mar-00	01-May-00	03-May-00	04-May-00
Matrix:	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water

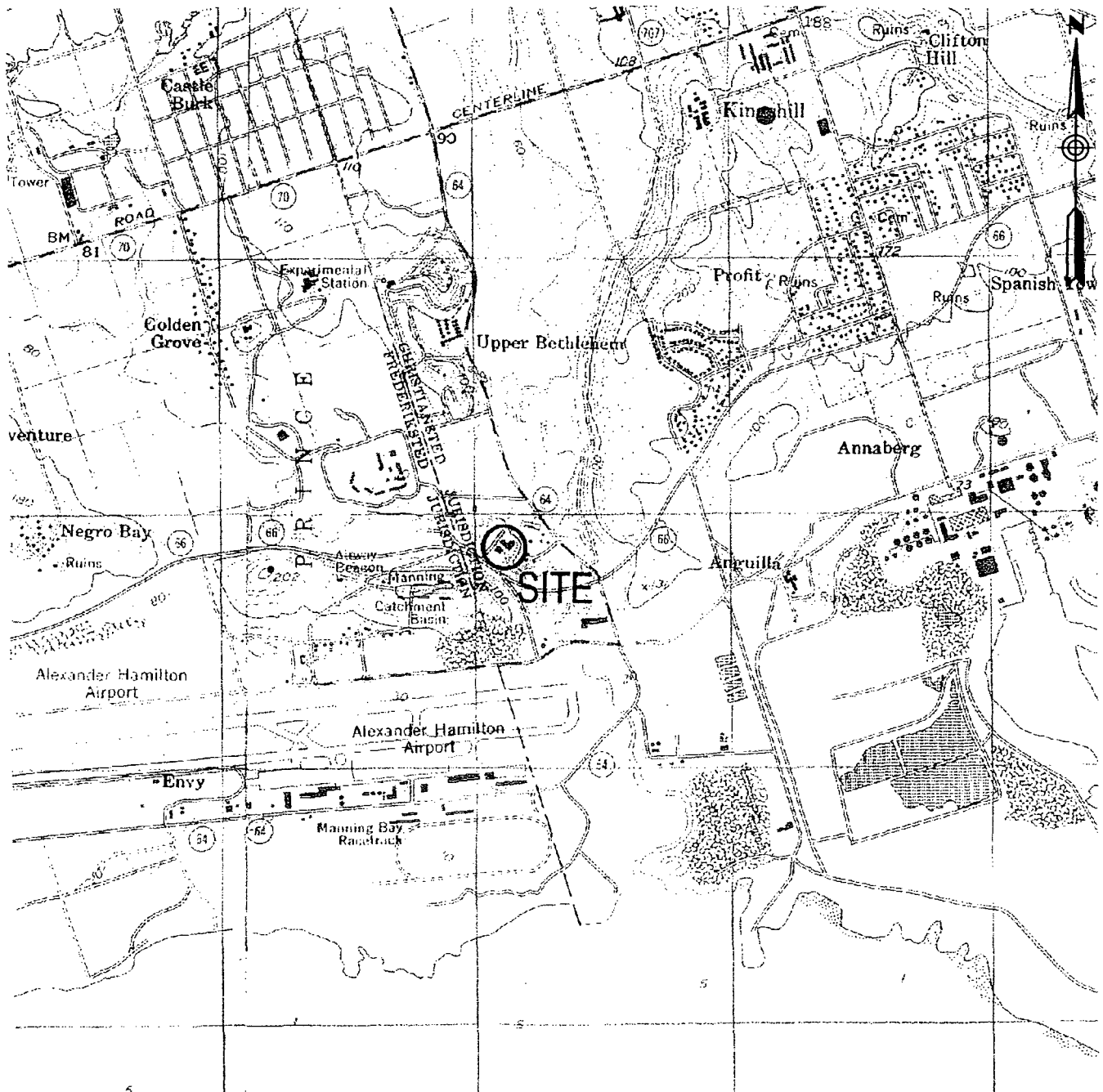
Site Target Compounds (ug/L)

Acetone	10 U	10 U	10 U	8.5 J	10 U	18.7 J	16.3 J	20 J	19.8 J	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1.9 J	10 U	10 U
Methylene chloride	1.7 J	3.1 J	2.4 J	6 J	1.4 J	2 J	3.6 J	3 J	2.8 J	2 J	1.6 J	1.2 J
Toluene	10 U	10 U	10 U	3.8 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	1.3 J	10 U	1.3 J	10 U	10 U	10 U	7.7 J	4.2 J	4.7 J

U: Not detection below method detection limit

J: Estimated value

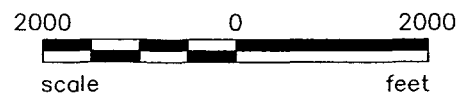
304937



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REFERENCE

1.) MAP TAKEN FROM U.S.G.S. 7.5 MINUTE QUADRANGLE OF CHRISTIANSTED, VIRGIN ISLANDS.



304938

JOB No.:	003-6016	SCALE:	AS SHOWN
CAD BY:	AM	DATE:	10/05/00
CHK BY:	SAS	FILE No.:	US01-039
REV BY:	SAS	DR SUBTITLE:	04

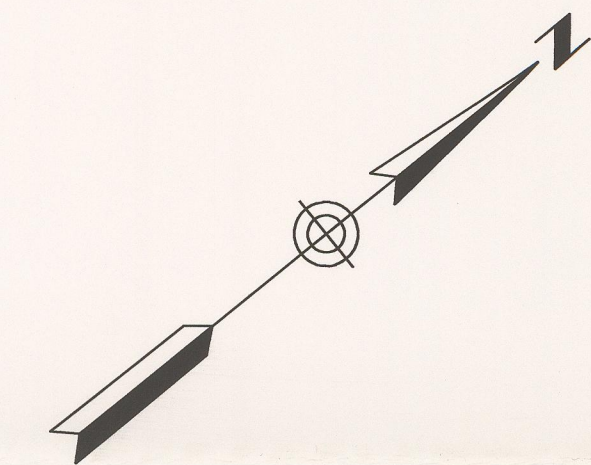
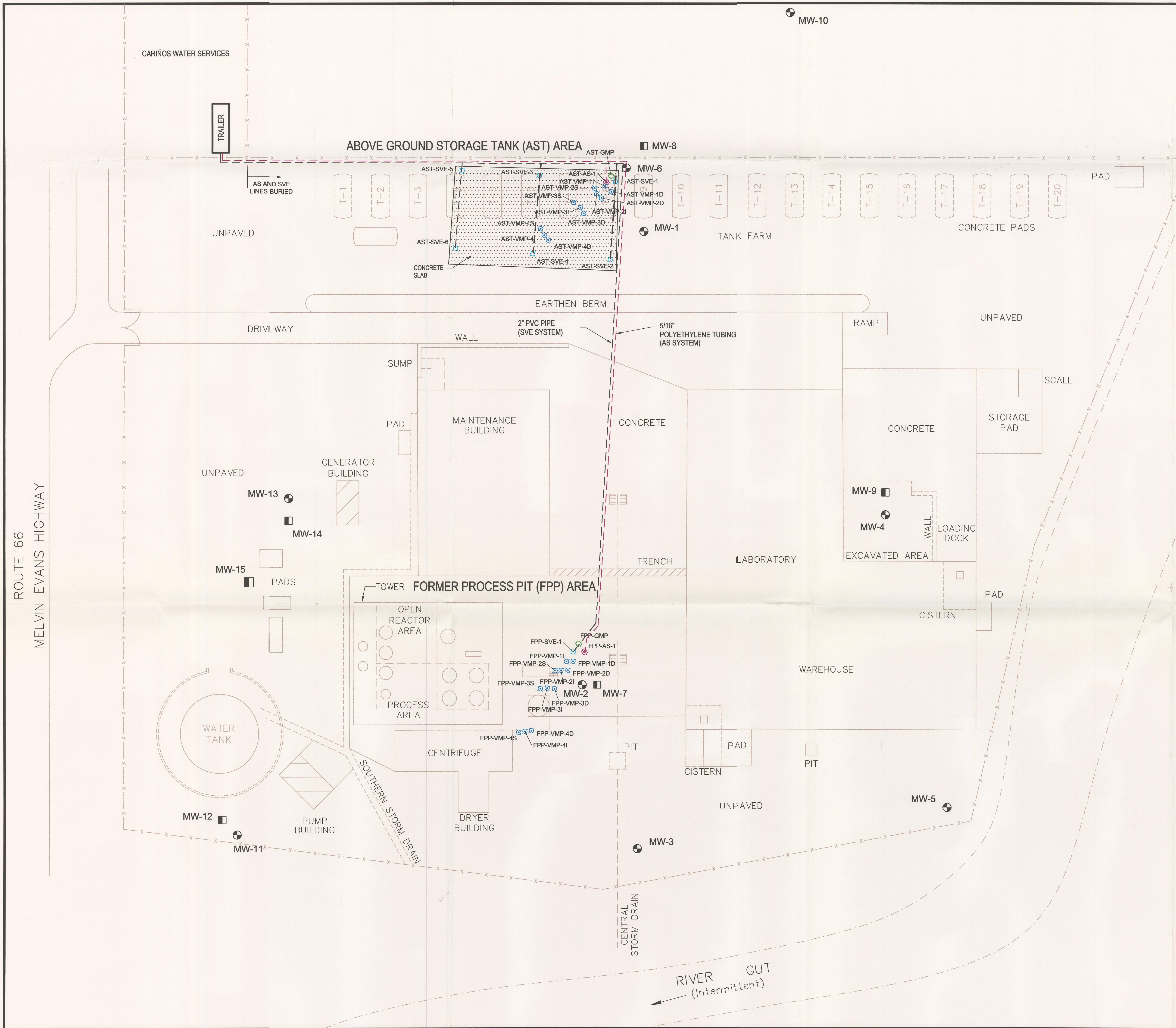
SITE LOCATION MAP

Golder Associates

VIRGIN ISLAND CHEMICAL SITE

FIGURE

1



- LEGEND**
- VAPOR MONITORING PROBE (VMP)
 - SOIL VAPOR EXTRACTION WELL (SVE)
 - AIR SPARGE WELL (AS)
 - GROUNDWATER MONITORING PROBE (GMP)
 - DEEP GROUNDWATER MONITORING WELL
 - SHALLOW GROUNDWATER MONITORING WELL

- NOTES**
- MONITORING WELL LOCATIONS ARE APPROXIMATE.
 - VMP DESIGNATIONS: S=SHALLOW, I=INTERMEDIATE, AND D=DEEP.
 - 2" - 3" CONCRETE SURFACE LAYER EXISTS IN FPP AREA.

REFERENCE

1.) DRAWING BASED ON FIGURE 3-7 OF THE R.I. REPORT ENTITLED "MONITORING WELL LOCATION MAP" DATED 1/11/99 AND INTERNAL McLAREN/HART DRAWING "NEWLOCO.DWG".



SOURCE: MODIFIED FROM DRAWING US01036, PROVIDED BY GOLDER ASSOCIATES 08/00.

REV		DATE	DESCRIPTION	CAD BY	CHK BY	RVW BY
PROJECT: VIRGIN ISLAND CHEMICAL SITE ST. CROIX, U.S. VIRGIN ISLANDS						
SHEET TITLE: SVE/AS PILOT TEST LAYOUT						
PROJECT No.		003-6016		FILE No.:		
CLIENT PROJ. No.				DRAFTING SUBTITLE: 04		
DES BY		ACK	07/14/00	SCALE: AS SHOWN		
CAD BY		AM	09/25/00			
CHK BY		ERTEC	10/05/00			
RVW BY		ERTEC	10/05/00			

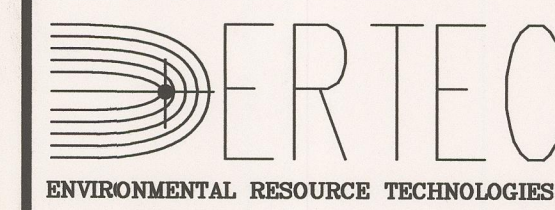
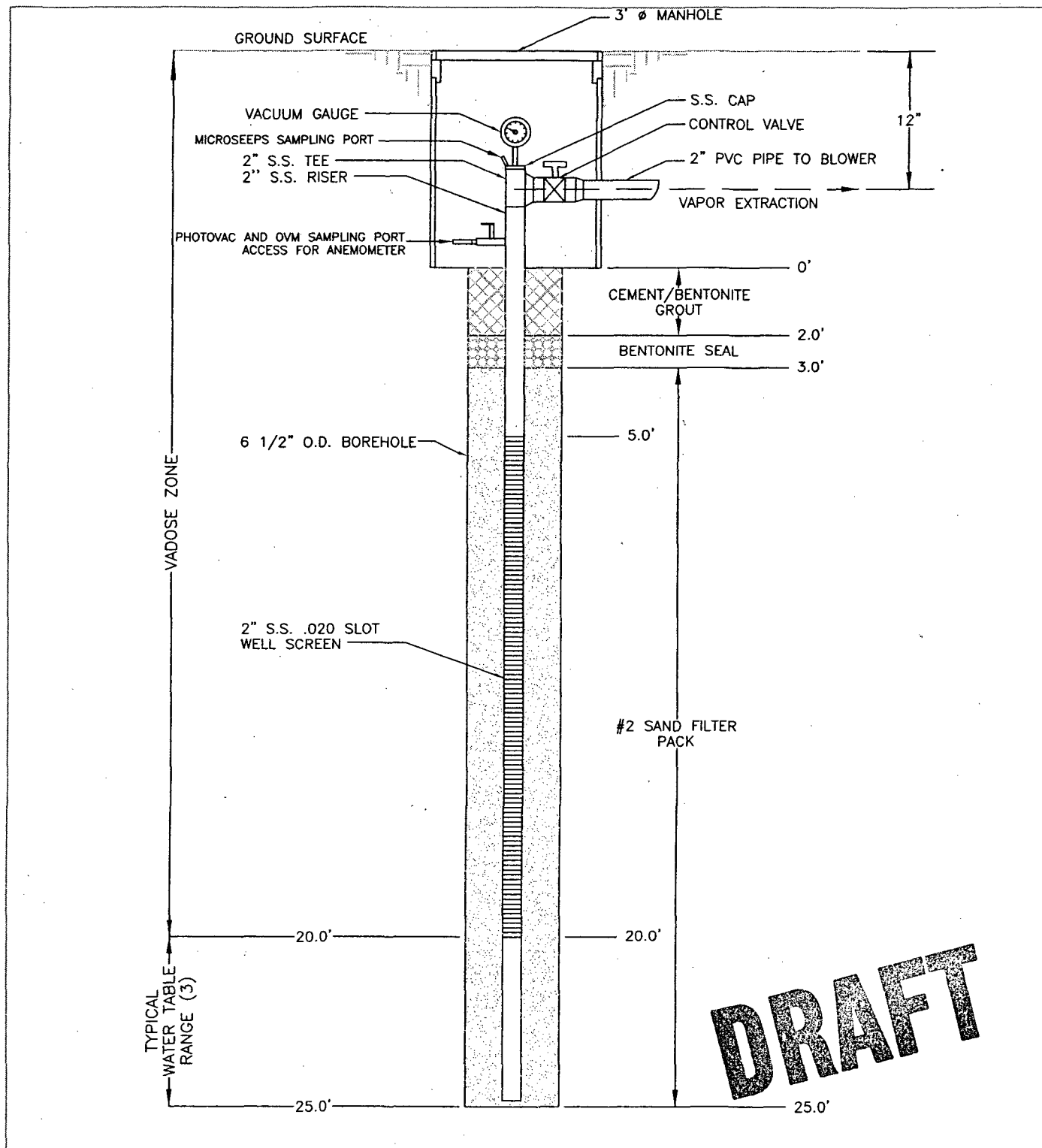


FIGURE 2



NOTE:

- 1.) ACTUAL DEPTHS VARIED BASED ON FIELD CONDITIONS.
- 2.) MONITORING POINT (GMP) WAS INSTALLED WITHIN 3 FEET OF SVE WELL TO MEASURE WATER LEVELS.
- 3.) ACTUAL WATER TABLE ENCOUNTERED AT 15' FEET BGS DURING PILOT STUDY.

DWG: 87100170/E-000810

304940

VIRGIN ISLAND CHEMICAL SITE
ST. CROIX, U.S. VIRGIN ISLANDS



CHK'D BY: JMV

DATE: 03/05/99

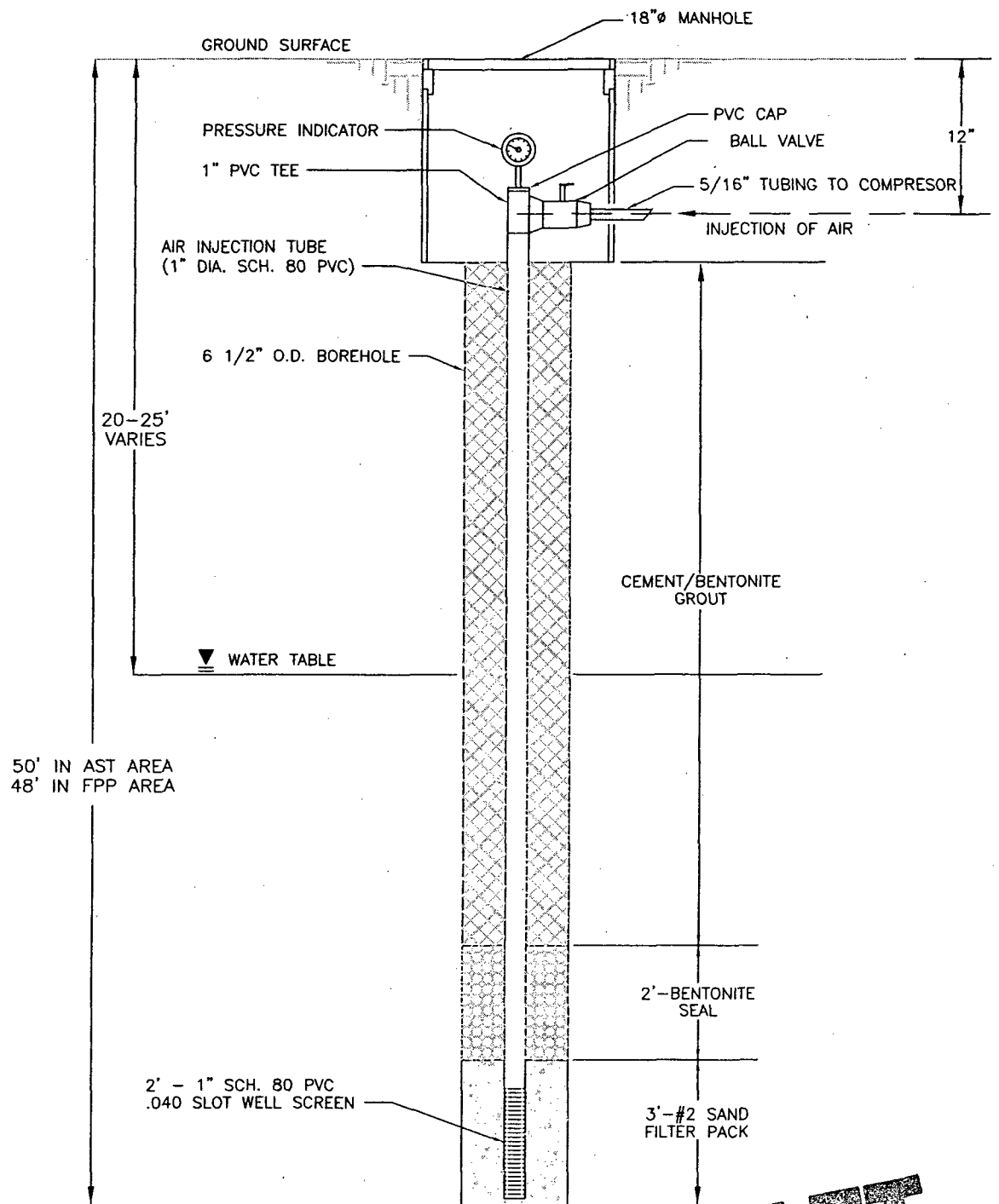
SCALE: NONE

REV. DATE: 08/31/00

TYPICAL SOIL VAPOR
EXTRACTION (SVE) WELL

FIGURE 3

DWG: 87100172 / E-000810



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VIRGIN ISLAND CHEMICAL SITE
ST. CROIX, U.S. VIRGIN ISLANDS



CHK'D BY: JMV

DATE: 03/05/99

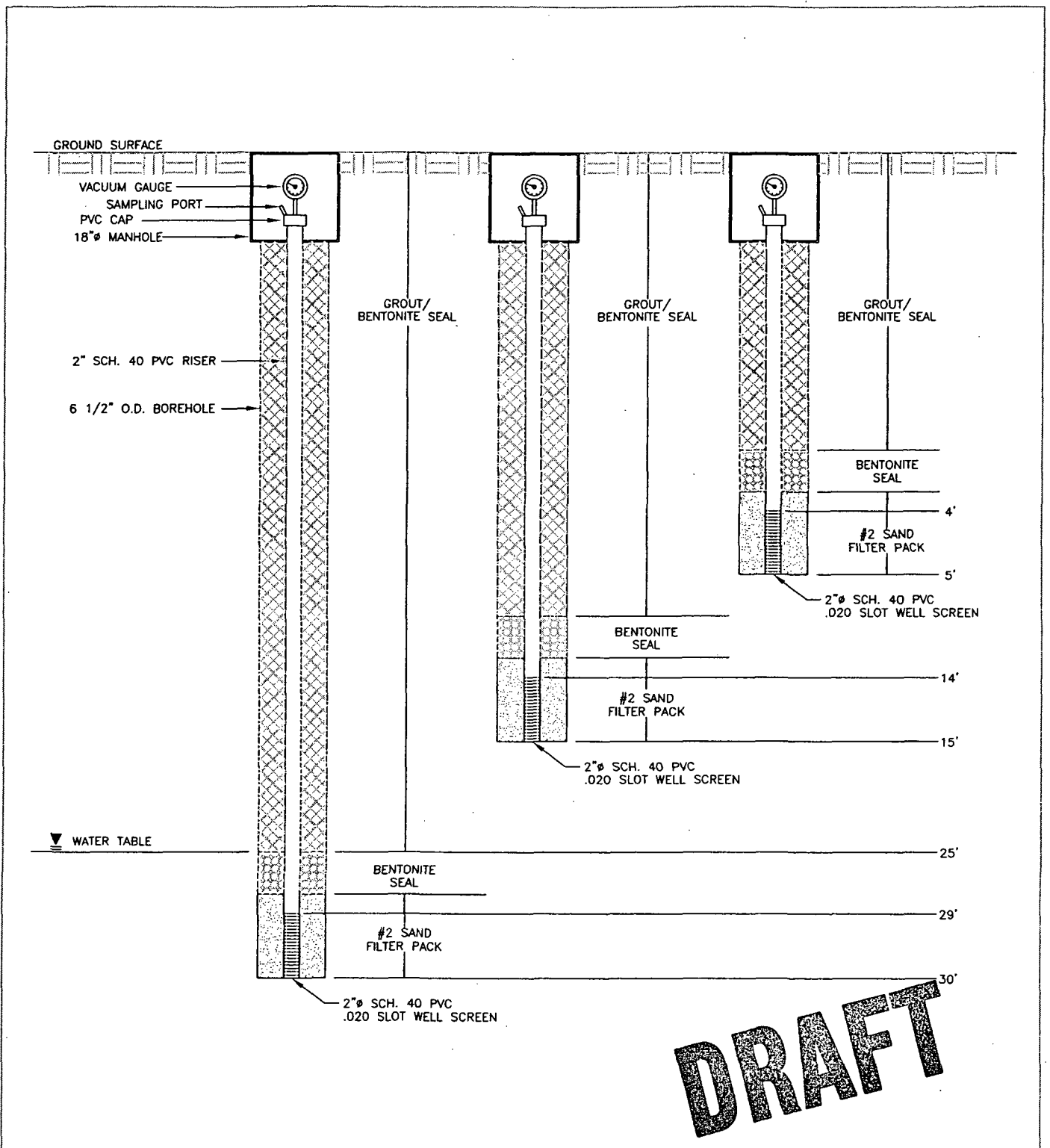
SCALE: NONE

REV. DATE: 08/31/00

TYPICAL AIR SPARGING (AS) WELL

FIGURE 4

304941



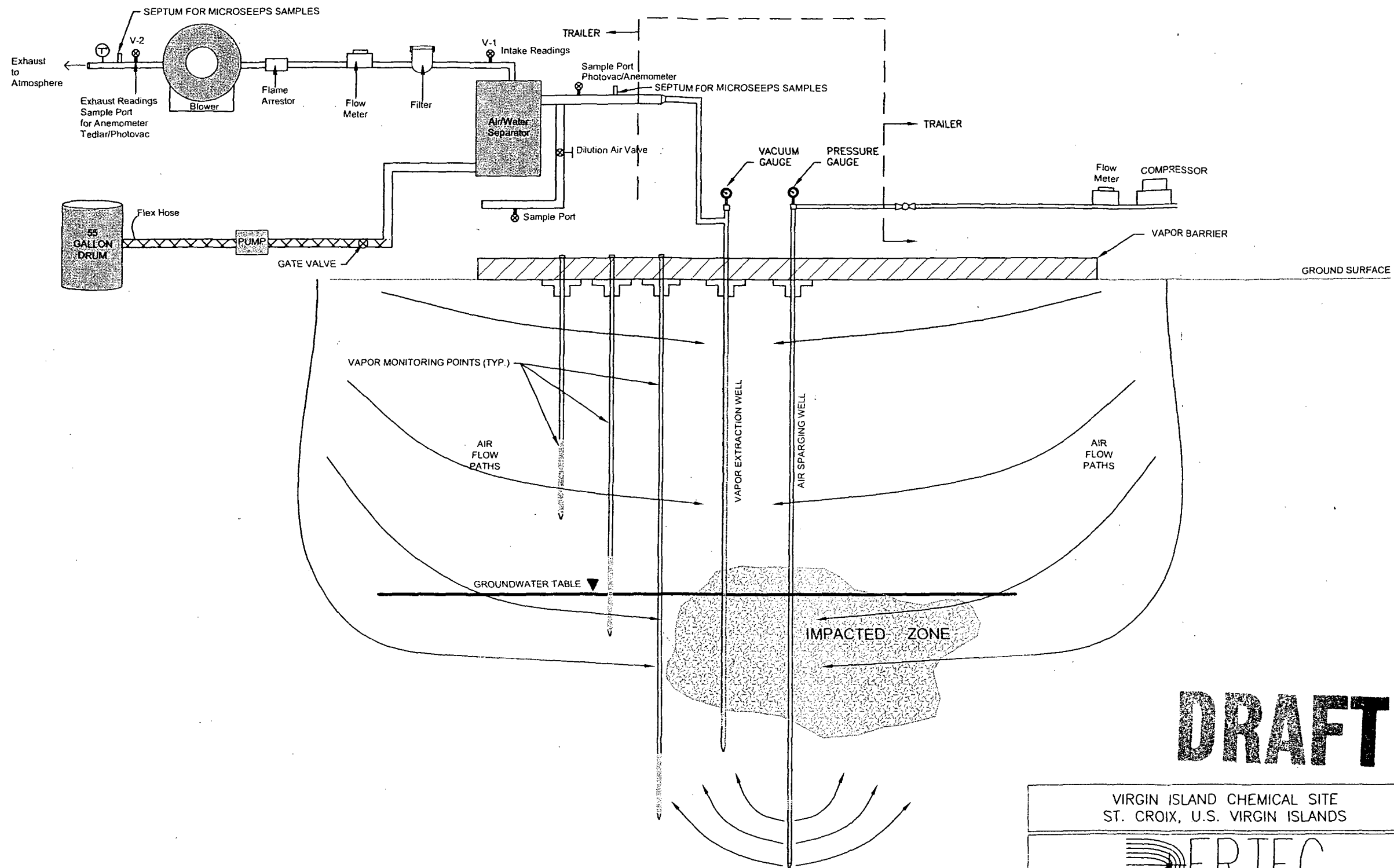
NOTE:

1) ACTUAL DEPTHS VARIED BASED ON FIELD CONDITIONS.

DWG: B7100171 / E-000810

304942

VIRGIN ISLAND CHEMICAL SITE ST. CROIX, U.S. VIRGIN ISLANDS	
 ENVIRONMENTAL RESOURCE TECHNOLOGIES	
CHK'D BY: JMV	DATE: 03/11/99
SCALE: NONE	REV. DATE: 08/31/00
SHALLOW/INTERMEDIATE/DEEP VAPOR MONITORING PROBE CLUSTER	
FIGURE 5	



NOTE

- 1.) ACTUAL WATER TABLE ENCOUNTERED AT 15 FEET BGS DURING PILOT STUDY.
- 2.) SEE WELL CONSTRUCTION LOGS FOR DETAILS.

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VIRGIN ISLAND CHEMICAL SITE
ST. CROIX, U.S. VIRGIN ISLANDS

ERTEC
ENVIRONMENTAL RESOURCE TECHNOLOGIES

CHK'D BY: JMV

DATE: 03/05/99

SCALE: NONE

REV. DATE: 08/31/00

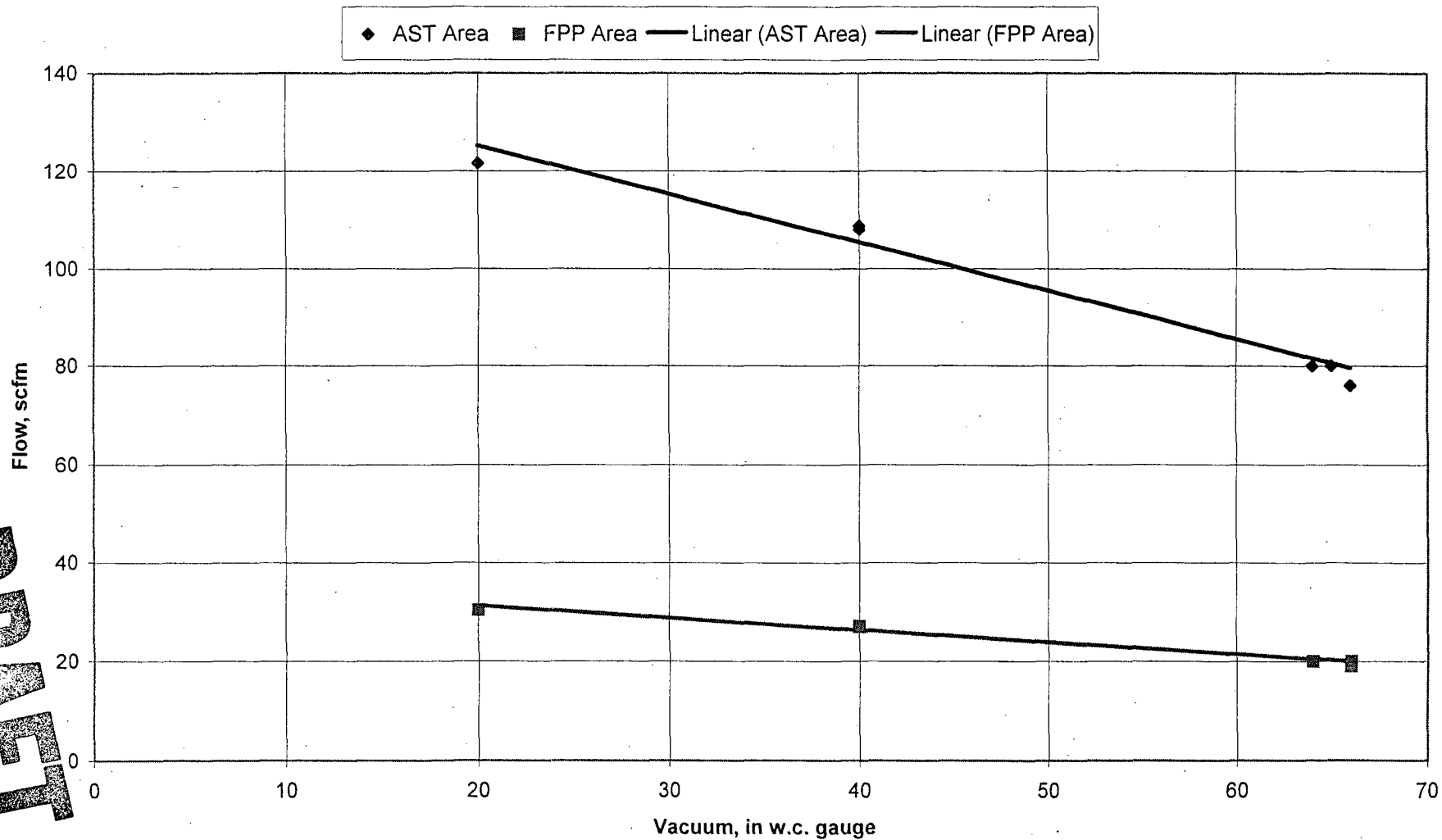
SOIL VAPOR EXTRACTION/AIR SPARGING
SCHEMATIC

FIGURE 6

DWG: 87100173 / E-000810

304943

Figure 7
Phase I Step Rate Test
Flow vs. Vacuum Data
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



304944

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Figure 8
Phase I SVE Constant Rate Test
AST Area - Intermediate Probes
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

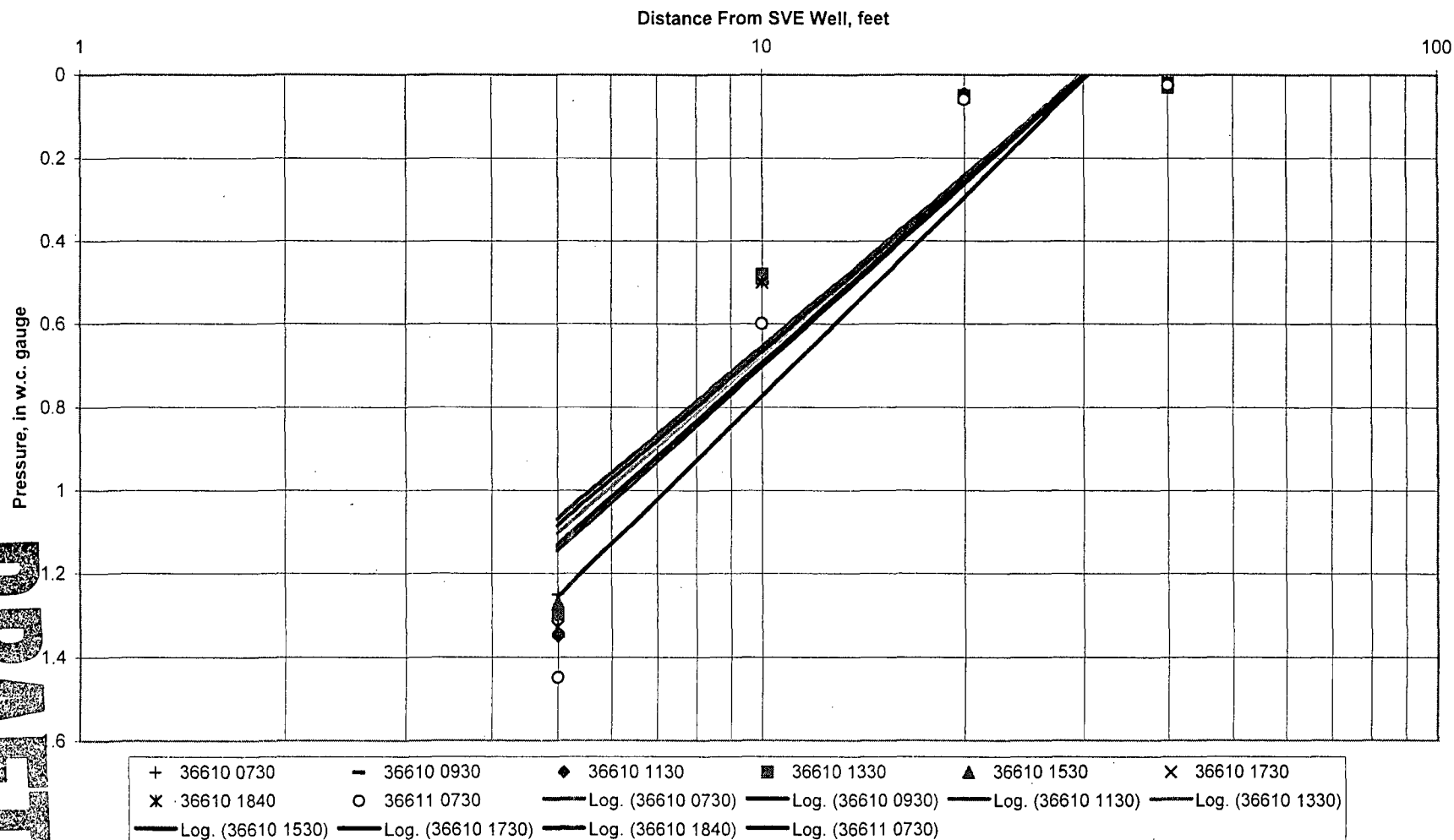
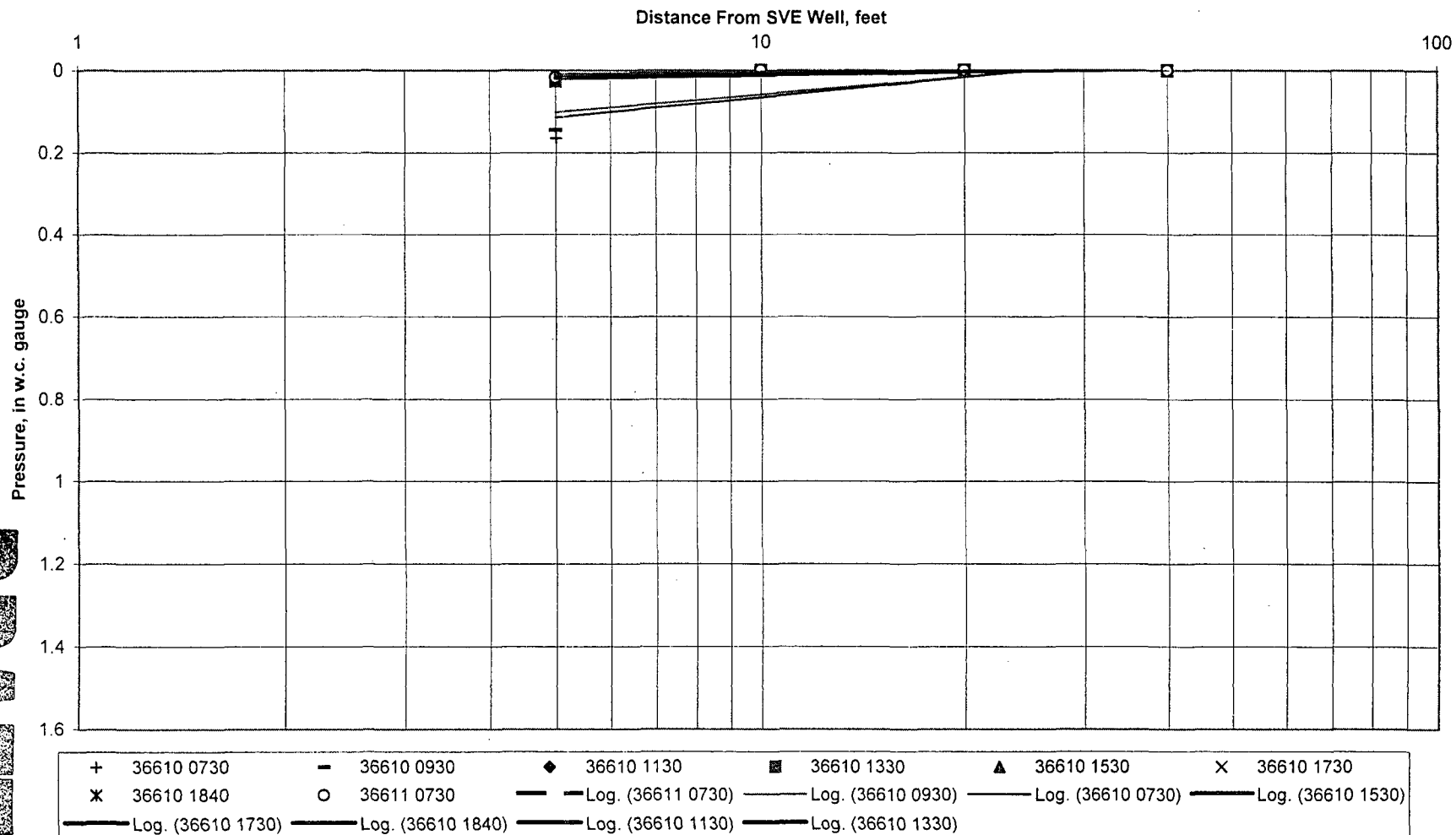


Figure 9
Phase I SVE Constant Rate Test
FPP Area - Intermediate Probes
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



304946

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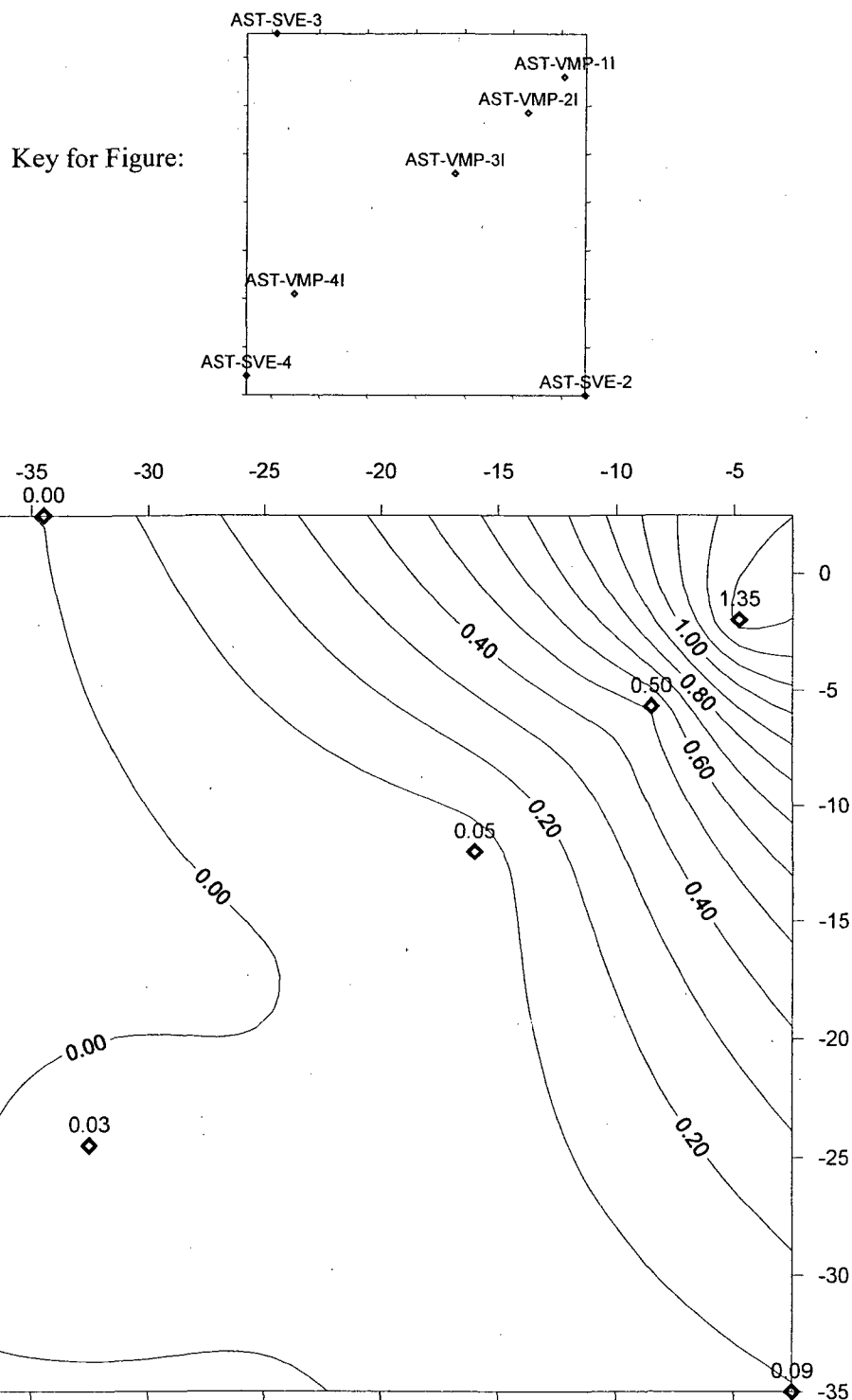
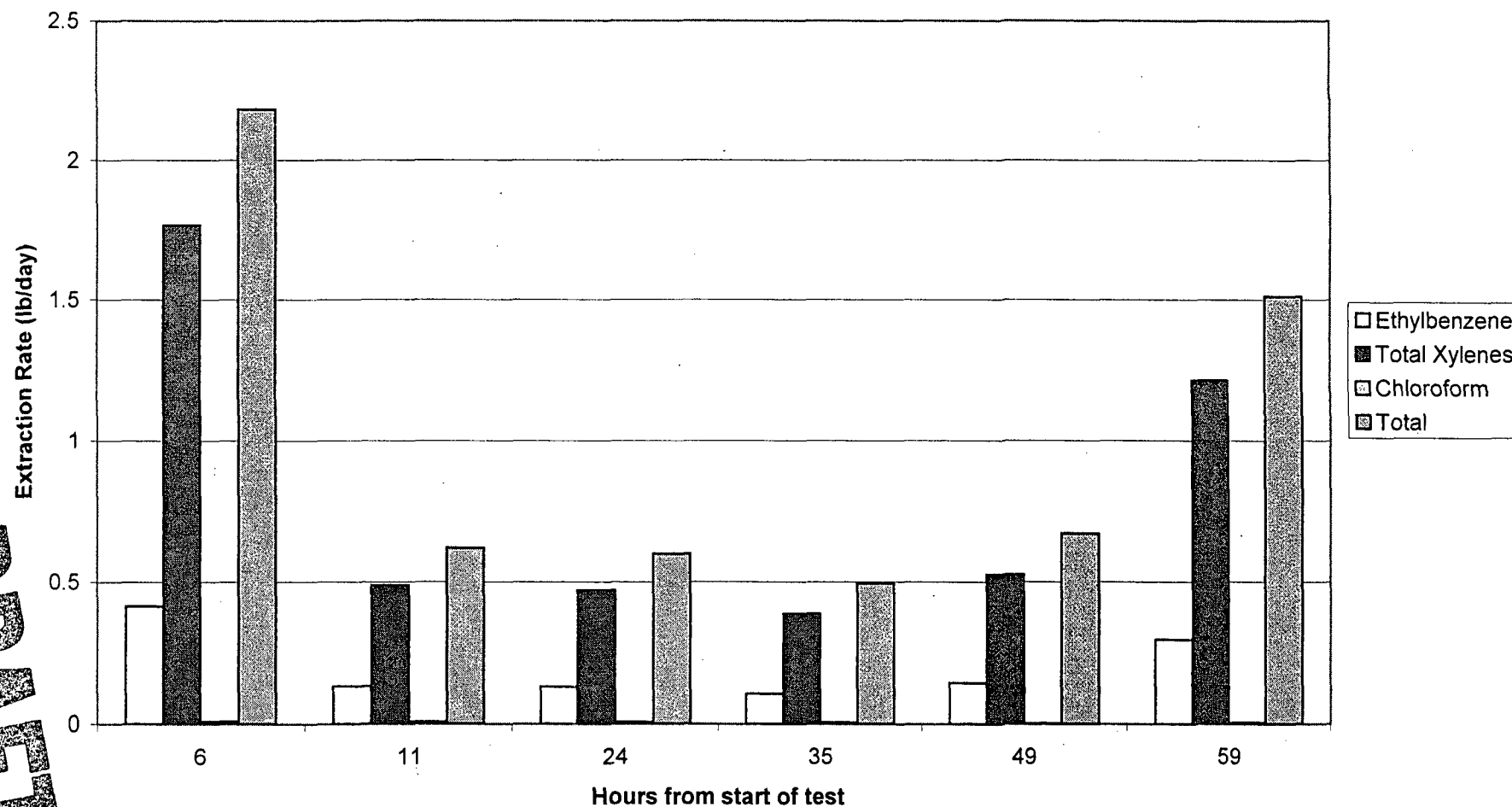


Figure 10
Phase I Constant Rate SVE Test, Contours of Vacuum of Intermediate Probes and SVE Wells
AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

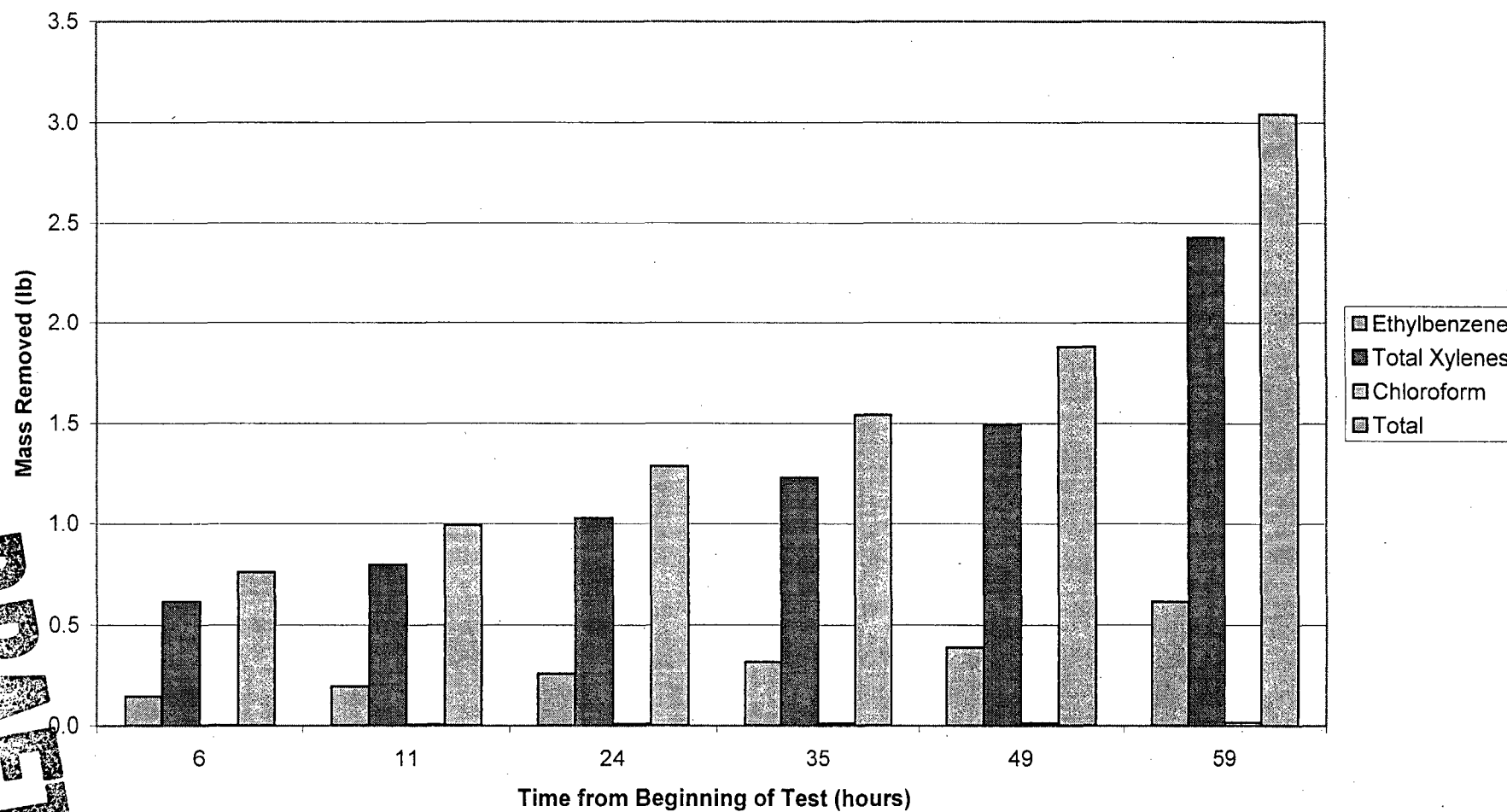
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Figure 11
Phase I Constant Rate Test
Rate of Extraction
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



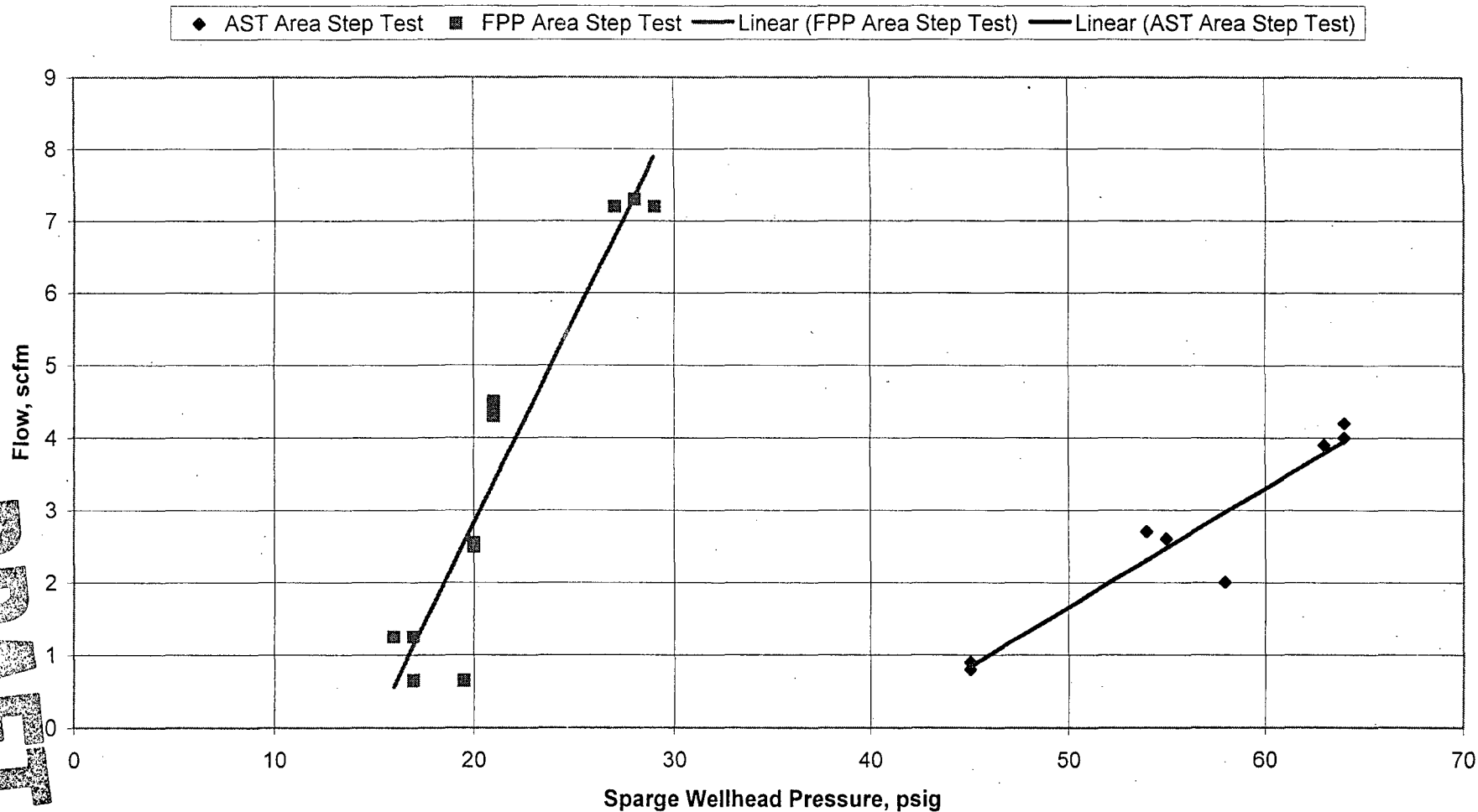
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Figure 12
Phase I Constant Rate Test
Cumulative Mass Removed
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Figure 13
Phase II AS Step Test
Flow vs. Pressure Data
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Figure 14
Phase II AS Step Test
Dissolved Oxygen Measurements, AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

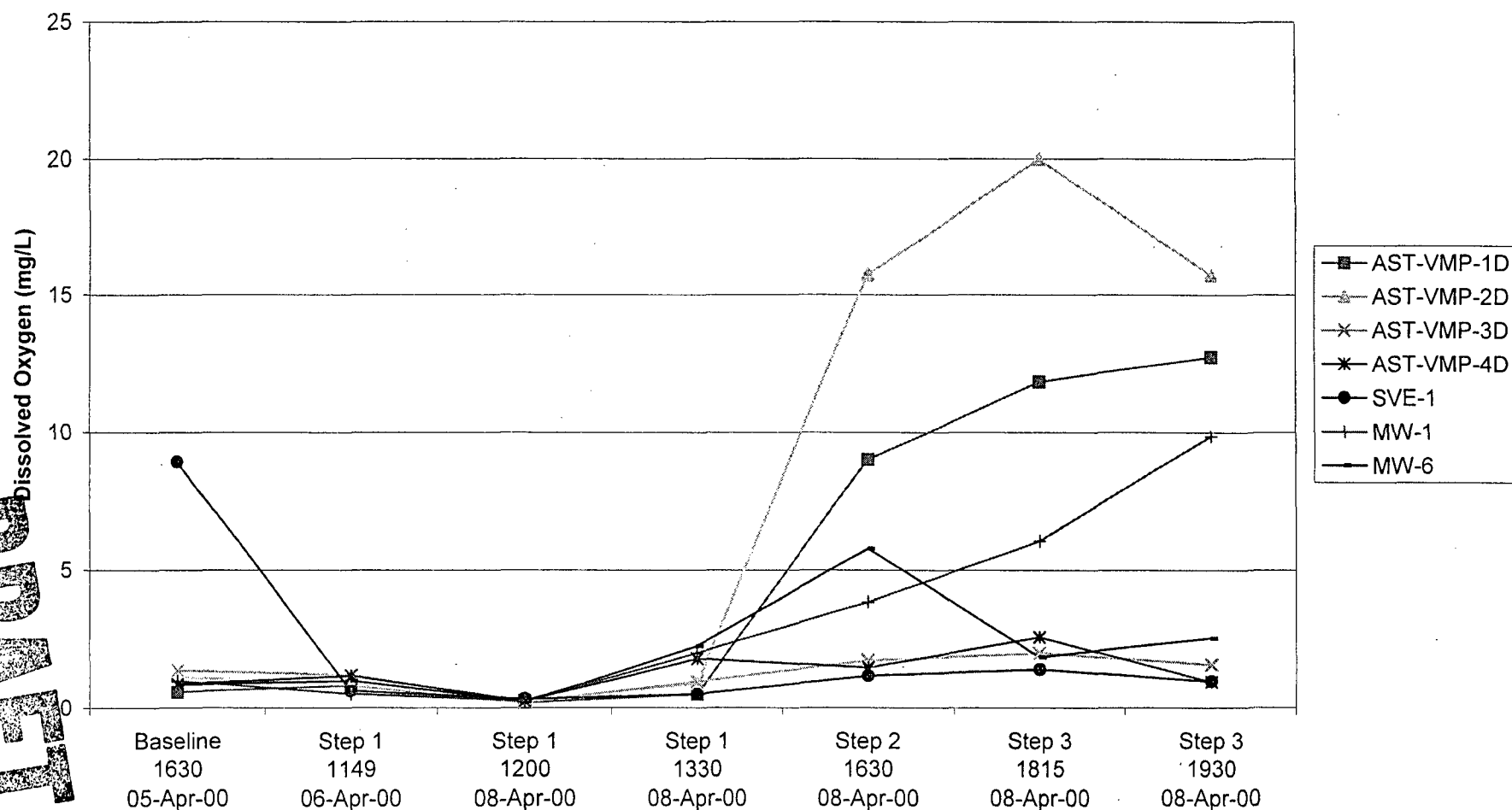


Figure 15
Phase II AS Step Test
Dissolved Oxygen, FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

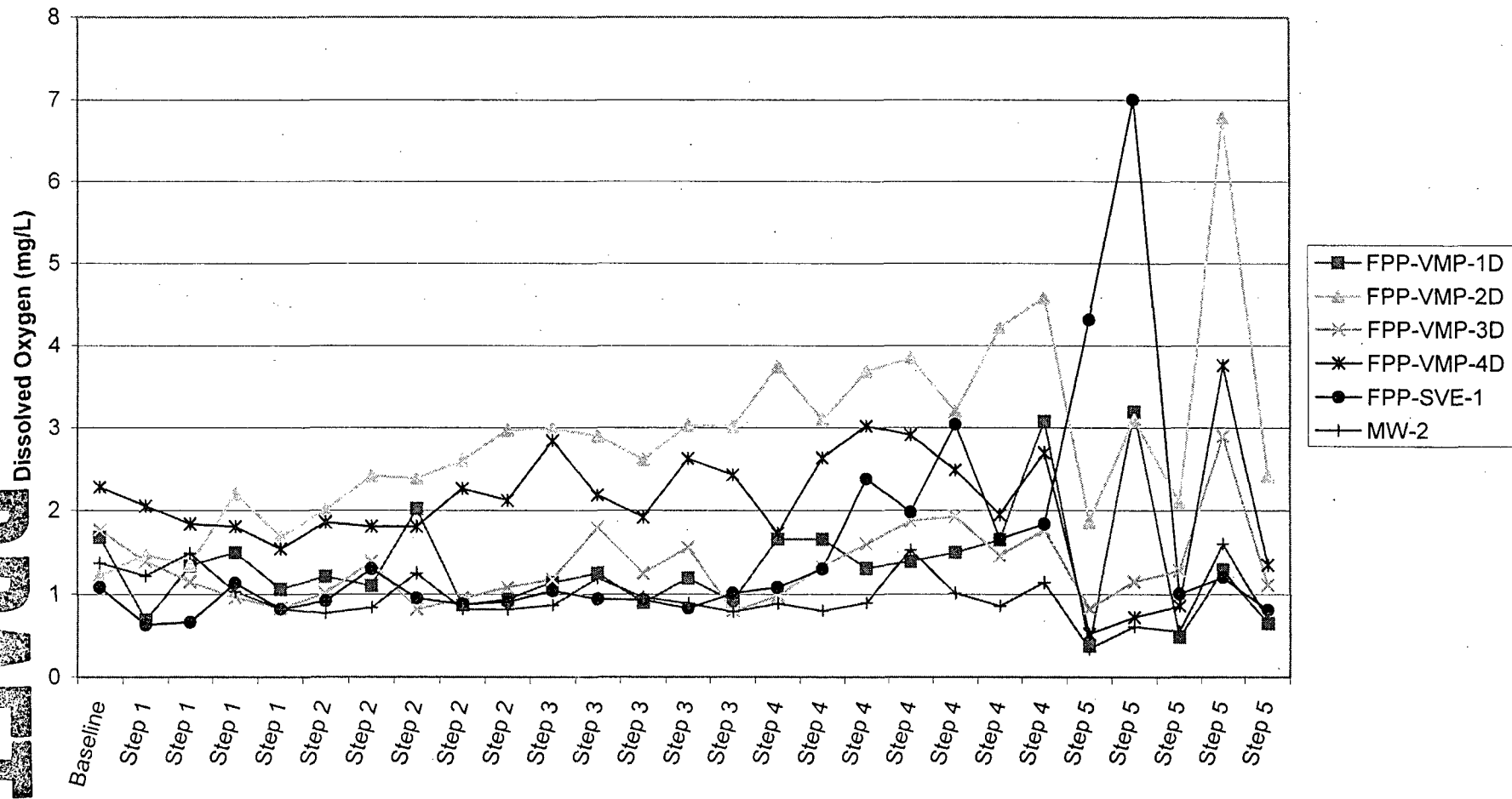


Figure 16
Phase II SVE/AS Test
AST Area - Intermediate Probes - Vacuum Response
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

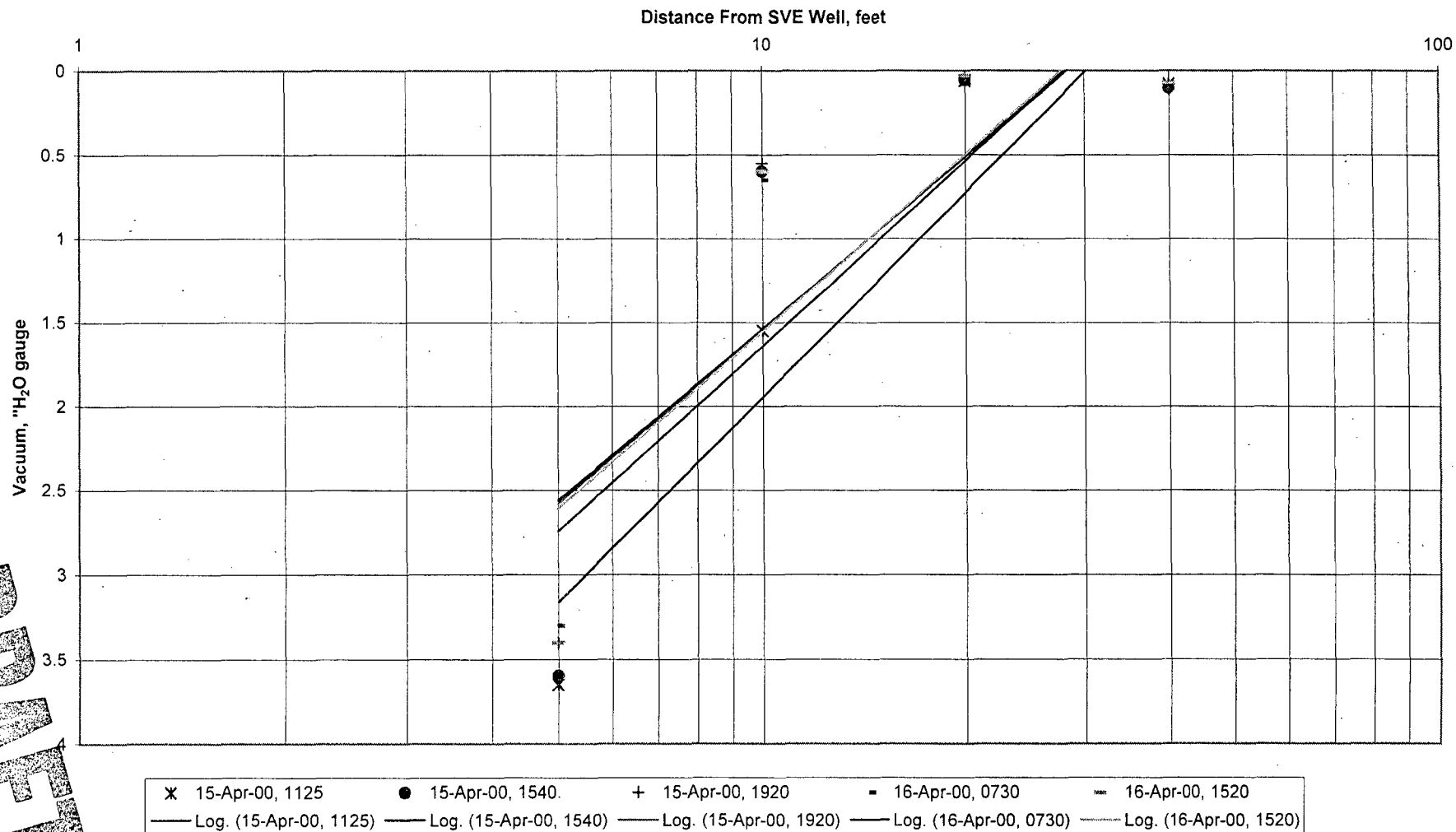
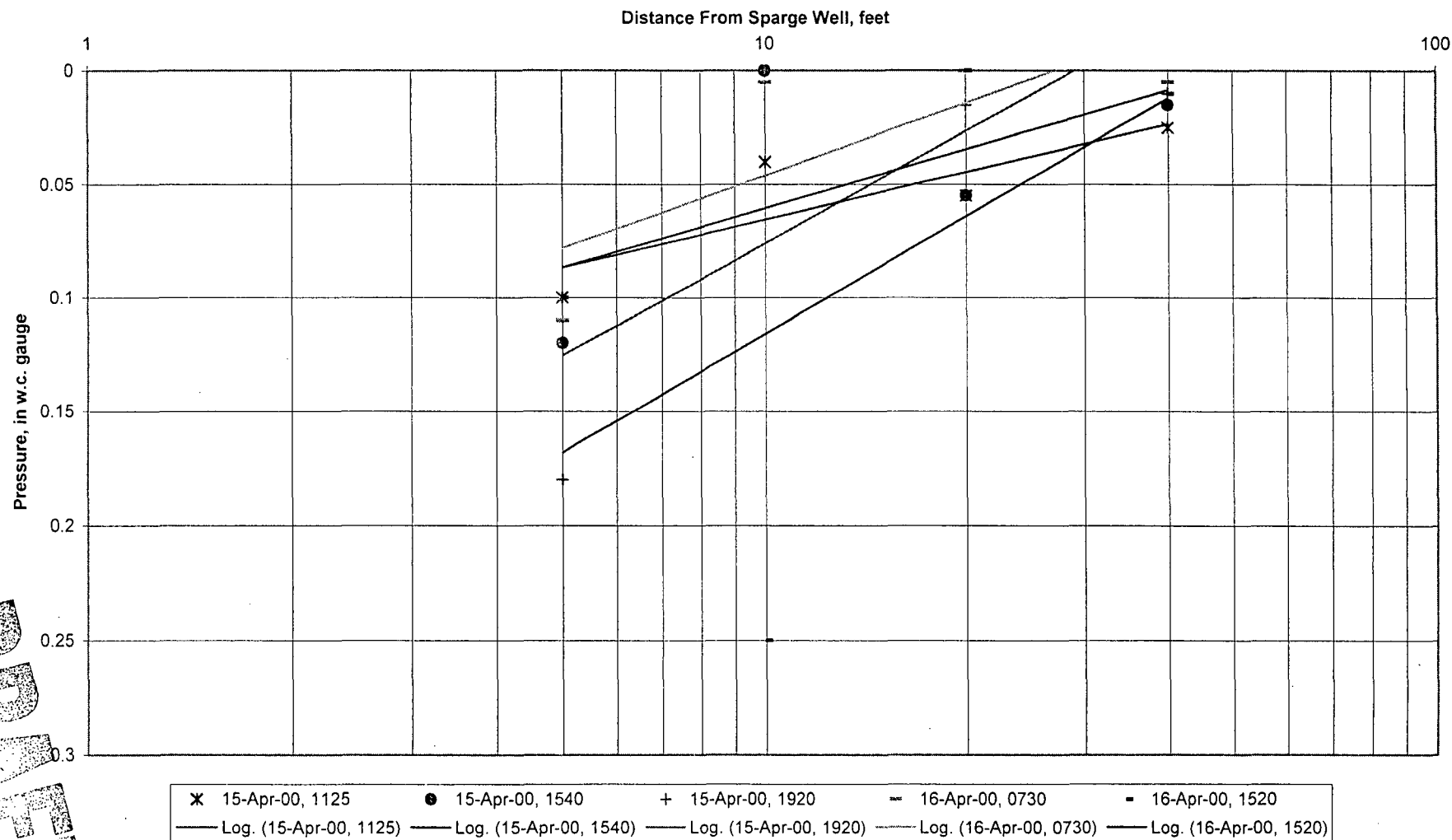


Figure 17
Phase II AS/SVE Test
AST Area - Deep Probes - Pressure Response
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Figure 18
Phase II SVE/AS Test
Dissolved Oxygen AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

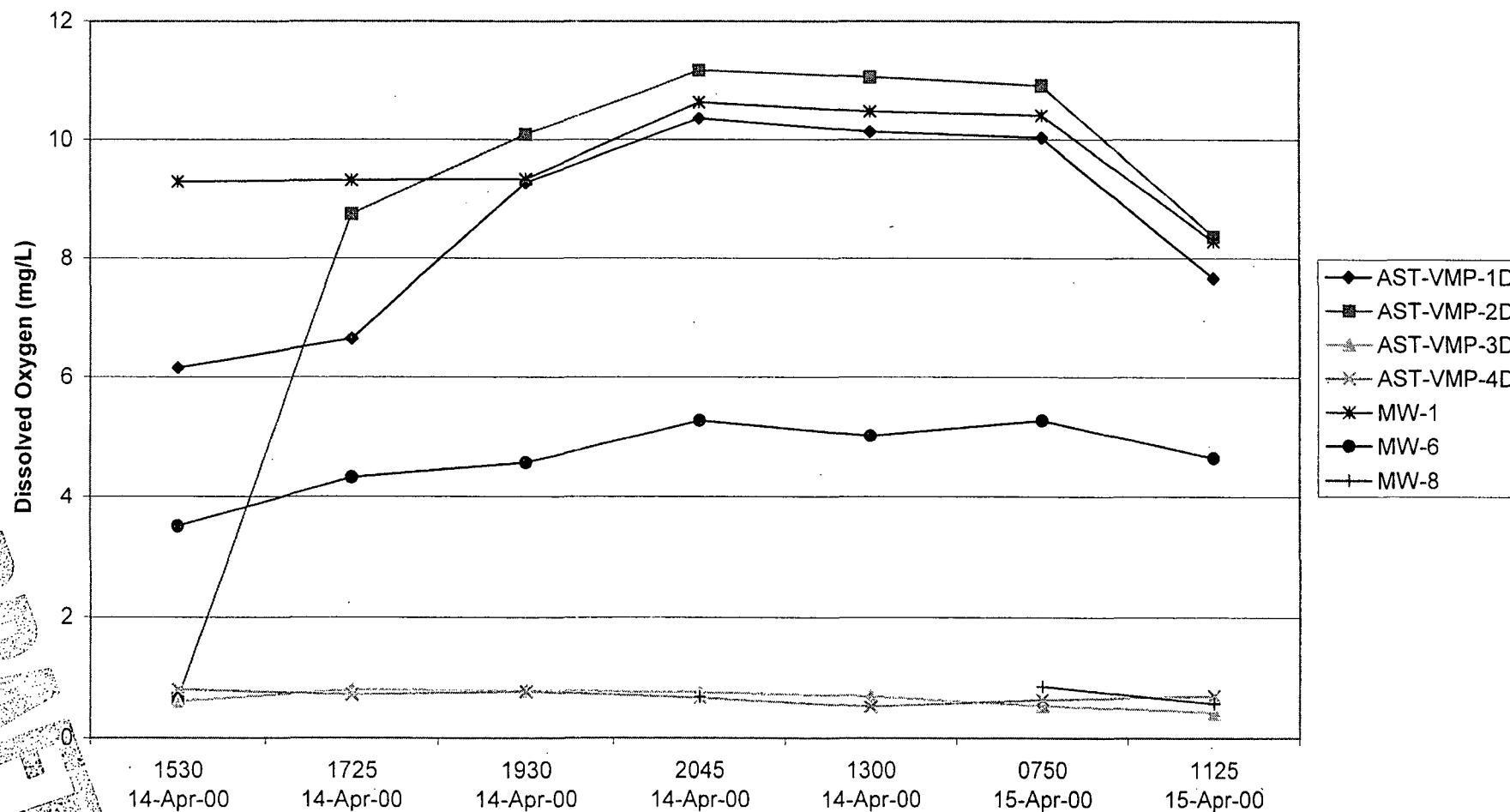
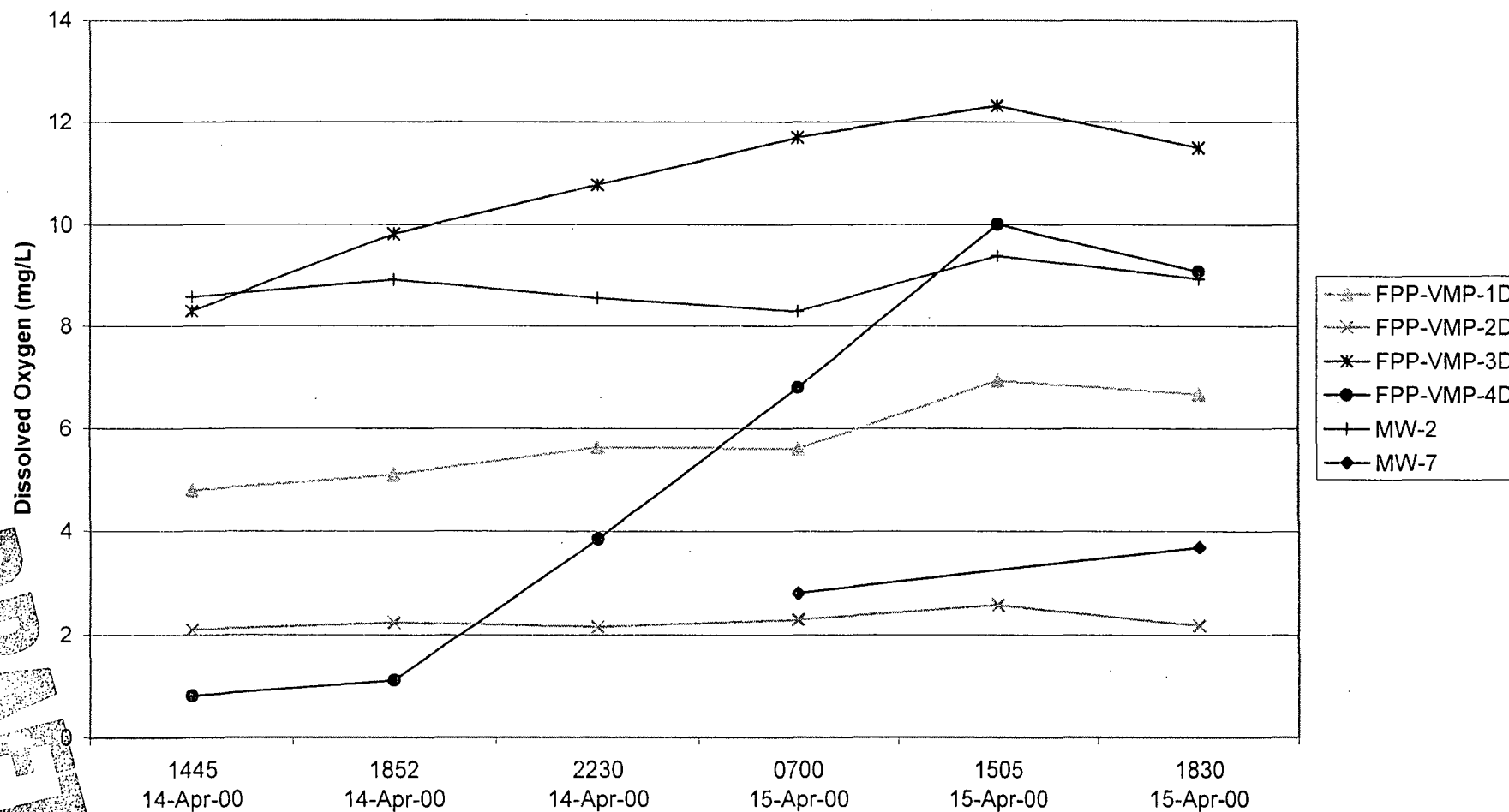


Figure 19
Phase II SVE/AS Test
Dissolved Oxygen - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Key for Figure:

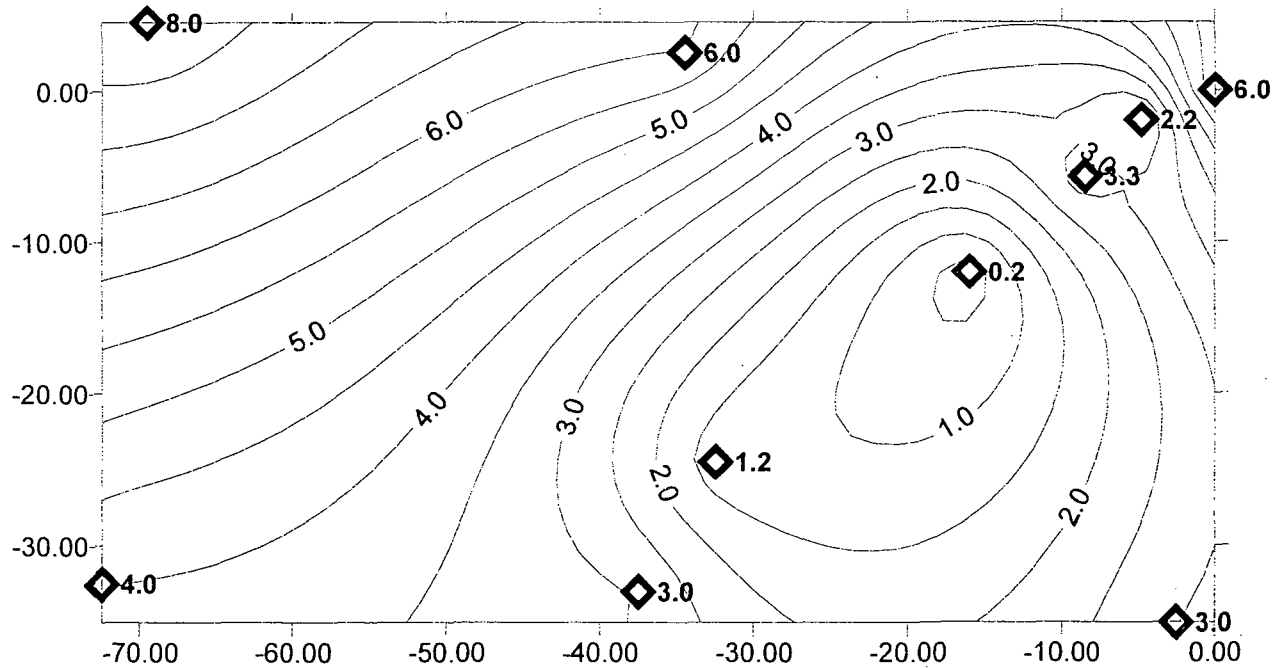
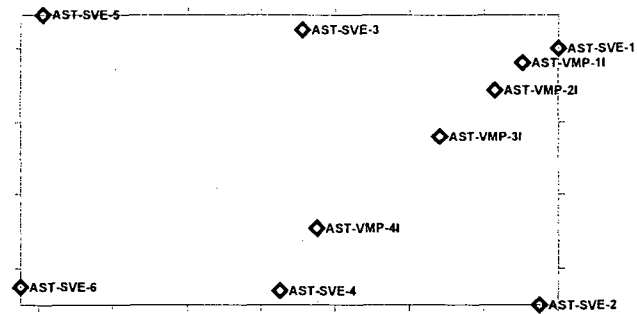
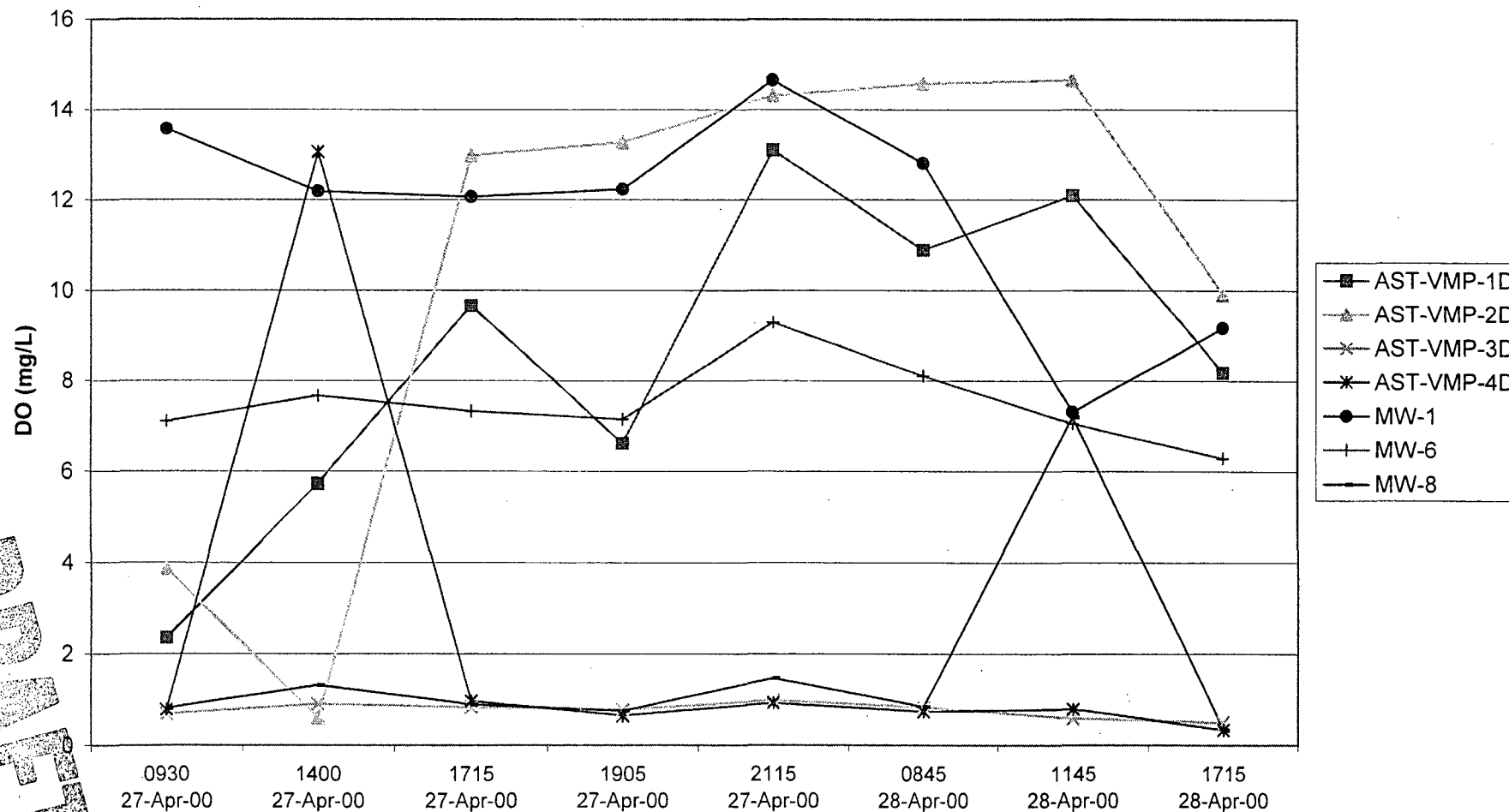


Figure 20
Contours of Vacuum Levels for Phase II Extended Test
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

304957

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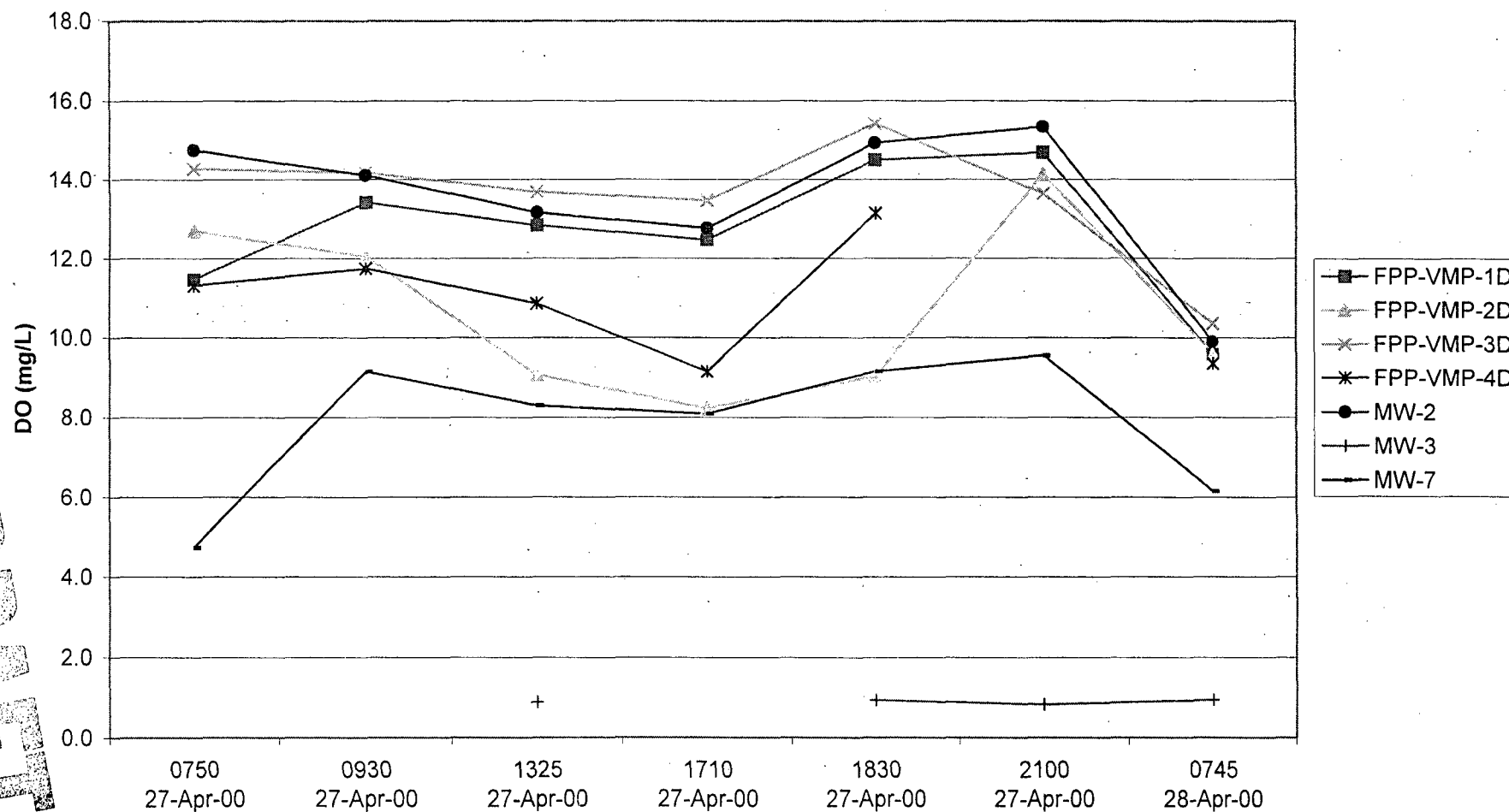
Figure 21
Phase II Extended Test
Dissolved Oxygen - AST Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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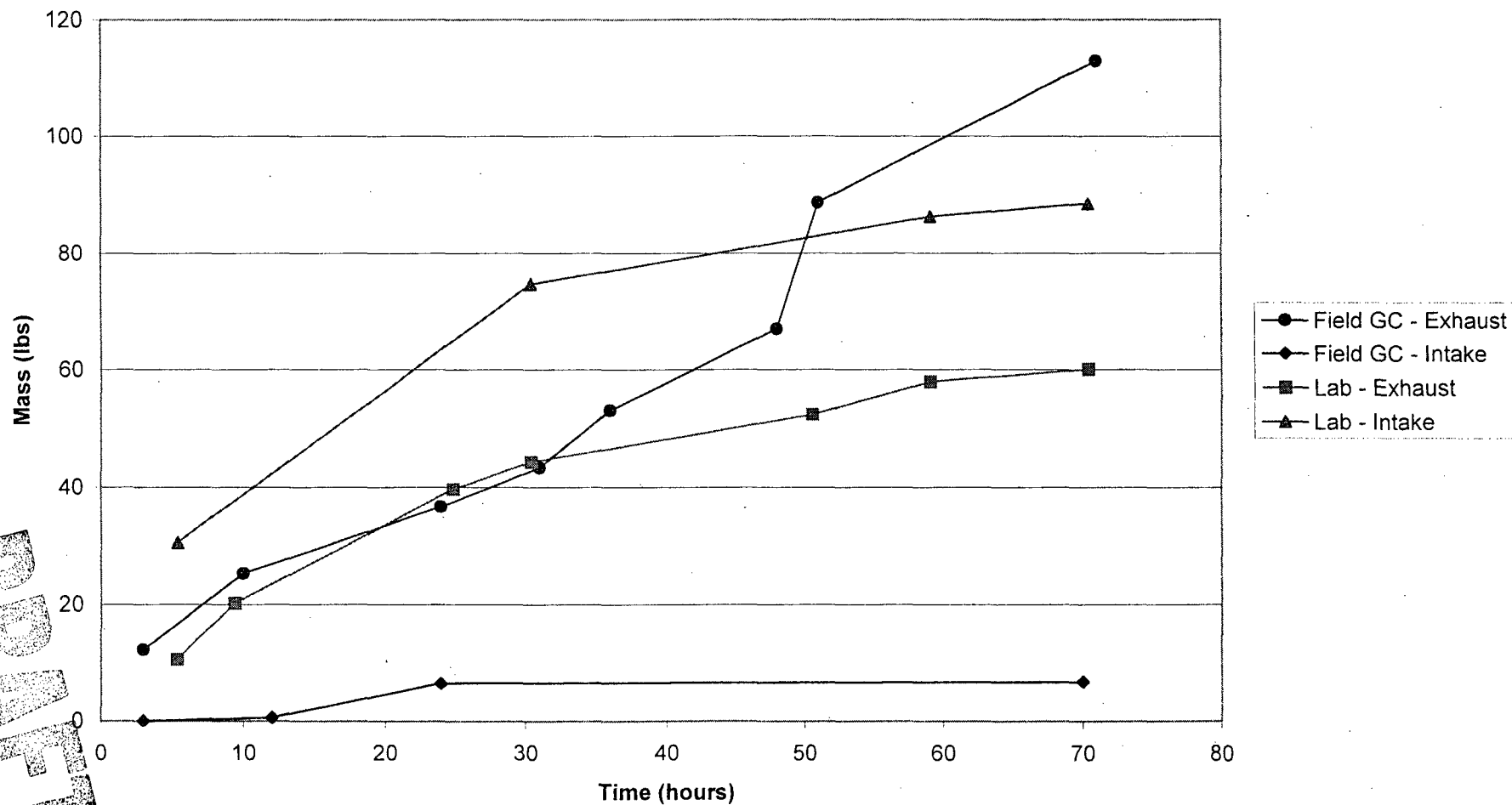
Figure 22
Phase II Extended Test
Dissolved Oxygen - FPP Area
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Figure 23
Phase II SVE/AS Extended Test
Total Cumulative Mass Removed - Comparison of Calculation Methods
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Figure 24
Phase II Extended Test
Rate of Mass Extraction
Microseeps Data (Lab)
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands

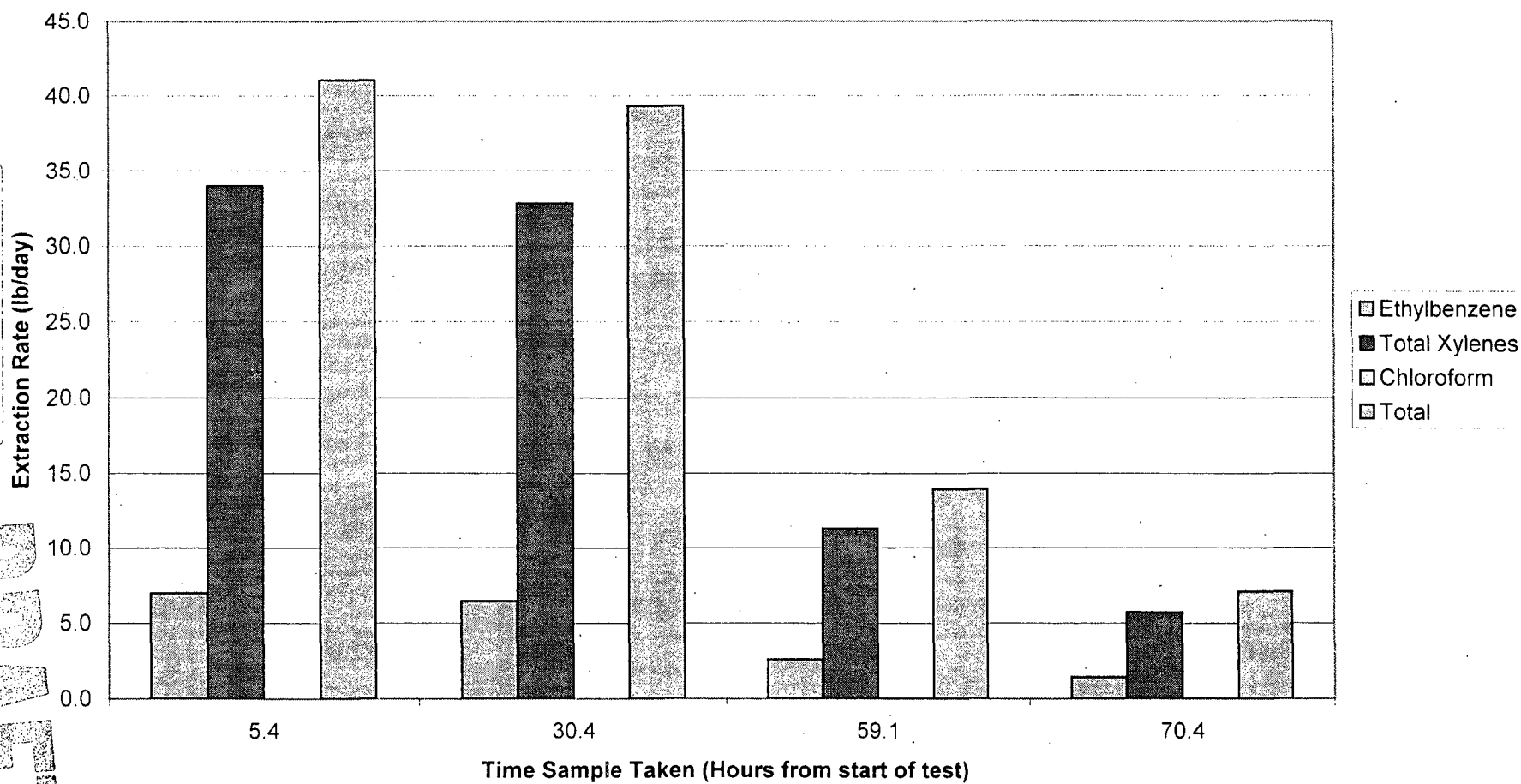
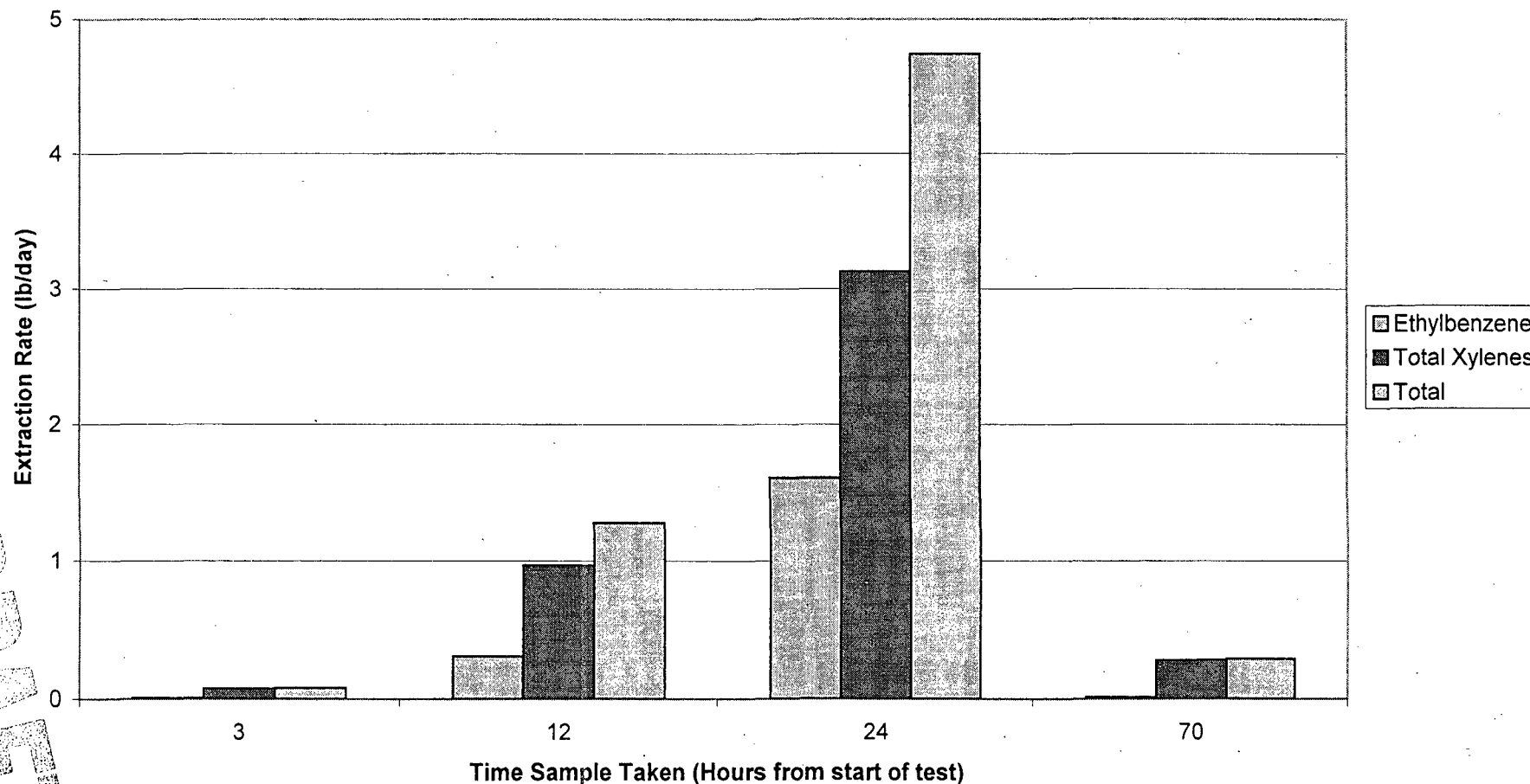


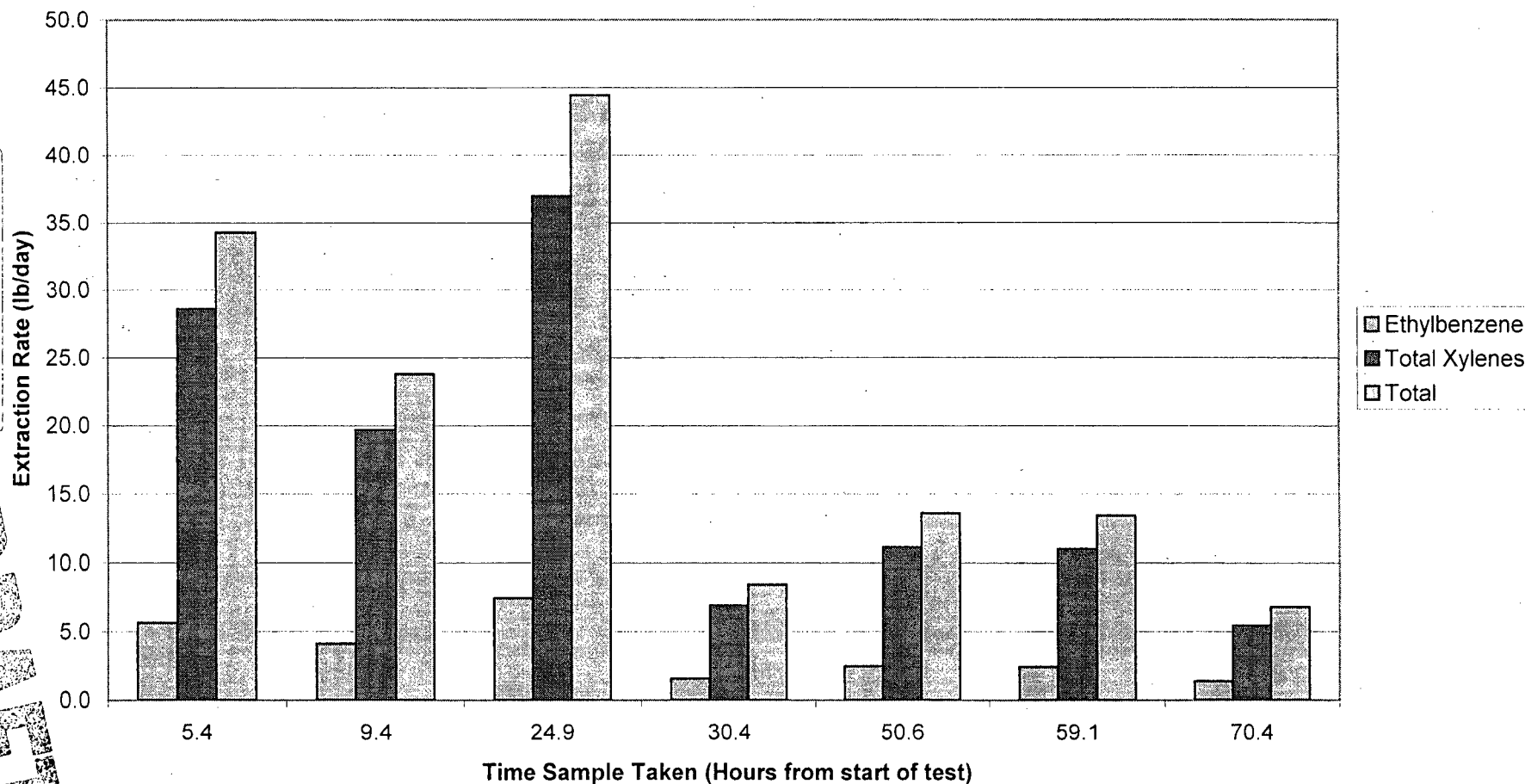
Figure 25
Phase II Extended Test
Rate of Mass Extraction
Photovac Data (Field GC) - Intake Port
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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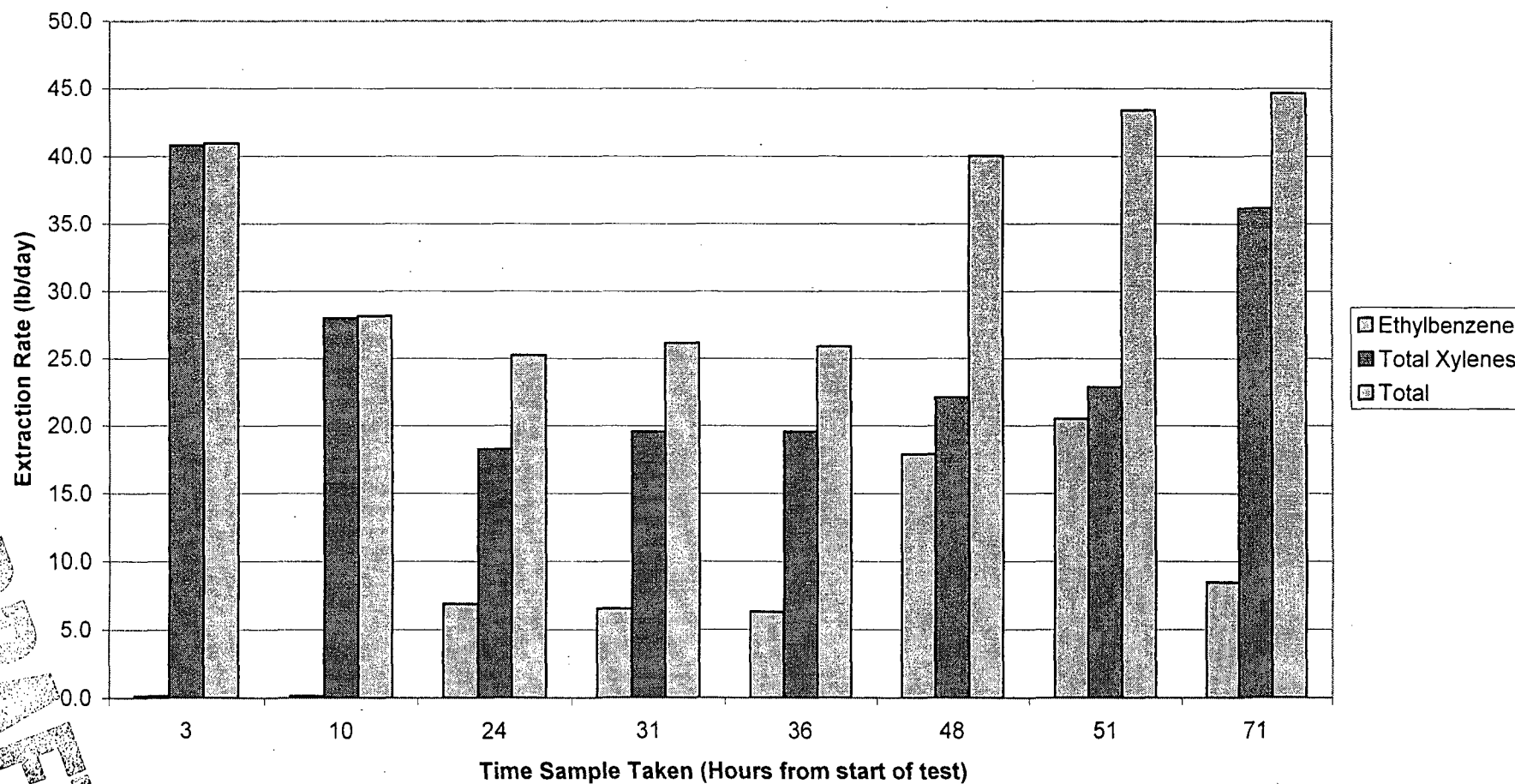
Figure 26
Phase II Extended Test
Rate of Mass Extraction
Microseeps Data (Lab) - Exhaust Port
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



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Figure 27
Phase II Extended Test
Rate of Mass Extraction
Photovac Data (Field GC) - Exhaust Port
Virgin Island Chemical Site
St. Croix, U.S. Virgin Islands



APPENDIX A

Permits



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

Department of Planning & Natural Resources
Division of Environmental Protection
WATER GUT HOMES 1118
CHRISTIANSTED, ST. CROIX 00820-5065
(809) 773-0565
40

November 23, 1999

Mr. Kevin M. Walsh
Global Environment and Safety Director
Pharmacia & Upjohn
7000 Portage Road
Kalamazoo, MI 49001

REF: Soil Vapor Extraction System (New - A/C & P/O)

Dear Mr. Walsh:

Enclosed please find "Authority to Construct" Permit Number: STX-559-A-99-AC and "Permit to Operate" Permit Number: STX-559-A-99-PO for the construction and operation of a soil vapor extraction system at the former VI Chemical site located at Plot# 13Q Estate Bethlehem, Middle Works, St. Croix, USVI 00840. The above-mentioned permits will be valid for a period of ninety (90) days.

The "Authority to Construct" and "Permit to Operate" are issued subject to the following binding conditions:

I. GENERAL CONDITIONS

- A. **Pharmacia & Upjohn** must notify the Virgin Islands Department of Planning and Natural Resources-Division of Environmental Protection upon completion of construction prior to initiation of operation of the pilot remediation study project.
- B. "Authority to Construct" and "Permit to Operate" this source does not relieve **Pharmacia & Upjohn** of the responsibilities for compliance with the provisions of any Federal or Territorial requirements.

II. OPERATING REQUIREMENTS

- A. The source shall only be operated in accordance with the conditions described in the application dated August 31, 1999 and supporting documents (Draft Final Treatability Study Workplan-May 1999) submitted by **Pharmacia & Upjohn** to the VIDPNR-DEP.
- B. The maximum flow rate of air from the soil vapor extraction system operation shall be two hundred and twenty five standard cubic feet per minute (225 SCFM). An air flow rate meter shall be installed and operated to record and monitor the flow through the operation.
- C. The emissions from soil vapor extraction unit shall be not exceed the 13.62 lbs/day.
- D. The monitoring data shall be taken under the operating parameter (flow rate, temperature, air injection, etc.) conditions under which the soil vapor extraction system has been operating. If those conditions are a range, that range shall be recorded and monitoring data shall be taken at worst case conditions.
- E. **Pharmacia & Upjohn** must report to the VIDPNR-DEP any physical change or changes in operation which increases the amount of air pollutants or process production.
- F. Construction of the source must not result in the contravention of any ambient air quality standards, federal or territorial.
- G. During construction, any source responsible for contravening ambient air quality standards will be required to be modified to bring operation into compliance.
- H. The VIDPNR-DEP reserves the right to inspect the VI Chemical site. **Pharmacia & Upjohn** shall give the VIDPNR-DEP whatever aid is necessary to perform said inspections in a safe and timely manner.

III. MONITORING AND RECORDKEEPING

- A. All monitors, recorders and meters, as required by the permits, shall be installed prior to operation of the equipment. **Pharmacia & Upjohn** shall maintain and calibrate, in a manner consistent with the manufacturer's specifications, all monitors, meters, portable hydrocarbon analyzers and recorders as required above. All specifications must be made available to representatives of the VIDPNR-DEP upon request.
- B. **Pharmacia & Upjohn** must comply with the Monitoring Protocol for all monitoring equipment, which includes the Sampling and Analysis Plan and procedures outlined in the Quality Assurance Project Plan as submitted in the Draft Final Treatability Study Workplan to VIDPNR-DEP.
- C. The permits require that all monitors, recorders and meters be located in a manner which allows easy access and visibility.
- D. The readings required for all portable monitors must be recorded and kept as per permit condition III.G.
- E. Flow rate readings shall be recorded with each set of data and kept as per permit condition III. G.
- F. Any deviation from requirements of Section II of these conditions shall be recorded.
- G. All records, required to be kept as part of the permit conditions, shall be entered in a permanently bound logbook with numbered pages, maintained on site for a minimum of two years after collection and shall be made available to representatives of the VIDPNR-DEP upon request.

IV. REPORTING REQUIREMENTS

- A. **Pharmacia & Upjohn** shall submit a written report to VIDPNR-DEP within thirty days after completion of pilot test operation. This report must contain the system operating data, measurements of the discharge flow rate of the extracted gas, the measurements of the concentrations of hydrocarbons in the extracted gas and any other pertinent information as a result of the evaluation of this operation.
- B. Any operation of the equipment which may cause off-property effects, including odors shall be immediately reported to the VIDPNR-DEP by **Pharmacia & Upjohn** in writing and by phone and/or telefax.
- C. **Pharmacia & Upjohn** shall report to the VIDPNR-DEP via telephone and/or telefax immediately upon determination any non-compliance of operating requirements directly related to emission limits, or any non-compliance specified in the conditions of this permit.
- D. **Pharmacia & Upjohn** shall submit to VIDPNR-DEP within 7 days a written report detailing the nature of the non-compliance of operating requirements directly related to emission limits, or any non-compliance specified in the conditions of this permit and the corrective measures instituted to bring the system into compliance with the requirements of this permit.

IV. OTHER REQUIREMENTS

- A. **Pharmacia & Upjohn** shall post the name of the contact person, along with the address and phone number on a permanent, legible location on the work site, prior to beginning the work to be performed in accordance with this permit.
- B. The Soil Vapor Extraction System shall not cause any air contaminant to be present in the outdoor atmosphere in such quantity and duration which is, or tends to be injurious to human health or welfare, animal or plant life or property or would unreasonably interfere with the enjoyment of life or property, except in areas over which the owner or permittee has exclusive use of occupancy.
- C. The VIDPNR-DEP issues these permits on the basis of the equipment descriptions and operating procedures presented in the August 31, 1999 Application for Authority to Construct. If final design and operation of the equipment differ from those presented, this permit approval will become invalid.

- D. A person who has been granted a permit under the provisions of the Virgin Islands Rules and Regulations (VIR&R) Title 12, subsections (a) and (b) of 206-20, shall firmly affix such Authority to Construct Permit, an approved facsimile, or other approved identification bearing the permit number upon the article, machine, equipment or other contrivance in such a manner as to be clearly visible and accessible. In the event that the article, machine, equipment or other contrivance is so constructed or operated that the Authority to construct Permit cannot be so placed, then the permit should be maintained so as to be readily available at all times on the operating premises.
- E. The "Authority to Construct" permit shall expire ninety days after the date of its issuance, unless an application for extension, in the form of a letter to the commissioner, is made fifteen (15) days prior to the expiration date of the permit.
- F. Prior to the operation of the Soil Vapor Extraction System, **Pharmacia & Upjohn** will notify the DPNR-DEP in writing on the completion date of construction and proposed schedule of operation.
- G. The "Permit to Operate" permit shall expire ninety days after the date of notification of construction completion.

Your cooperation in complying with these regulations will be most appreciated.

Sincerely,



Dean C. Plaskett, Esq.
Commissioner, DPNR

Enclosure: (1) Certificate: Authority to Construct
(1) Certificate: Permit to Operate

cc: Hollis L. Griffin, Director DEP
APC Files

Government of The Virgin Islands of The United States

DEPARTMENT OF PLANNING & NATURAL RESOURCES



DIVISION OF ENVIRONMENTAL PROTECTION

St. Croix, Virgin Islands

AIR POLLUTION CONTROL

☒ **AUTHORITY TO CONSTRUCT**

☐ **PERMIT TO OPERATE**

For: **PHARMACIA & UPJOHN**

Permit No. STX-559-A-99-AC

Pursuant to the provisions of Title 12, Chapter 9, Section 206, Sub-Section 20 of the Virgin Islands Code. This Permit is issued to:

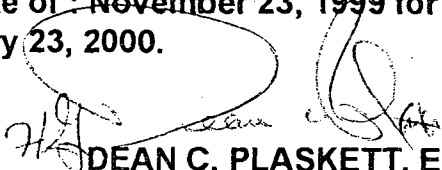
Pharmacia & Upjohn

For the operation of the following: One (1) EG & G Rotron DR-6 Regenerative Blower/Compressor

Located at: 13Q Estate Bethlehem, Middle Works, St. Croix

In accordance with the application dated: August 31, 1999 and in conformity with the statements and supporting data entered therein, all of which are filed with the Department and are considered a part of this permit.

This permit shall be effective from the date of : November 23, 1999 for a ninety day (90) period ending on: February 23, 2000.


DEAN C. PLASKETT, ESQ.
Commissioner

304971

Government of The Virgin Islands of The United States

DEPARTMENT OF PLANNING & NATURAL RESOURCES



DIVISION OF ENVIRONMENTAL PROTECTION

St. Croix, Virgin Islands

AIR POLLUTION CONTROL

☐ AUTHORITY TO CONSTRUCT

☒ PERMIT TO OPERATE

For: **PHARMACIA & UPJOHN**

Permit No.STX-559-A-99-PO

Pursuant to the provisions of Title 12, Chapter 9, Section 206, Sub-Section 20 of the Virgin Islands Code. This Permit is issued to:

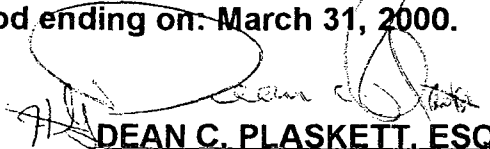
Pharmacia & Upjohn

**For the operation of the following: One (1) EG & G Rotron DR-6
Regenerative Blower/Compressor**

Located at: 13Q Estate Bethlehem, Middle Works, St. Croix

In accordance with the application dated: August 31, 1999 and in conformity with the statements and supporting data entered therein, all of which are filed with the Department and are considered a part of this permit.

This permit shall be effective from the date of : notification of completion of construction for a ninety day (90) period ending on: March 31, 2000.


DEAN C. PLASKETT, ESQ.

Commissioner

304972



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

Department of Planning & Natural Resources
Division of Environmental Protection
WATER GUT HOMES 1118
B 111 / APT. 14-A
CHRISTIANSTED, ST. CROIX 00820-5085
(340) 773-0585

WELL DRILLING PERMIT

NEW PERMIT (x)

RENEWAL PERMIT ()

In accordance with the provisions of Title 12, Chapter 5, Virgin Islands Code, as amended, a Well Drilling permit is hereby issued to:

Soil Tech.

(Name of Well Driller)

WDL-013-98

(License Number)

P.O. Box 195336 San Juan, P.R. 00919-5336, (787)-792-8900

(Mailing Address & Telephone #)

to drill 26 well(s) at Plot #130 Est. Bethlehem-Middle Works, St. Croix, according to the plan submitted in application for this permit and approved by the well inspector. This permit is granted with the following conditions:

1. Well log shall be completed and delivered to the Office of the Commissioner of Planning and Natural Resources within thirty (30) days after the completion of the well drilling operation, for each hole drilled.
2. Each well shall have an opening of not less than 3/4 inch in diameter for the measurement of water level by means of a wetted steel tape.
3. Water samples shall be furnished upon request.

The Commissioner of the Department of Planning and Natural Resources shall have the power to revoke or suspend this permit upon finding, after public notice and adequate hearing, that such revocation or suspension is in the public interest; provided, that any persons aggrieved by any such

304973

decision of the Commissioner may appeal such decision to the Board of Land Use Appeals within ten (10) days of the decision; provided, further, that all decisions of the Commissioner shall be final except upon findings by the Board of Land Use Appeals that the same was arrived at by fraud or illegal means.

This permit is valid from September 23, 1999 to September 23, 2001. If a renewal is desired, the holder is responsible for making application for same without any notice from this Office. In the event of failure to do so, it will be understood that the permit has expired.


Dean C. Plaskett Esq., Commissioner

10/14/99
Date

Well Drilling Permit No. WDP-049-99

Reference: Berlex Laboratory/ Pharmacia (property owner)

P.O. Box 193336 San Juan, P.R. 00919-5336, (787)-792-8900 (mailing address, telephone)

Property Tax Number N/A



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
Remainder of Plot 3
Estate Anna's Hope, Christiansted
St. Croix, U.S. Virgin Islands 00820
Nisky Center, Suite 331
45-A Estate Nisky, Charlotte Amalie
St. Thomas, U.S. Virgin Islands 00802

PERMIT APPLICATION CONTROL FORM

PROJECT INFORMATION *Plot 427256*

APPLICANT NAME: *Julio E. Carbone* PHONE: *(787) 192-8900*
ADDRESS: *PO Box 191704 San Juan, PR 00919-1704*
PROPERTY OWNER NAME: *Charles H. Perry, Holdings Corp. (CHS)* PHONE:
ADDRESS:
PROJECT DESIGNER: *Soil Tech* ENGINEER: *José C. Aguilar* ARCHITECT: *N/A*
LICENSE NUMBER: *7362 (PR) Exp. 2003, 12th August* PHONE: *(787) 792-8900*
ADDRESS: *PO Box 191704 San Juan, PR. 00919-1704*
PROJECT LOCATION -- PLOT NO.: *130* ESTATE: *Berkeley*
QUARTER: *Middle Works* ISLAND: *St. Croix*
ZONING DISTRICT: TAX ASSESSOR'S IDENTIFICATION NUMBER:

PROJECT DESCRIPTION: Description of land or water use intended, for single family dwelling, hotel, restaurant, etc. Provide details on all water and land development planned, including land preparation, site and building construction, special construction, digging (including walls), water treatment, storage facilities, etc.

*EPA-Mandated Cleanup of Soils and Groundwater at Site (Volansko)
utilizing Soil Vapor Extraction Technology (SVE). Fourteen wells
and eleven monitoring points will be installed at site. There will be no groundwater
extraction from these wells.*

REQUIREMENTS

PRY PERMIT: ☐ SUBDIVISION ☐ BUILDING PERMIT ☐ HISTORIC DISTRICT ☐ COASTAL ZONE MANAGEMENT (CZM)	REQ'D	DATE SENT	APPROVED BY	DATE	FEE	PAID
BOUNDARY APPROVALS						
AIR POLLUTION CONTROL - CONSTRUCT						
AIR POLLUTION CONTROL - OPERATE						
ARMY CORP OF ENGINEERS						
BUILDING PERMIT						
CZM MAJOR LAND						
CZM MINOR LAND						
CZM MAJOR WATER						
CZM MINOR WATER						
EARTH CHANGE						
ELECTRICAL PERMIT						
ENERGY COMPLIANCE						
FIRE SERVICE						
FLOOD HAZARD						
GROUP DWELLING						
HAZARDOUS MATERIAL REVIEW						
HISTORIC DISTRICT						
PLUMBING PERMIT						
PUBLIC WATER SUPPLY SYSTEM						
ROAD AND DRIVEWAY						
SUBDIVISION PRELIMINARY						
SUBDIVISION FINAL						
UNDERGROUND STORAGE TANK						
WATER CONNECTION/UTILITY/TREATMENT PLANT (CZM)						
WATER DISCHARGE/POLLUTION CONTROL						
WATER QUALITY CERTIFICATION						
WELL DRILLING / APPROPRIATION						

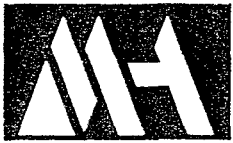
LEGAL DOCUMENTS REQUIRED: ☐ CORPORATE AGREEMENTS ☐ LIST OF NEIGHBORING PROPERTIES
☐ ZONING MAP ☐ P.Y.O. MAP ☐ PROOF OF LEGAL INTEREST ☐ OTHER

DEPARTMENT USE

CREATED BY: *JS* DATE RECEIVED: *9-20-99*
VIEWED BY:
APPROVED: ☐ DATE:
PROVED: *DATE: 9-23-99*
COURT APPROVAL:

STX-440-99
CONTROL NUMBER

304975



**McLaren
Hart, Inc.**

October 5, 1999

Mr. John Steffy
13 Chesapeake Landing
Annapolis, MD 21403

**RE: VIRGIN ISLAND CHEMICAL SITE
ST. CROIX, U.S. VIRGIN ISLANDS
TREATABILITY STUDY IMPLEMENTATION**

Dear Mr. Steffy:

We have been given approval by the U.S. Environmental Protection Agency to implement a soil vapor extraction (SVE)/air sparging (AS) pilot-scale study at the above-referenced site. Enclosed, you will find an application for a well drilling permit that must be executed by the property owner. The permit will serve as a general application for all wells to be installed during the upcoming study. Twelve SVE wells, two AS wells, and 11 vapor monitoring points will be installed as part of the upcoming work. Additionally, one of the existing production wells, P-1, will be properly abandoned and replaced for future monitoring purposes.

Please sign the attached permit and return to McLaren/Hart in the enclosed pre-addressed FedEx envelope. Please use the airbill provided to ensure that package will be billed to McLaren/Hart.

Thank you for your prompt attention to this matter and for your continuing cooperation. If you have any questions do not hesitate to call me at (908) 647-8111.

Sincerely,

Norma Eichlin
Senior Engineer

Attachment

cc: Wilfredo Geigel
Lori Singer, Esq. - Sills, Cummis, et al
Terry Grimmer - Berlex
Kevin Walsh - Parmacia & Upjohn
Jose Agrelot - ERTEC

304977



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

Department of Planning & Natural Resources
Division of Environmental Protection
WATER CUT HOMES 1118
CHRISTIANSTED, ST. CROIX 00620-5065
(809) 771-0565

APPLICATION FOR PERMIT TO DRILL WELL

In compliance with Title 12, Chapter 5, Virgin Islands Code, the undersigned

Name of Driller & License Number

SOIL TECH - WDL-013

P.O. Box 191704 San Juan, Puerto Rico 00919-1704

Mailing Address

(787) 792-8900

Telephone Number

hereby applies for a permit to:

- ☒ Drill a well 12 soil vapor extraction; 2 air sparging; 11 vapor monitoring points; 1 monitoring well
☐ Deepen an existing well
☐ Clean and refurbish an existing well

on the property:

Berlex Laboratories/Pharmacia Upjohn

(Name of Property Owner)

Plot 13Q, Estate Bethlehem, Middle Works, St. Croix

(Estate, Lot Number and Island)

(Property Tax Number)

The well will be drilled to the approximate depth of 25' (30') and will be 2" (1") inches in diameter. It will have 5 feet of casing constructed of 5/8" (PVC) material, 13' (25') feet of screening of 0.020" (description of screen) and will have bentonite/concrete (proposed type of casing seal).

Soil Vapor Extraction/(Air Sparging)

Purpose of well

The attached sketch (property map from Cadastral Survey) shows location of proposed well relative to existing buildings or other physical features, the location of existing wells on the property or nearby adjacent properties, and the location of all known sources of contamination in the vicinity.

304978

If pump will be installed by driller, answer the following: 5 HP blower-vacuum. (5HP Pos. Presa.)

Capacity of Pump _____ Horsepower _____ Size _____
(GPM) (HP) (inches)

A log showing the various strata or formations intersected by the well, formation yields and quality, and casing and screening details will be forwarded to the Division of Environmental Protection within 30 days after completion of drilling operations.

Fee of \$10.00 is attached. (If check, please make payable to the Government of the Virgin Islands).

Signature of Property Owner

Date

Signature of Well Driller

WDL-013

Driller's License No

FOR DEPARTMENT USE ONLY:

DATE: _____

APPROVED: _____ DISAPPROVED: _____

REMARKS and/or SPECIAL CONDITIONS:

12 soil vapor extraction wells (approx. 25 feet - above water table)

2 air sparging wells (40 feet)

11 vapor monitoring points (less than 25 feet - various depths)

1 monitoring well to replace old production well P-1 (98 feet)

SIGNATURE OF WELL INSPECTOR: _____

DRILLING PERMIT NO. (If approved): _____



GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

Department of Planning & Natural Resources
Division of Environmental Protection
WATER GUT HOMES 1118
CHRISTIANSTED, ST. CROIX 00820-5055
(809) 773-0555

APPLICATION FOR PERMIT TO DRILL WELL

In compliance with Title 12, Chapter 5, Virgin Islands Code, the undersigned

Name of Driller & License Number
Soil Tech - WDL-013
P.O. Box 195236 San Juan P.R. 00919-5236

Mailing Address
(787) 792-8900

Telephone Number
hereby applies for a permit to:

☒ Drill a well 7+2 + 11 VARI MONITORING POINTS
☐ Deepen an existing well
☐ Clean and refurbish an existing well

on the property: BERRY LABORATORIES / PHARMACIA UGJOHN
(Name of Property Owner)
Plot 13 Q, Estate Bethlehem - Middle Works, St. Croix
(Estate, Lot Number and Island)

(Property Tax Number)

The well will be drilled to the approximate depth of 25' (50') feet and will be 2" (1/2") inches in diameter. It will have 5 feet of casing, constructed of S/S (PVC) material, 15' (25') feet of screening of 0.020" (description of screen) and will have CEMENT/CONCRETE (proposed type of casing seal).

Soil VARI EXTRACTION (AIR SAMPLING)
Purpose of well

The attached sketch (property map from Cadastral Survey) shows location of proposed well relative to existing buildings or other physical features, the location of existing wells on the property or nearby adjacent properties, and the location of all known sources of contamination in the vicinity.

If pump will be installed by driller, answer the following: 5 HP blower-vacuum, (EPA 16 Press.)

Capacity of Pump _____ Horsepower _____ Size _____
(GPM) (HP) (inches)

A log showing the various strata or formations intersected by the well, formation yields and quality, and casing and screening details will be forwarded to the Division of Environmental Protection within 30 days after completion of drilling operations.

Fee of \$10.00 is attached. (If check, please make payable to the Government of the Virgin Islands).

\$260 (26 @ \$10 each)
see access agreement (attachment)
Signature of Property Owner _____ Date WDL-013
Signature of Well Driller _____ Driller's License No _____

FOR DEPARTMENT USE ONLY:

DATE: _____

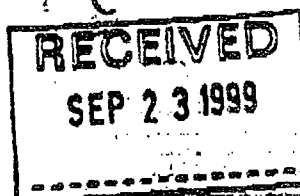
APPROVED: _____ DISAPPROVED: _____

REMARKS and/or SPECIAL CONDITIONS:

12	Soil vapor extraction (<25' above WT)
2	air sparging (40')
11	vapor monitoring point (<25' @ various dept)
1	Monitoring well to replace old production well (98')
<u>Total 26</u>	

SIGNATURE OF WELL INSPECTOR: _____
DRILLING PERMIT NO. (If approved): _____

APPROVED





GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES

Department of Planning & Natural Resources
Division of Environmental Protection
WATER CUT HOMES 1118
CHRISTIANsted, ST. CROIX 00620-3005
(809) 773-0545

APPLICATION FOR PERMIT TO DRILL WELL

In compliance with Title 12, Chapter 5, Virgin Islands Code, the undersigned

Name of Driller & License Number

SOIL TECH - WDL-013

P.O. Box 191704 San Juan, Puerto Rico 00919-1704

Mailing Address

(787) 792-8900

Telephone Number

hereby applies for a permit to:

☒ Drill a well 12 soil vapor extraction; 2 air sparging; 11 vapor
☐ Deepen an existing well monitoring points; 1 monitoring well
☐ Clean and refurbish an existing well

on the property:

Berlex Laboratories/Pharmacia Upjohn

(Name of Property Owner)

Plot 13Q, Estate Bethlehem, Middle Works, St. Croix

(Estate, Lot Number and Island)

(Property Tax Number)

The well will be drilled to the approximate depth of 25' (30') feet and will be 2" (1 1/2") inches in diameter. It will have 5 feet of casing constructed of 3/8" (PVC) material, 15' (25') feet of screening of 0.020" (description of screen) and will have bentonite/concrete (proposed type of casing seal).

Soil Vapor Extraction/(Air Sparging)

Purpose of well

The attached sketch (property map from Cadastral Survey) shows location of proposed well relative to existing buildings or other physical features, the location of existing wells on the property or nearby adjacent properties, and the location of all known sources of contamination in the vicinity.

If pump will be installed by driller, answer the following: 5 HP blower-vacuum. (5HP Pos. Press.)

Capacity of Pump _____ Horsepower _____ Size _____
(GPM) (HP) (inches)

A log showing the various strata or formations intersected by the well, formation yields and quality, and casing and screening details will be forwarded to the Division of Environmental Protection within 30 days after completion of drilling operations.

Fee of \$10.00 is attached. (If check, please make payable to the Government of the Virgin Islands).

[Signature]
Signature of Property Owner

10/9/99
Date

[Signature]
Signature of Well Driller

WDL-013

Driller's License No

FOR DEPARTMENT USE ONLY:

DATE: _____

APPROVED: _____ DISAPPROVED: _____

REMARKS and/or SPECIAL CONDITIONS:

12 soil vapor extraction wells (approx. 25 feet - above water table)
2 air sparging wells (40 feet)
11 vapor monitoring points (less than 25 feet - various depths)
1 monitoring well to replace old production well P-1 (98 feet)

SIGNATURE OF WELL INSPECTOR: _____

DRILLING PERMIT NO. (If approved): _____



FACSIMILE COVER LETTER

- ☐ Hard copy to follow via:
- ☐ Messenger
 - ☐ Certified Mail
 - ☐ Regular Mail
- ☐ No hard copy to follow

TO: Mr. Perry Shuman	FROM: Julio Cardona
COMPANY: Berlex Laboratories	REFERENCE:
DATE: September 16, 1999	
FAX: 1-510-262-7075	JOB NO: 99-0641

MESSAGE FOLLOWS:

all you need further information, please
 feel free to call us at (787) 792-8902.
 Thank you

THIS FAX INCLUDES A TOTAL OF 4 PAGES, INCLUDING THE COVER SHEET. IF YOU RECEIVE LESS THAN THIS, PLEASE CONTACT US AT (787) 792-8900.

The information contained in this telefacsimile message is privileged and confidential, and intended only for the use of the individual(s) and/or entity(ies) named above. If you are not the intended recipient, you are hereby notified that any unauthorized disclosure, copying, distribution or taking of any action in reliance on the contents of the telecopied material is strictly prohibited. If you have received this transmission in error, please immediately notify us by telephone to arrange for the return of the materials. Thank you.

E-55204-122

16 September, 1999

Mr. Kevin Walsh
Pharmacia & Upjohn

Mr. Terry Grimmer
Berlex Laboratories

Subject: VICHEM project, St. Croix, USVI - Property owner signature requirement on well drilling permit application form, and requirements for demolition permit

Mr. Syed Syedali, of the USVI Dept. of Planning and Natural Resources (DPNR) at St. Croix indicated on Sept. 14, 1999 that his Department cannot accept the well drilling permit application form for the proposed wells and vapor monitoring points for the Soil Vapor Extraction system (SVE) to be installed at the VICHEM site unless it is signed by the property owner or his legal representatives. Mr Syedali also indicated, that a signed facsimile ("fax") is acceptable for this purpose. I will send each of you a completed application form via fax for the owner's signature. Please return the same as soon as possible so that we may submit it as expediently as possible.

Also on Sept. 14, Mr. Syedali graciously arranged for a site inspection with Mr. Gordon Thomas, Building Permits Department Director, who is in charge of the evaluation of both the Earth Change Permit (ECP) and the Demolition Permit (DP) within the DPNR. Mr. Thomas indicated that the ECP may be submitted with ERTEC's signature as representatives. I will submit the ECP documentation today.

Regarding the DP, Mr. Thomas indicated that a detailed plan is required spelling out the actions and activities that will be conducted at site. He expressed concern about the testing and disposal procedures for the above-ground tanks, and asbestos testing. In addition, both Mr. Thomas and Mr. Syedali expressed concern about fencing of the property and about a number of emptied 55-gallon steel drums in the premises (from previous drilling and sampling). The ancillary documentation for the DP is the same as for the ECP, and is already under ERTEC's possession.

If you have any questions, please contact me at your earliest convenience.

Julio E. Cardona
Environmental Scientist

304985

APPENDIX B

Boring Logs and Well Construction Diagrams

Golder Associates

LOG OF BORING AST AS-1

(Page 1 of 2)

Project : Vichem
Project Number : 003-6016
Hole Depth : 50' bgs
Date Started : 2/22/00
Date Completed : 2/22/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth
in
FEET

Surf.
Elev.
0

Well: AST AS-1
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/22/00
Date Completed : 2/22/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 47.5' bgs
Material : SCH 80 PVC
Diameter : 1"
Joints : NA

WELL SCREEN

Interval : 47.5' bgs-49.5' bgs
Material : SCH 80 PVC
Diameter : 1"
Slot Size : 0.040"

SAND PACK

Interval : 46.5' bgs- 50' bgs
Type : #2

BENTONITE SEAL

Interval : 44.5' bgs- 46.5' bgs

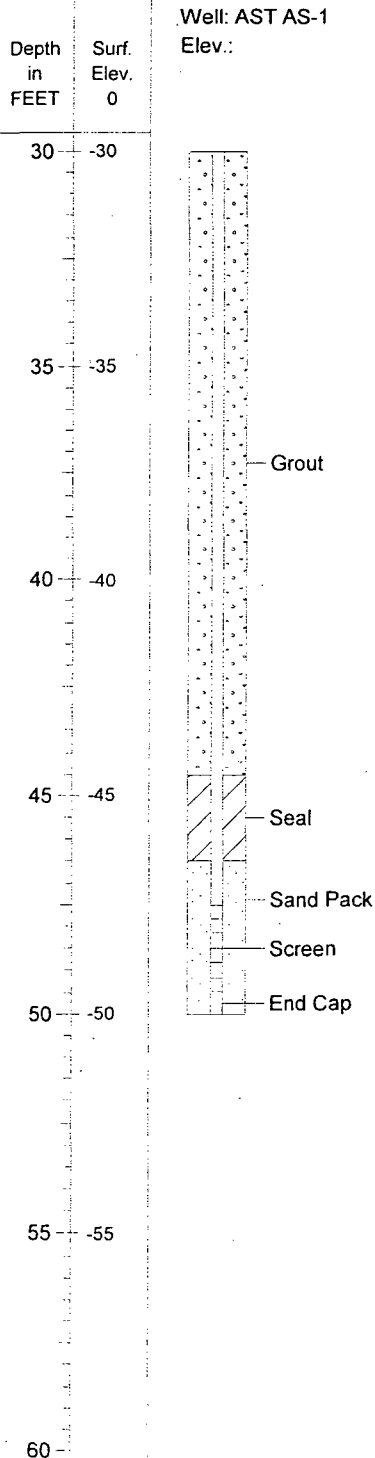
NOTES

Concrete

Grout

Project : Vichem
Project Number : 003-6016
Hole Depth : 50 ' bgs
Date Started : 2/22/00
Date Completed : 2/22/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon



Well Construction Information

WELL CONSTRUCTION

Date Started : 2/22/00
Date Completed : 2/22/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 47.5' bgs
Material : SCH 80 PVC
Diameter : 1"
Joints : NA

WELL SCREEN

Interval : 47.5' bgs-49.5' bgs
Material : SCH 80 PVC
Diameter : 1"
Slot Size : 0.040"

SAND PACK

Interval : 46.5' bgs- 50' bgs
Type : #2

BENTONITE SEAL

Interval : 44.5' bgs- 46.5' bgs

NOTES

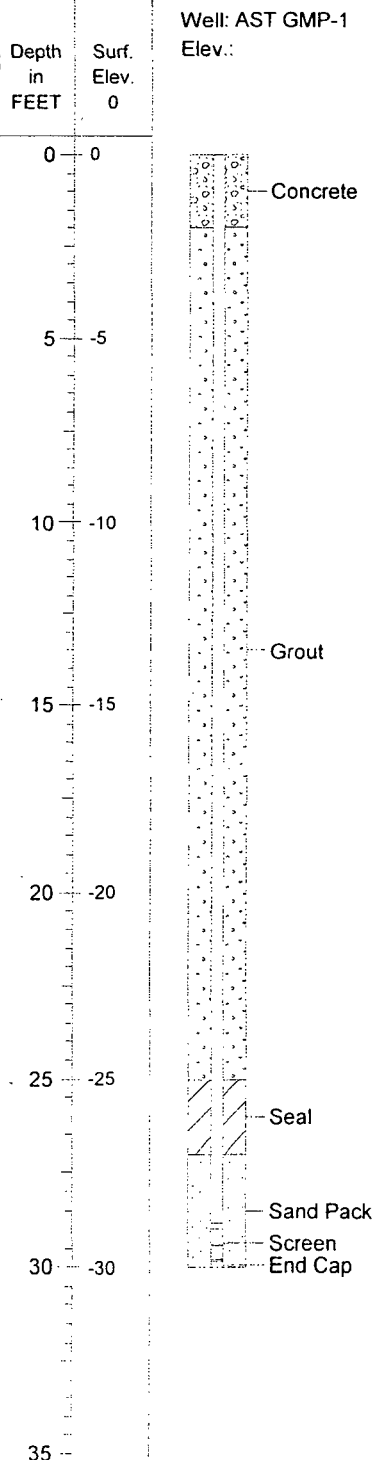
Golder Associates

LOG OF BORING AST GMP-1

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 30' bgs
Date Started : 2/24/00
Date Completed : 2/24/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon



Well Construction Information

WELL CONSTRUCTION

Date Started : 2/24/00
Date Completed : 2/24/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 28.85' bgs
Material : SCH 40 PVC
Diameter : 1"
Joints : NA

WELL SCREEN

Interval : 28.85' bgs-29.85' bgs
Material : SCH 40 PVC
Diameter : 1"
Slot Size : 0.020"

SAND PACK

Interval : 27' bgs- 30' bgs
Type : #2

BENTONITE SEAL

Interval : 25' bgs- 27' bgs

NOTES

Golder Associates

LOG OF BORING AST SVE-1

(Page 1 of 2)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 50' bgs
 Date Started : 2/8/00
 Date Completed : 2/8/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-1 Elev.:	Well Construction Information
0	0	PT		6	0.0 - 0.5' : Vegetative debris			WELL CONSTRUCTION Date Started : 2/8/00 Date Completed : 2/8/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA WELL SCREEN Interval : 4.5' bgs- 19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 3.5' bgs- 30' bgs Type : #2 BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs SUMP Interval : 19.5' bgs- 24.5' bgs
		MH		4	0.5 - 2.0' : CLAY & SILT, brown and compact, mottled texture			
		MH		4	2.0 - 4.0' : CLAY & SILT, light brown and compact, mottled texture			2 2.5 3.5 4.5
		MH		5	4.0 - 6.0' : CLAY & SILT, light brown and compact with some SAND	sweet odor, aromatic		
5	-5	SC		10	6.0 - 8.0' : CLAY, same as above, transition to clay with sand (25%), light brown	transition to clay with 25% sand at 7.5', odor		19.5
		CL		4	8.0 - 10.0' : CLAY, light brown and compact with 10% sand	odor		
10	-10	GC		3	10.0 - 12.0' : CLAY, light brown, very compact with sand, gravel, and pebbles	odor		24.5
		GC		14	12.0 - 14.0' : same as above	odor		
15	-15	MH		5	14.0 - 16.0' : CLAY & SILT, olive brown	odor		NOTES
		SM		7	16.0 - 18.0' : SAND, medium with 10% silt & clay	wet, odor		
		SW		8	18.0 - 20.0' : SAND, coarse with gravel transition to clay	sand and gravel to clay at 19.75', odor		
20	-20	GM		8	20.0 - 22.0' : poorly sorted mixture of CLAY, SILT, SAND, GRAVEL, and PEBBLES, compact	odor		
		GM		15	22.0 - 24.0' : same as above, CLAY & SILT dominate matrix	odor		
25	-25	SP		12	24.0 - 26.0' : SAND & GRAVEL, with clay and silt to clay, 10% sand compact	sand & gravel transition to clay at 25'		
		MH		8	26.0 - 28.0' : CLAY & SILT, light brown, compact	slight odor		
		ML		5	28.0 - 30.0' : SILT, light brown	slight odor		
30				11			30	

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LOG OF BORING AST SVE-1

(Page 2 of 2)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 50' bgs
 Date Started : 2/8/00
 Date Completed : 2/8/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-1 Elev.:	Well Construction Information
30	-30	SM		9 14 15 22		slight odor		WELL CONSTRUCTION Date Started : 2/8/00 Date Completed : 2/8/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA WELL SCREEN Interval : 4.5' bgs- 19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 3.5' bgs- 30' bgs Type : #2 BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs SUMP Interval : 19.5' bgs- 24.5' bgs NOTES
		SM		17 29 21 20	32.0 - 34.0' : same as above, wet, brown SILT and SAND to GRAVEL, wet and brown clay & silt, wet plastic	slight odor		
		SM		10 15 9	34.0 - 36.0' : same as above, and brown silt & sand to gravel, dry	no odor		
35	-35	SM		18 7 12 14 21	36.0 - 38.0' : same as above, brown sand & silt to clayey gravel, dry	no odor		
		SM		9 15 22 23	38.0 - 40.0' : brown SILT & SAND to GRAVEL, wet and brown sandy gravel to silt, dry			
40	-40	SM		3 5 11 15	40.0 - 42.0' : same as above, wet			
		SM		10 12 15 20	42.0 - 44.0' : same as above, wet and brown silt & clay, mottling dry			
45	-45	SM		7 10 14 15	44.0 - 46.0' : same as above			
		CL		9 11 14 16	46.0 - 48.0' : brown CLAY and SILT, mottling dry			
		CL		7 6 12 15	48.0 - 50.0' : same as above	END OF BOREHOLE		
50	-50							
55	-55							
60								

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LOG OF BORING AST SVE-2

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 25' bgs
 Date Started : 2/11/00
 Date Completed : 2/11/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-2 Elev.:	Well Construction Information
0	0	GM		8 11 9 7	0.0 - 2.0' : reworked CLAY & SILT, mixed with stone, compact			WELL CONSTRUCTION Date Started : 2/11/00 Date Completed : 2/11/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA WELL SCREEN Interval : 4.5' bgs-19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 3.5' bgs- 25' bgs Type : #2 BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs SUMP Interval : 19.5' bgs- 24.5' bgs NOTES
		MH		9 8 11 14	2.0 - 4.0' : CLAY & SILT, light brown, compact			
				15	4.0 - 6.0' : same as above			
5	-5	MH		15 18 18				
		MH		21 26 24 24	6.0 - 8.0' : same as above	odor present		
		SP		7 11 8	8.0 - 10.0' : SANDY GRAVEL, light brown, silt (10%)	odor present		
10	-10			6				
		SP		4 8 6	10.0 - 12.0' : same as above	odor present		
				7				
		SP		7 8 9	12.0 - 14.0' : same as above, grading into sand & silt, compact	odor present		
				7				
15	-15	SM		4 6 10 8	14.0 - 16.0' : SILT and very fine sand, light brown	moist		
		SM		4 12 15 22	16.0 - 18.0' : SAND, very fine with silt, light brown	wet		
		SM		10 17 13	18.0 - 20.0' : SAND & SILT, light brown	wet		
20	-20	GM		4 5 8 12	20.0 - 22.0' : poorly sorted mixture of SILT and CLAY with fine SAND and trace GRAVEL	wet		
		MH		11 13 13	22.0 - 24.0' : CLAY & SILT, brown and olive green, compact	wet		
25	-25	MH		6 12	24.0 - 25.0' : same as above	wet		
						END OF BOREHOLE		

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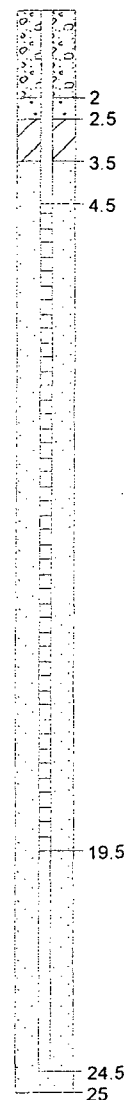
LOG OF BORING AST SVE-3

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 25' bgs
 Date Started : 2/9/00
 Date Completed : 2/9/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-3 Elev.:	Well Construction Information
0	0				0.0 - 0.5' : top soil	Topsoil to clay at 0.5		WELL CONSTRUCTION Date Started : 2/9/00 Date Completed : 2/9/00 Hole Diameter : 6.25"
		CL		3	0.5 - 2.0' : CLAY & SILT with trace sand, brown			WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA
		CL		4	2.0 - 4.0' : CLAY, with SILT, very compact with mottled texture, brown			WELL SCREEN Interval : 4.5' bgs- 19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020"
		CL		4	4.0 - 6.0' : CLAY, with SILT and trace sand, brown			SAND PACK Interval : 3.5' bgs- 25' bgs Type : #2
5	-5	CL		6	6.0 - 8.0' : CLAY with SILT, light brown with 5% sand and gravel			BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs
		CL		8	8.0 - 10.0' : same as above			SUMP Interval : 19.5' bgs- 24.5' bgs
		CL		12	10.0 - 12.0' : same as above, transition to poorly sorted mixture of CLAY/SILT with GRAVEL (50%)	transition from clay to clay and gravel at 11'		
10	-10	GC		12	12.0 - 14.0' : CLAY with SILT, light brown, compact	back to all clay at 12'		
		CL		8	14.0 - 16.0' : CLAY, brown to silt and fine sand, olive brown	transition clay to silt and sand at 15'		
		CL		3	16.0 - 18.0' : fine SAND & SILT grading into more medium sand and silt	fine sand/silt to medium sand/silt at 17.5'		
		SM		7	18.0 - 20.0' : SAND, fine with SILT (30%) and GRAVEL (15%), olive green			
		SM		7	20.0 - 22.0' : SAND and SILT grading into clay, with silt, light brown, compact and wet	transition to clay at 20.5', wet		
20	-20	SM		5	22.0 - 24.0' : poorly sorted mixture of SAND, SILT and GRAVEL, olive green	odor		
		SP		11	24.0 - 25.0' : same as above	odor		
		SP		14				
25	-25	SP		17				
		SP		24				
		SP		15				
		SP		30				
30						END OF BOREHOLE		



LOG OF BORING AST SVE-4

LOG OF BORING AST SVE-4

(Page 1 of 1)

Project	: Vichem
Project Number	: 003-6016
Hole Depth	: 25 ' bgs
Date Started	: 2/9/00
Date Completed	: 2/9/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : B. Blum / Warren
Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-4 Elev.:	Well Construction Information
0	0	MH		7	0.0 - 2.0' : CLAY & SILT, compact, brown			WELL CONSTRUCTION Date Started : 2/10/00 Date Completed : 2/10/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA WELL SCREEN Interval : 4.5' bgs- 19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 3.5' bgs- 25' bgs Type : #2 BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs SUMP Interval : 19.5' bgs- 24.5' bgs
		MH		12	2.0 - 4.0' : same as above			
		MH		12				
		MH		15				
		MH		17				
5	-5	MH		20	4.0 - 6.0' : CLAY & SILT with sand (5%), light brown, compact			
		MH		15				
		MH		18				
		MH		20				
		MH		38				
		SW		31	6.0 - 8.0' : poorly sorted mixture of SAND with angular PEBBLES, SILT & CLAY			
		SW		20				
		SW		18				
		SW		4	8.0 - 10.0' : trace			
		SW		7				
		SW		11				
10	-10	MH		17	10.0 - 12.0' : CLAY & SILT, brown, compact			
		MH		4				
		MH		8				
		MH		11				
		MH		14				
		GM		16	12.0 - 14.0' : CLAY & SILT, light brown with 10% sand and 5% gravel			
		GM		16				
		GM		21				
		GM		23				
		MH		11	14.0 - 16.0' : CLAY & SILT, compact, light brown			
15	-15	MH		7				
		MH		11				
		MH		9				
		MH		7	16.0 - 18.0' : same as above, grading to fine sand with silt, olive green	transition clay to fine sand at 17.25'		
		MH		13				
		MH		15				
		MH		15	18.0 - 20.0' : no recovery	possibly sand falling out of spoon		
		MH		17				
		MH		17				
20	-20	MH		5	20.0 - 22.0' : CLAY & SILT, rusty brown, very compact	wet		
		MH		7				
		MH		11				
		MH		15				
		MH		20	22.0 - 24.0' : same as above	wet		
		MH		18				
		MH		22				
		MH		24				
		GC		20	24.0 - 25.0' : poorly sorted mixture of CLAY with SAND & GRAVEL (20%)	wet		
25	-25	GC		23				
		GC				END OF BOREHOLE		

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/10/00
Date Completed : 2/10/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 4.5' bgs
Material : SCH 5, stainless steel
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 4.5' bgs- 19.5' bgs
Material : SCH 5, stainless steel
Diameter : 2"
Slot Size : 0.020"

SAND PACK

Interval : 3.5' bgs- 25' bgs
Type : #2

BENTONITE SEAL

Interval : 2.5' bgs- 3.5' bgs

SUMP

Interval : 19.5' bgs- 24.5' bgs

NOTES

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LOG OF BORING AST SVE-5

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Project : Vichem
 Project Number : 003-6016
 Hole Depth : 25 ' bgs
 Date Started : 2/10/00
 Date Completed : 2/10/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-5 Elev.:	Well Construction Information
0	0	MH		3	0.0 - 2.0' : CLAY & SILT, brown, compact			WELL CONSTRUCTION Date Started : 2/10/00 Date Completed : 2/10/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA WELL SCREEN Interval : 4.5' bgs-19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 3.5' bgs- 25' bgs Type : #2 BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs SUMP Interval : 19.5' bgs- 24.5' bgs NOTES
		SM		4	2.0 - 4.0' : SILT & SAND (fine), light brown, compact			
				5				
				10				
				6				
				8				
				8				
				9				
				10				
5	-5	MH		10	4.0 - 6.0' : CLAY & SILT, brown and olive green, compact			
				12				
				12				
				14				
		MH		11	6.0 - 8.0' : CLAY & SILT, brown, compact			
				11				
				11				
				9				
		SM		6	8.0 - 10.0' : SAND & SILT, brown to clay, with silt, compact	sand & silt to clay & silt at 9'		
				11				
10	-10			10		odor present		
		MH		3	10.0 - 12.0' : CLAY with SILT, compact brown to olive green			
				12				
				14				
				14				
		MH		20	12.0 - 14.0' : same as above			
				23				
				25				
15	-15	ML		4	14.0 - 16.0' : SILT, olive green, grading into fine sand and silt	transition silt to sand at 15'		
				7				
				14				
				15				
		SM		31	16.0 - 18.0' : fine SAND with SILT and GRAVEL (15%)			
				25				
				15				
				14				
				5				
		MH		8	18.0 - 20.0' : CLAY & SILT, compact, olive green	transition to clay at 18'-19'		
				9				
20	-20			13		wet		
		MH		5	20.0 - 22.0' : CLAY & SILT, olive green, compact			
				5				
				11				
				16				
		MH		14	22.0 - 24.0' : same as above, some rusty brown silt and sand in spoon tip	dry		
				15				
				23				
				28				
25	-25	MH		6	24.0 - 25.0' : CLAY & SILT with fine sand (15%), light brown			
				7				
						END OF BOREHOLE		
30								

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LOG OF BORING AST SVE-6

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 25' bgs
 Date Started : 2/10/00
 Date Completed : 2/10/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-6 Elev.:	Well Construction Information
0	0				0.0 - 0.5' : top soil			WELL CONSTRUCTION Date Started : 2/10/00 Date Completed : 2/10/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 4.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA WELL SCREEN Interval : 4.5' bgs- 19.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 3.5' bgs- 25' bgs Type : #2 BENTONITE SEAL Interval : 2.5' bgs- 3.5' bgs SUMP Interval : 19.5' bgs- 24.5' bgs
		MH		4 10 14 10	0.5 - 2.0' : CLAY & SILT, brown, compact			
		SC		7 7 8 13	2.0 - 4.0' : CLAY & SILT with trace fine sand, brown, compact			
5	-5	SM		6 11 8 8	4.0 - 6.0' : SAND, with SILT grading into clay with silt	sand at 4'-5', clay at 5'		
		MH		10 10 11 15	6.0 - 8.0' : CLAY & SILT, light, brown, compact			
		MH		8 8 8	8.0 - 10.0' : same as above			
10	-10	MH		12 5 17 17 21	10.0 - 12.0' : CLAY, with SILT transition to sand, fine to medium, orange brown	clay to sand at 10.75'		
		SW		15 17 23 17	12.0 - 14.0' : SAND, with GRAVEL to angular pebbles, trace silt			
15	-15	SW		8 9 12 11	14.0 - 16.0' : SAND, coarse olive green with trace gravel & silt			
		SW		15 12 10 25	16.0 - 18.0' : SAND, fine with silt (10%) and gravel (10%)	moist		
		MH		11 9 10 16	18.0 - 20.0' : CLAY & SILT, olive brown, compact			NOTES
20	-20	GC		12 13 36 33	20.0 - 22.0' : poorly sorted CLAY with SAND & GRAVEL (15%), compact, olive brown	wet		
		GC		25 25 16 20 10	22.0 - 24.0' : same as above, grading to clay and silt, rusty brown and dense	wet		
25	-25	GC		10 14	24.0 - 25.0' : same as above			
					END OF BOREHOLE			

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LOG OF BORING AST VMP-1D

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 30' bgs
Date Started : 2/14/00
Date Completed : 2/14/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth in FEET : 0
Surf. Elev. : 0
Well: AST VMP-1D
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/14/00
Date Completed : 2/14/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-27.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 27.55' bgs-29.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

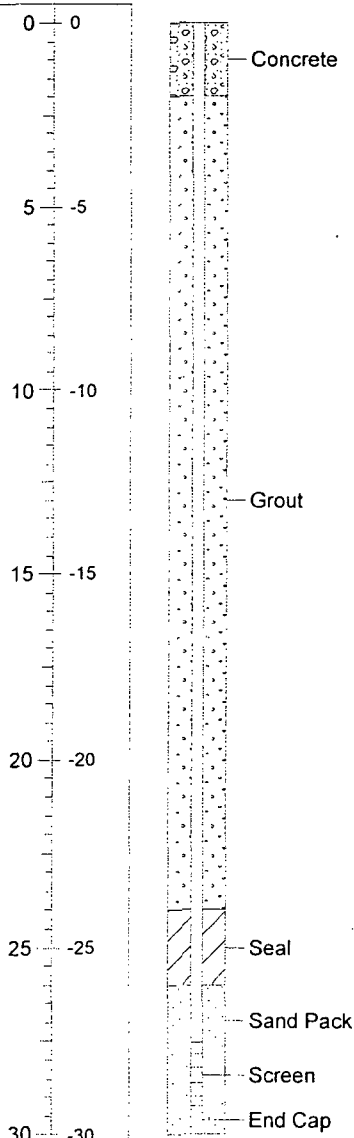
SAND PACK

Interval : 26' bgs-30' bgs
Type : #2

BENTONITE SEAL

Interval : 24' bgs-26' bgs

NOTES



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LOG OF BORING AST VMP-11

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 15' bgs
Date Started : 2/17/00
Date Completed : 2/17/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Well: AST VMP-11
Elev.: 0

Well Construction Information

Depth in FEET
Surf. Elev. 0

0 - 0

4 - 4

8 - 8

12 - 12

16 - 16

20

Concrete

Grout

Seal

Sand Pack
Screen

End Cap

WELL CONSTRUCTION

Date Started : 2/17/00
Date Completed : 2/17/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES

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LOG OF BORING AST VMP-2D

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 30' bgs
 Date Started : 2/16/00
 Date Completed : 2/16/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : M. Shorter / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: VMP-2D Elev.:	Well Construction Information
0	0	MH		0	0.0 - 0.5' : concrete-reinforced with 0.4" rebar light brown CLAY & SILT, trace sand, dry, plastic			WELL CONSTRUCTION Date Started : 2/16/00 Date Completed : 2/16/00 Hole Diameter : 6.25"
		MH		10	2.0 - 4.0' : light brown CLAY & SILT, trace gravel, plastic, dry, little mottling (dark to light brown)			WELL CASING Interval : 0' bgs-27.55' bgs Material : SCH 40 PVC Diameter : 2" Joints : NA
5	-5	MH		6	4.0 - 6.0' : light brown CLAY & SILT, trace sand, dry, plastic			WELL SCREEN Interval : 27.55' bgs-29.25' bgs Material : SCH 40 PVC Diameter : 2" Slot : 0.020"
		MH		3	6.0 - 8.0' : light brown CLAY & SILT, trace sand, dry, slight sweet odor			SAND PACK Interval : 26' bgs-30' bgs Type : #2
10	-10	SC		3	8.0 - 10.0' : 1.0' same as above, no odor; 0.7' brown clay, some sand, dry; 0.3' brown SAND, moist			BENTONITE SEAL Interval : 24' bgs-26' bgs
		MH		9	10.0 - 12.0' : brown / light brown CLAY & SILT, trace sand, dry, slight odor			NOTES
		MH		7	12.0 - 14.0' : 0.8' brown CLAY & SILT, dry; 1.2' light brown sand & silt trace clay, moist to wet			
15	-15	MH		7	14.0 - 16.0' : brown CLAY & SILT, trace sand, moist to dry, odor at 15.8'			
		MH		5	16.0 - 18.0' : brown same as above, dry (0.7'), 1.0' light brown medium to coarse sand, some clay, wet; trace silt and gravel			
20	-20	SP		13	18.0 - 20.0' : brown medium to coarse SAND, some clay, trace gravel, wet, strong odor, wet			
		SC		8	20.0 - 22.0' : 1.0' brown CLAY & SILT, some medium to coarse sand, wet; 1.0' greenish / gray medium to coarse SAND, some clay, wet			
		SC		11	22.0 - 24.0' : same as above (greenish / gray), wet, slight odor			
25	-25	SC		10	24.0 - 26.0' : 0' same as above, moist to wet; 0.6' brown medium to coarse SAND, some silt, trace gravel, moist			
		SC		12	26.0 - 28.0' : 1.5' same as above, dry to moist (mottling); 0.5' grayish green fine to medium SAND & SILT, trace clay, dry			
30	-30	SC		11	28.0 - 30.0' : same as above, no odor, wet	END OF BOREHOLE		
35								

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304999

Golder Associates

LOG OF BORING AST VMP-2I

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 15' bgs
Date Started : 2/17/00
Date Completed : 2/17/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth
in
FEET

Surf.
Elev.
0

Well: AST VMP-2I
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/17/00
Date Completed : 2/17/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

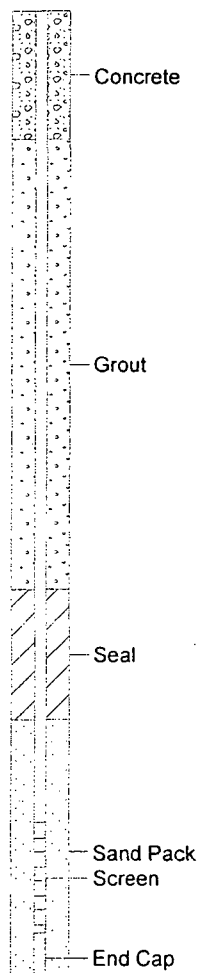
SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES



Golder Associates

LOG OF BORING AST VMP-2S

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 5' bgs
Date Started : 2/17/00
Date Completed : 2/17/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Well: AST VMP-2S
Elev.: 0

Well Construction Information

Depth
in
FEET

Surf.
Elev.
0

0 0

1 -1

2 -2

3 -3

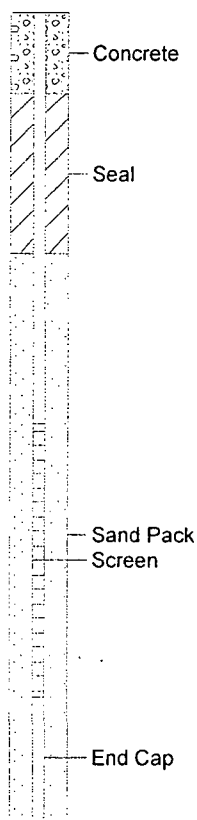
4 -4

5 -5

6 -6

7 -7

8



WELL CONSTRUCTION

Date Started : 2/17/00
Date Completed : 2/17/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-2.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 2.55' bgs-4.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

SAND PACK

Interval : 1.5' bgs-5' bgs
Type : #2

BENTONITE SEAL

Interval : 0.5' bgs-1.5' bgs

NOTES

Golder Associates

LOG OF BORING AST VMP-3D

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 30' bgs
 Date Started : 2/23/00
 Date Completed : 2/23/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : M. Shorter / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: VMP-3D Elev.:	Well Construction Information
0	0	MH		2	0.0 - 2.0' : gray / brown CLAY & SILT, trace gravel, moist	no odor		WELL CONSTRUCTION Date Started : 2/23/00 Date Completed : 2/23/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 25.55' bgs Material : SCH 40 PVC Diameter : 2" Joints : NA WELL SCREEN Interval : 25.55' bgs-27.25' Material : SCH 40 PVC Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 26' bgs- 30' bgs Type : #2 BENTONITE SEAL Interval : 23.3' bgs- 26' bgs
		MH		4	2.0 - 4.0' : same as above, mottling	no odor	2	
		MH		6	4.0 - 6.0' : brown SILT & CLAY, trace gravel, dry	no odor		
5	-5	MH		14	6.0 - 8.0' : same as above, changing to sand & silt at nose	no odor		
		SM		4	8.0 - 10.0' : 1.0' brown / black SILT & CLAY, dry; 1.0' grayish brown SILT & SAND, trace clay, dry	no odor		
10	-10	SP		11	10.0 - 12.0' : 0.6' same as above; 1.0' gray / brown medium to coarse SANDY GRAVEL, dry	no odor		
				12	12.0 - 14.0' : no recovery after three attempts	no odor		
		MH		4	14.0 - 16.0' : 1.0' brown SILT & CLAY, trace gravel, dry; 1.0' grayish brown medium to coarse SAND & SILT, trace gravel, dry	no odor		
15	-15	SM		4	16.0 - 18.0' : same as above	slight odor		
		SM		7	18.0 - 20.0' : 1.5' same as above, wet; 0.2' brown SILT & CLAY, trace sand, wet	slight odor		NOTES
20	-20	SM		3	20.0 - 22.0' : grayish brown SILT & fine SAND, trace clay, moist	no odor		
		MH		7	22.0 - 24.0' : 0.9' brown SILT & CLAY, plastic; 1.0' grayish brown medium to coarse SANDY GRAVEL	slight odor	23.4	
25	-25	SP		16	24.0 - 26.0' : 1.5' same as above, wet; 0.2' grayish brown medium to coarse SAND & SILT, trace clay, wet	no odor	25.55 26	
		ML		8	26.0 - 28.0' : grayish brown SILT, mottling, wet	slight odor	27.25	
		ML		11	28.0 - 30.0' : same as above			
30	-30			15			30	
						END OF BOREHOLE		
35								

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305002

Golder Associates

LOG OF BORING AST VMP-3I

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 15' bgs
 Date Started : 2/18/00
 Date Completed : 2/18/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : M. Shorter / Warren
 Sampling Method : Split Spoon

Well: AST VMP-3I
 Elev.: 0

Depth
in
FEET

Surf.
Elev.
0

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/18/00
 Date Completed : 2/18/00
 Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
 Material : PVC
 Diameter : 2"
 Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
 Material : SCH 40 PVC
 Diameter : 2"
 Slot Size : 0.020"

SAND PACK

Interval : 11' bgs- 15' bgs
 Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES

Concrete

Grout

Seal

Sand Pack
Screen

End Cap

0 0

4 -4

8 -8

12 -12

16 -16

20

Project : Vichem
Project Number : 003-6016
Hole Depth : 5' bgs
Date Started : 2/18/00
Date Completed : 2/18/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Well: AST VMP-3S
Elev.: 0

Depth
in
FEET

Surf.
Elev.
0

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/18/00
Date Completed : 2/18/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-2.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 2.55' bgs-4.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

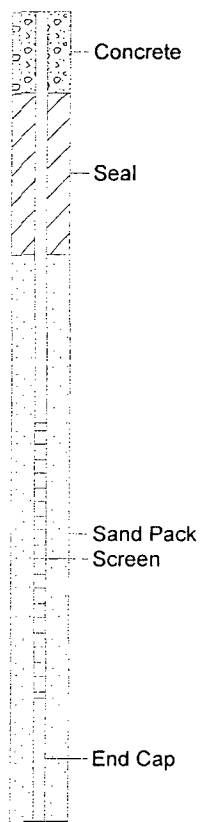
SAND PACK

Interval : 1.5' bgs-5' bgs
Type : #2

BENTONITE SEAL

Interval : 0.5' bgs-1.5' bgs

NOTES



Golder Associates

LOG OF BORING AST VMP-4D

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 30' bgs
 Date Started : 2/23/00
 Date Completed : 2/23/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : M. Shorter / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: VMP-4D Elev.:	Well Construction Information
0	0	SM		6	0.0 - 2.0' : brown SILT & SAND, some gravel, dry			WELL CONSTRUCTION Date Started : 2/23/00 Date Completed : 2/23/00 Hole Diameter : 6.25"
		SM		8	2.0 - 4.0' : 1.0' same as above; 1.0' brown / gray SILT & CLAY, mottling, dry	no odor throughout borehole		
				8				WELL CASING Interval : 0' bgs- 25.55' bgs Material : SCH 40 PVC Diameter : 2" Joints : NA
				8				
5	-5	MH		16	4.0 - 6.0' : brown SILT & CLAY, trace gravel, dry			WELL SCREEN Interval : 25.55' bgs-27.25' Material : SCH 40 PVC Diameter : 2" Slot Size : 0.020"
				17				
				17				SAND PACK Interval : 26' bgs- 30' bgs Type : #2
				19				
		SW		26	6.0 - 8.0' : brown fine SAND, some silt, dry			BENTONITE SEAL Interval : 24' bgs- 26' bgs
				17				
				14				NOTES
				14				
		SW		6	8.0 - 10.0' : brown fine SAND, dry			
				6				
10	-10			9				
				8				
		SM		4	10.0 - 12.0' : brown SILT & fine SAND, some gravel, dry			
				6				
				11				
				10				
		SM		11	12.0 - 14.0' : brown SILT & SAND, trace clay, mottling, dry			
				12				
				14				
				14				
15	-15	SM		4	14.0 - 16.0' : brown SILT & SAND, trace clay, dry			
				6				
				9				
				15				
		ML		6	16.0 - 18.0' : brown SILT, some gravel, dry to moist in nose			
				14				
				18				
				19				
		MH		6	18.0 - 20.0' : light brown SILT & CLAY, trace gravel, stiff			
				8				
20	-20			9				
				12				
		MH		6	20.0 - 22.0' : gray SILT & CLAY, stiff			
				10				
				12				
				13				
		MH		4	22.0 - 24.0' : same as above			
				7				
				11				
				20				
25	-25	SM		17	24.0 - 26.0' : brown SAND & SILT, trace gravel, wet			
				10				
				14				
				17				
				3				
				9				
		SM		8	26.0 - 28.0' : same as above			
				8				
				9				
				9				
		SM		10	28.0 - 30.0' : same as above			
				10				
30	-30			25				
35								

END OF
BOREHOLE



Golder Associates

LOG OF BORING AST VMP-4I

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 15' bgs
Date Started : 2/18/00
Date Completed : 2/18/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth in FEET
Surf. Elev. 0
Well: AST VMP-4I
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/18/00
Date Completed : 2/18/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

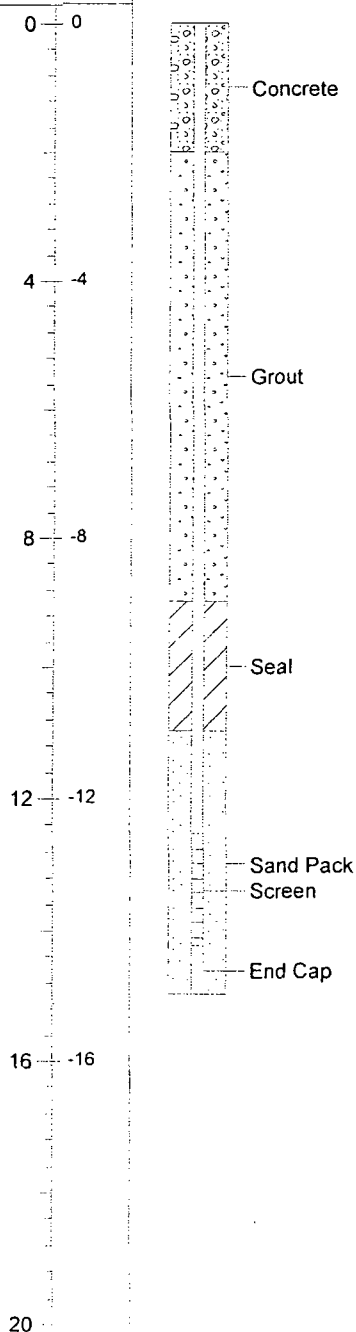
SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES



Golder Associates

LOG OF BORING AST VMP-4S

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 5' bgs
Date Started : 2/18/00
Date Completed : 2/18/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Well: AST VMP-4S
Elev.: 0

Depth
in
FEET

Surf.
Elev.
0

0

1

2

3

4

5

6

7

8

-1

-2

-3

-4

-5

-6

-7



Well Construction Information

WELL CONSTRUCTION

Date Started : 2/18/00
Date Completed : 2/18/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-2.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 2.55' bgs-4.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

SAND PACK

Interval : 1.5' bgs-5' bgs
Type : #2

BENTONITE SEAL

Interval : 0.5' bgs-1.5' bgs

NOTES

Golder Associates

LOG OF BORING FPP AS-1

(Page 1 of 2)

Project : Vichem
Project Number : 003-6016
Hole Depth : 48 ' bgs
Date Started : 2/21/00
Date Completed : 2/21/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: FPP AS-1 Elev.:	Well Construction Information
0	0				For 0-26.0', see boring log for FPP-SVE-1			WELL CONSTRUCTION Date Started : 2/21/00 Date Completed : 2/21/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 45.5' bgs Material : SCH 80 PVC Diameter : 1" Joints : NA WELL SCREEN Interval : 45.5' bgs-47.5' bgs Material : SCH 80 PVC Diameter : 1" Slot Size : 0.040" SAND PACK Interval : 44.5' bgs- 48' bgs Type : #2 BENTONITE SEAL Interval : 42.5' bgs- 44.5' bgs NOTES
5	-5							
10	-10							
15	-15							
20	-20							
25								

Golder Associates

LOG OF BORING FPP AS-1

(Page 2 of 2)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 48' bgs
 Date Started : 2/21/00
 Date Completed : 2/21/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : M. Shorter / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: FPP AS-1 Elev.:	Well Construction Information
25	-25							WELL CONSTRUCTION Date Started : 2/21/00 Date Completed : 2/21/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 45.5' bgs Material : SCH 80 PVC Diameter : 1" Joints : NA WELL SCREEN Interval : 45.5' bgs-47.5' bgs Material : SCH 80 PVC Diameter : 1" Slot Size : 0.040" SAND PACK Interval : 44.5' bgs- 48' bgs Type : #2 BENTONITE SEAL Interval : 42.5' bgs- 44.5' bgs
		CL		13 22 12 15		transition to gravel and sand at 27'		
		SP		14 12 10 15		transition to clay at 29'		
30	-30	CL		14 21 21 20		some sand "stuff" in spoon		
		CL		14 15 16 14		transition into clay/sand and gravel at 32.5'		
		SC		18 20 22 16		transition into more clay at 35'		
35	-35	CL		10 12 14 13				
		CL		7 9 15 21				
40	-40	CL		6 10 14 17				
		CL		6 10 14 17				
45	-45	CL		7 12 16 20				
		CL		1 15 16 20		END OF BOREHOLE		
50								



NOTES

Golder Associates

LOG OF BORING FPP GMP-1

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 30' bgs
Date Started : 2/24/00
Date Completed : 2/24/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth in FEET
Surf. Elev. 0
Well: FPP GMP-1
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/24/00
Date Completed : 2/24/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 28.85' bgs
Material : SCH 40 PVC
Diameter : 1"
Joints : NA

WELL SCREEN

Interval : 28.85' bgs-29.85' bgs
Material : SCH 40 PVC
Diameter : 1"
Slot Size : 0.020"

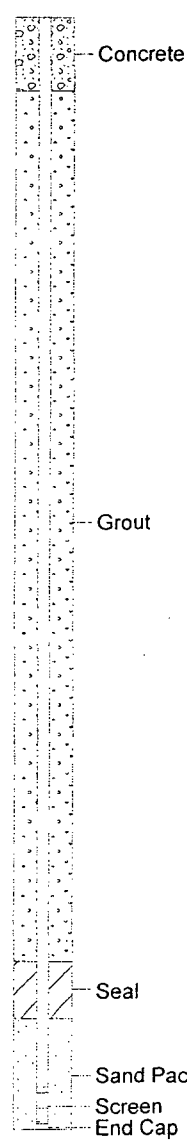
SAND PACK

Interval : 27' bgs- 30' bgs
Type : #2

BENTONITE SEAL

Interval : 25.5' bgs- 27' bgs

NOTES



Golder Associates

LOG OF BORING FPP SVE-1

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 48' bgs
 Date Started : 2/1/00
 Date Completed : 2/1/00

Drilling Company : Ertec
 Driller : Jose L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: SVE-1 Elev.:	Well Construction Information
0	0	CG		1	0.0 - 0.5' : Concrete			WELL CONSTRUCTION Date Started : 2/7/00 Date Completed : 2/7/00 Hole Diameter : 6.25"
		SM		1	0.5 - 2.0' : Fill, SAND & SILT with gravel			
		FL		2	2.0 - 4.0' : Fill grading into light brown clay at 2.5'			WELL CASING Interval : 0' bgs- 6.5' bgs Material : SCH 5, stainless steel Diameter : 2" Joints : NA
		CL		4	4.0 - 6.0' : CLAY, light brown			
5	-5	CL		6	6.0 - 8.0' : CLAY, light brown, 10% sand & 10% silt, moist @ 7'			WELL SCREEN Interval : 6.5' bgs- 21.5' bgs Material : SCH 5, stainless steel Diameter : 2" Slot Size : 0.020"
		CL		7	8.0 - 10.0' : CLAY, light brown, less moist than above, 10% sand			
10	-10	CL		8	10.0 - 12.0' : CLAY, same as above, 10% sand			SAND PACK Interval : 5' bgs- 26.5' bgs Type : #2
		CL		11	12.0 - 14.0' : CLAY, same as above, 10% sand compacted			
15	-15	CL		15	14.0 - 16.0' : CLAY, same as above, 10% sand compacted			BENTONITE SEAL Interval : 3.5' bgs- 5' bgs
		CL		12	16.0 - 18.0' : CLAY grading to sand, fine to medium with 40% clay and 5% gravel			
		SP		11	18.0 - 20.0' : SAND, GRAVEL with silt & clay, 40% wet			SUMP Interval : 21.5' bgs- 26.5' bgs
20	-20	SC		5	20.0 - 22.0' : same as above grading into CLAY, light brown with 15% sand, wet	Transition back to clay at 20.5'		
		CL		6	22.0 - 24.0' : CLAY, light brown with 10% sand, wet			NOTES
25	-25	CL		4	24.0 - 26.0' : CLAY, same as above with 10% sand, moist			
30					END OF BOREHOLE			

Project : Vichem
Project Number : 003-6016
Hole Depth : 30' bgs
Date Started : 2/7/00
Date Completed : 2/7/00

Drilling Company : Ertec
Driller : J.L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : B. Blum / Warren
Sampling Method : Split Spoon

Depth
in
FEET

Surf.
Elev.
0

Well: FPP VMP-1D
Elev.:

Well Construction
Information

WELL CONSTRUCTION

Date Started : 2/7/00
Date Completed : 2/7/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 27.3' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 27.3' bgs- 29' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

SAND PACK

Interval : 26' bgs- 30' bgs
Type : #2

BENTONITE SEAL

Interval : 24' bgs- 26' bgs

NOTES

The well came up 0.25' during construction

0 0

5 -5

10 -10

15 -15

20 -20

25 -25

30 -30

35

Grout

Seal

Sand Pack

Screen

End Cap

Golder Associates

LOG OF BORING FPP VMP-11

(Page 1 of 1)

Project	: Vichem	Drilling Company	: Ertec
Project Number	: 003-6016	Driller	: Jose L. Morales
Hole Depth	: 15' bgs	Drilling Method	: Hollow Stem Auger
Date Started	: 2/21/00	Geologist/Office	: M. Shorter / Warren
Date Completed	: 2/21/00	Sampling Method	: Split Spoon

Depth
in
FEET

Surf.
Elev.
0

Well: FPP VMP-11
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/21/00
Date Completed : 2/21/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

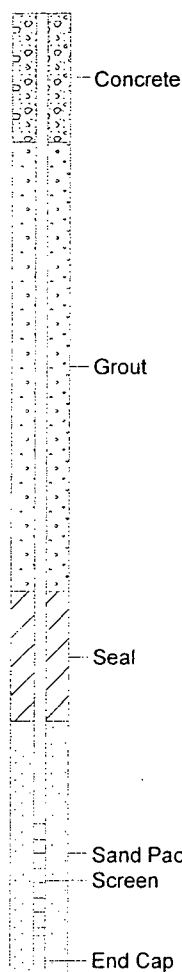
SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES



Golder Associates

LOG OF BORING FPP VMP-2D

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 30' bgs
 Date Started : 2/4/00
 Date Completed : 2/4/00

Drilling Company : Ertec
 Driller : J.L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: VMP-2D Elev.:	Well Construction Information
0	0	CG		3	0.0 - 0.5' : concrete			WELL CONSTRUCTION Date Started : 2/7/00 Date Completed : 2/7/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 27.55' bgs Material : SCH 40 PVC Diameter : 2" Joints : NA WELL SCREEN Interval : 27.55' bgs-29.25' bgs Material : SCH 40 PVC Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 24' bgs- 30' bgs Type : #2 BENTONITE SEAL Interval : 22' bgs- 24' bgs NOTES
		CL		3	0.5 - 2.0' : CLAY, light brown with sand (15%), compacted			
		CL		6	2.0 - 4.0' : same as above			
		CL		7	4.0 - 6.0' : CLAY, light brown with silt & sand (10%), compacted			
5	-5	CL		12	6.0 - 8.0' : SAND, coarse and gravel transition to clay, with sand and back to sandy gravel, then clay again	6.5 sand & gravel, 6.5-7.5 clay, 7.5-7.75, sand & gravel, 7.75-8 clay		
		SP		11	8.0 - 10.0' : CLAY, light brown with silt & sand(15%)			
		CL		11	10.0 - 12.0' : CLAY, same as above	less wet		
10	-10	CL		10	12.0 - 14.0' : CLAY, same as above	less moist with depth		
		CL		13	14.0 - 16.0' : CLAY, same as above	moist		
15	-15	CL		10	16.0 - 18.0' : CLAY, with gravel and pebbles (20%), compact and moist			
		GC		20	18.0 - 20.0' : GRAVEL and SAND, poorly sorted with clay(50%)	transition to sand & gravel at 18'		
		SP		14	20.0 - 22.0' : GRAVEL and SAND with clay (50%), transitioning into clay with gravel & sand(25%), compact	Transition from sand & gravel to clay at 20.5' dry		
20	-20	SC		8	22.0 - 24.0' : CLAY, light brown, compact and mottled with green streaks, sand & silt (10%)			
		CL		12	24.0 - 26.0' : GRAVEL & SAND, brown with 20% clay	moist sand & gravel at 24'		
25	-25	SP		9	26.0 - 28.0' : coarse SAND and GRAVEL with silt & clay (10%), clay in tip of spoon	wet clay at 28'		
		SW		11	28.0 - 30.0' : CLAY with 40% SAND & GRAVEL to clay with 15% sand & gravel, wet	transition to more clay at 29.5'		
		GC		14				
30	-30			16				
				15				
				19				
						END OF BOREHOLE		

Project : Vichem
Project Number : 003-6016
Hole Depth : 15' bgs
Date Started : 2/21/00
Date Completed : 2/21/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Well: FPP-VMP-2I
Elev.:
Depth in FEET : 0
Surf. Elev. : 0

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/21/00
Date Completed : 2/21/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

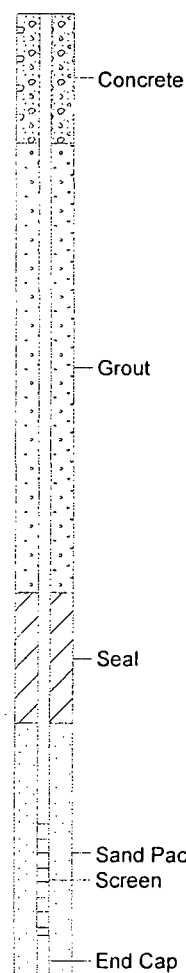
SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES



Golder Associates

LOG OF BORING FPP VMP-2S

(Page 1 of 1)

Project	: Vichem	Drilling Company	: Ertec
Project Number	: 003-6016	Driller	: Jose L. Morales
Hole Depth	: 5' bgs	Drilling Method	: Hollow Stem Auger
Date Started	: 2/21/00	Geologist/Office	: M. Shorter / Warren
Date Completed	: 2/21/00	Sampling Method	: Split Spoon

Well: FPP VMP-2S
Elev.:
Depth in FEET
Surf. Elev. 0

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/21/00
Date Completed : 2/21/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-2.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 2.55' bgs-4.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

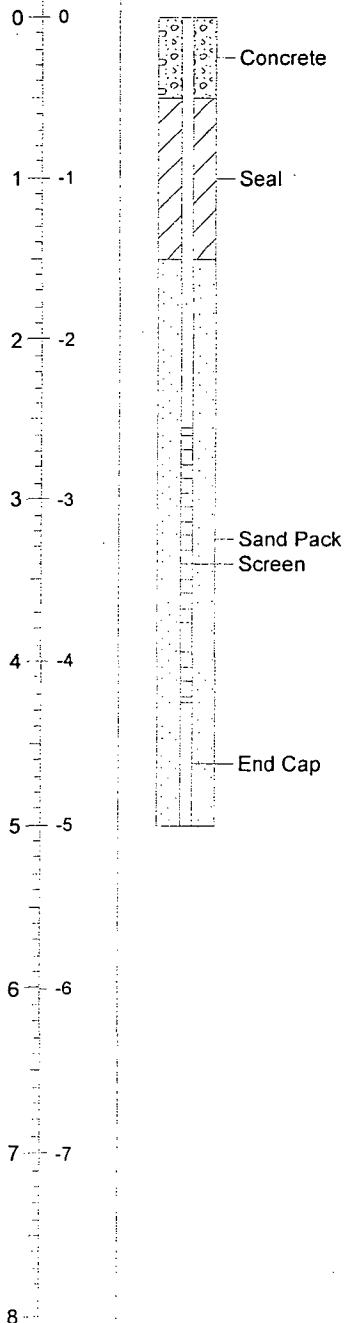
SAND PACK

Interval : 1.5' bgs-5' bgs
Type : #2

BENTONITE SEAL

Interval : 0.5' bgs-1.5' bgs

NOTES



Golder Associates

LOG OF BORING FPP VMP-3D

(Page 1 of 1)

Project : Vichem
 Project Number : 003-6016
 Hole Depth : 30' bgs
 Date Started : 2/2/00
 Date Completed : 2/2/00

Drilling Company : Ertec
 Driller : J.L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: VMP-3D Elev.:	Well Construction Information
0	0	CG		5	0.0 - 0.5' : concrete			WELL CONSTRUCTION Date Started : 2/3/00 Date Completed : 2/3/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 27.55' bgs Material : SCH 40 PVC Diameter : 2" Joints : NA WELL SCREEN Interval : 27.55' bgs-29.25' bgs Material : SCH 40 PVC Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 24' bgs- 30' bgs Type : #2 BENTONITE SEAL Interval : 22' bgs- 24' bgs
		CL		5	0.5 - 2.0' : CLAY, compact light brown with sand (10%)			
		CL		6	2.0 - 4.0' : CLAY, compact light brown with sand (10%)			NOTES
		CL		7	4.0 - 6.0' : same as above (15%)			
5	-5	CL		7	6.0 - 8.0' : same as above, mottled texture	three pictures taken of this sample		
		CL		8	8.0 - 10.0' : same as above, mottled texture	two pictures taken of this sample		
10	-10	CL		10	10.0 - 12.0' : CLAY, with sand & silt (25%), compact light brown			
		SC		15	12.0 - 14.0' : same as above			
15	-15	SP		13	14.0 - 16.0' : SAND, coarse and gravel with silt & clay (15%) light brown	transition to sand & gravel, at 14' wet wet		
		SP		12	16.0 - 18.0' : same as above			
		SP		11	18.0 - 20.0' : SAND and GRAVEL as above, transition to clay, compaction with sand & gravel(15%), light brown	transition to clay at 18.5'		
20	-20	CL		17	20.0 - 22.0' : CLAY with sand & gravel (15%) to clay with silt and fine sand (20%)	CLAY with less sand & gravel at 20.5'		
		CL		17	22.0 - 24.0' : same as above, clay with 15% silt & sand			
25	-25	CL		15	24.0 - 26.0' : CLAY with 15% silt & sand, transition to sand & gravel with 25% silt & clay	transition to sand & gravel at 25.75'		
		SM		19	26.0 - 28.0' : SILT and fine SAND, light brown to clay with 20% sand & gravel	transition to silt & sand at 26', then to clay at 27'		
30	-30	CL		16	28.0 - 30.0' : CLAY with 15% silt and trace fine sand			
					END OF BOREHOLE			

305017

Golder Associates

LOG OF BORING FPP VMP-3I

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 15' bgs
Date Started : 2/21/00
Date Completed : 2/21/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth in FEET
Surf. Elev. 0
Well: FPP VMP-3I
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/21/00
Date Completed : 2/21/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

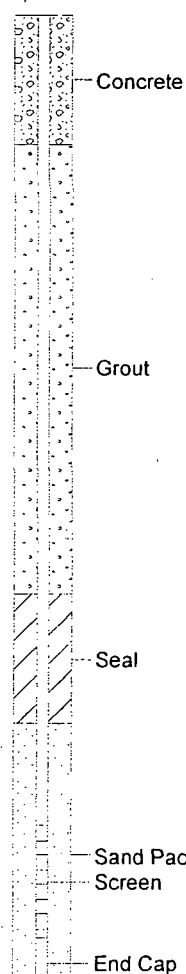
SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES



Project : Vichem
Project Number : 003-6016
Hole Depth : 5' bgs
Date Started : 2/21/00
Date Completed : 2/21/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth in FEET
Surf. Elev. 0
Well: FPP VMP-3S
Elev.:

Well Construction Information

WELL CONSTRUCTION

Date Started : 2/21/00
Date Completed : 2/21/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-2.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 2.55' bgs-4.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

SAND PACK

Interval : 1.5' bgs-5' bgs
Type : #2

BENTONITE SEAL

Interval : 0.5' bgs-1.5' bgs

NOTES

Concrete
Seal
Sand Pack Screen
End Cap

Golder Associates

LOG OF BORING FPP-VMP-4D

(Page 1 of 1)

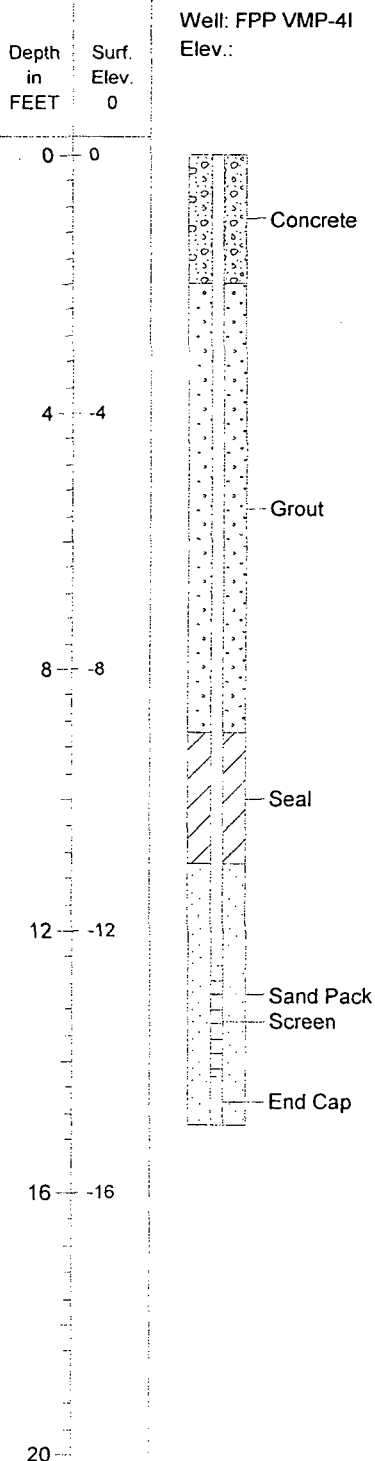
Project : Vichem
 Project Number : 003-6016
 Hole Depth : 30' bgs
 Date Started : 2/2/00
 Date Completed : 2/2/00

Drilling Company : Ertec
 Driller : J.L. Morales
 Drilling Method : Hollow Stem Auger
 Geologist/Office : B. Blum / Warren
 Sampling Method : Split Spoon

Depth in FEET	Surf. Elev. 0	USCS	GRAPHIC	Blow Count	DESCRIPTION	REMARKS	Well: VMP-4D Elev.:	Well Construction Information
0	0	CG		3	0.0 - 0.5' : concrete			WELL CONSTRUCTION Date Started : 2/3/00 Date Completed : 2/3/00 Hole Diameter : 6.25" WELL CASING Interval : 0' bgs- 27.55' bgs Material : SCH 40 PVC Diameter : 2" Joints : NA WELL SCREEN Interval : 27.55' bgs-29.25' bgs Material : SCH 40 PVC Diameter : 2" Slot Size : 0.020" SAND PACK Interval : 24' bgs- 30' bgs Type : #2 BENTONITE SEAL Interval : 22' bgs- 24' bgs
		CL		5	0.5 - 2.5' : CLAY, light brown with sand (15%)			
		CL		8	2.5 - 4.0' : CLAY, light brown with 10% sand, compacted			NOTES
		CL		4	4.0 - 6.0' : No recovery, cuttings are CLAY, same as above			
5	-5	CL		10	6.0 - 8.0' : CLAY, light brown with SILT (20%) and SAND (10%)			
		SC		18	8.0 - 10.0' : SAND, fine with CLAY & SILT (40%), light brown			
10	-10	SC		10	10.0 - 12.0' : same as above, grading into sand, medium	transition into medium sand at 11'		
		SP		13	12.0 - 14.0' : SAND, medium with silt (10%), light brown			
15	-15	SP		7	14.0 - 16.0' : SAND, coarse with gravel (10%) and silt (15%), light brown	moist at 15'		
		SP		10	16.0 - 18.0' : same as above grading into clay & gravel (25%)	transition to clay at 17.5'		
		CL		12	18.0 - 20.0' : CLAY, compact with sand (15%)			
20	-20	CL		6	20.0 - 22.0' : CLAY, compact with trace sand, light brown			
		GC		4	22.0 - 24.0' : CLAY, compact with gravel and pebbles (15%), light brown, mottled			
25	-25	CL		9	24.0 - 26.0' : CLAY, compact with sand (5%) and trace pebbles			
		GC		5	26.0 - 28.0' : same as above	wet		
30	-30	GC		12	28.0 - 30.0' : same as above			
				14				
				5				
				10				
				12				
				20				
						END OF BOREHOLE		

Project : Vichem
Project Number : 003-6016
Hole Depth : 15' bgs
Date Started : 2/22/00
Date Completed : 2/22/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon



Well Construction Information

WELL CONSTRUCTION

Date Started : 2/22/00
Date Completed : 2/22/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs- 12.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 12.55' bgs-14.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot Size : 0.020"

SAND PACK

Interval : 11' bgs- 15' bgs
Type : #2

BENTONITE SEAL

Interval : 9' bgs- 11' bgs

NOTES

Golder Associates

LOG OF BORING FPP VMP-4S

(Page 1 of 1)

Project : Vichem
Project Number : 003-6016
Hole Depth : 5' bgs
Date Started : 2/22/00
Date Completed : 2/22/00

Drilling Company : Ertec
Driller : Jose L. Morales
Drilling Method : Hollow Stem Auger
Geologist/Office : M. Shorter / Warren
Sampling Method : Split Spoon

Depth
in
FEET

Surf.
Elev.
0

Well: FPP VMP-4S
Elev.:

Well Construction
Information

WELL CONSTRUCTION

Date Started : 2/22/00
Date Completed : 2/22/00
Hole Diameter : 6.25"

WELL CASING

Interval : 0' bgs-2.55' bgs
Material : SCH 40 PVC
Diameter : 2"
Joints : NA

WELL SCREEN

Interval : 2.55' bgs-4.25' bgs
Material : SCH 40 PVC
Diameter : 2"
Slot : 0.020"

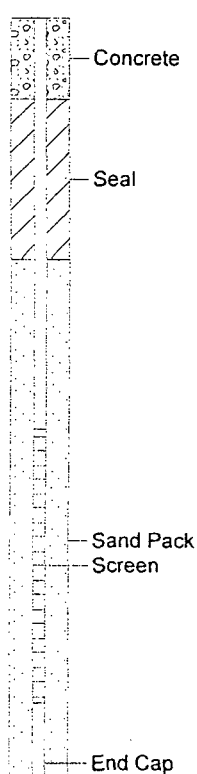
SAND PACK

Interval : 1.5' bgs-5' bgs
Type : #2

BENTONITE SEAL

Interval : 0.5' bgs-1.5' bgs

NOTES



APPENDIX C
Groundwater Sampling Forms

GROUNDWATER SAMPLING FORM



Well Number MW-1
 State Permit No. unknown
 Project Name Virgin Island Chemical Site
 Project Number unknown

Sampling Date 3/29/00
 Weather Partly Cloudy, ~80°F, 10-15 mph
 Sampled by: JL, RW
 (initials)

Well Information

Well Type: ☒ Monitor ☐ Other: _____ Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 4" inches Well Screened interval _____ to _____ feet below TIC
 Well Depth (ft below TIC) _____ Well Headspace Reading (PID/FID) 80 ppm
 Water Level (ft below TIC) 15.84 Product Level-if present (ft below TIC) None
 Well Notes (Odor, well condition, etc.) Well condition - good, secured; Odor - slight to none

Volume of Water in Casing (gallons)

(33.00) - (15.74) * .64 gpf * 0.0408 = _____ gallons
 Well Depth Water Level Well Diameter (in)

CO₂ - 1000 ppm 70 ppm

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	SAL ‰	TDS g/L	Notes
9:37	—	—	<u>5.4</u>	—	—	<u>15.74</u>	<u>500</u>	—	—	—	Purge Start
9:42	<u>29.99</u>	<u>6.72</u>	<u>2.54</u>	<u>.206</u>	<u>38.4</u>	<u>16.85</u>	<u>280</u>	<u>-253</u>	<u>.10</u>	<u>1.32</u>	
9:47	<u>30.02</u>	<u>6.71</u>	<u>.39</u>	<u>.206</u>	<u>48.5</u>	<u>16.97</u>	<u>220</u>	<u>-255</u>	<u>.10</u>	<u>1.32</u>	
9:52	<u>30.38</u>	<u>6.71</u>	<u>.34</u>	<u>.206</u>	<u>59.9</u>	<u>17.04</u>	<u>400</u>	<u>-259</u>	<u>.10</u>	<u>1.32</u>	
9:57	<u>30.42</u>	<u>6.71</u>	<u>.33</u>	<u>.206</u>	<u>64.2</u>	<u>17.18</u>	<u>330</u>	<u>-264</u>	<u>.10</u>	<u>1.32</u>	
10:02	<u>30.67</u>	<u>6.70</u>	<u>.30</u>	<u>.206</u>	<u>52.9</u>	<u>17.24</u>	<u>300</u>	<u>-267</u>	<u>.10</u>	<u>1.32</u>	
10:07	<u>30.90</u>	<u>6.69</u>	<u>.29</u>	<u>.206</u>	<u>69.3</u>	<u>17.31</u>	—	<u>-270</u>	<u>.10</u>	<u>1.32</u>	
10:12	<u>30.91</u>	<u>6.69</u>	<u>.31</u>	<u>.208</u>	<u>54.2</u>	<u>17.32</u>	<u>248</u>	<u>-309</u>	<u>.10</u>	<u>1.33</u>	
10:17	<u>30.92</u>	<u>6.69</u>	<u>.30</u>	<u>.207</u>	<u>66.1</u>	<u>17.39</u>	—	<u>-273</u>	<u>.10</u>	<u>1.33</u>	
10:22	<u>30.84</u>	<u>6.69</u>	<u>.32</u>	<u>.208</u>	<u>62.7</u>	<u>17.40</u>	—	<u>-274</u>	<u>.10</u>	<u>1.33</u>	
10:27	<u>30.96</u>	<u>6.69</u>	<u>.37</u>	<u>.208</u>	<u>64.9</u>	<u>17.42</u>	<u>368</u>	<u>-273</u>	<u>.10</u>	<u>1.33</u>	Changed sample flow to 200 ml/min
10:32	<u>30.78</u>	<u>6.67</u>	<u>.31</u>	<u>.208</u>	<u>80.7</u>	<u>17.52</u>	—	<u>-279</u>	<u>.10</u>	<u>1.33</u>	sampled at 11:04
10:37	<u>30.96</u>	<u>6.69</u>	<u>.28</u>	<u>.207</u>	<u>30.3</u>	<u>17.55</u>	<u>320</u>	<u>-281</u>	<u>.10</u>	<u>1.33</u>	
10:42	<u>31.06</u>	<u>6.69</u>	<u>.27</u>	<u>.208</u>	<u>97.0</u>	<u>17.55</u>	—	<u>-280</u>	<u>.10</u>	<u>1.33</u>	
10:47	<u>31.03</u>	<u>6.69</u>	<u>.26</u>	<u>.208</u>	<u>98.9</u>	<u>17.55</u>	—	<u>-281</u>	<u>.10</u>	<u>1.33</u>	
10:52	<u>31.09</u>	<u>6.69</u>	<u>.26</u>	<u>.207</u>	<u>91.4</u>	<u>17.48</u>	<u>320</u>	<u>-283</u>	<u>.10</u>	<u>1.32</u>	
11:04	<u>31.99</u>	<u>6.69</u>	<u>.41</u>	<u>.214</u>	<u>131</u>	<u>17.39</u>	—	<u>-279</u>	<u>.10</u>	<u>1.37</u>	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) Horiba U-22

Sample Information

Groundwater Sample Field ID MW-1/3-29
 Sampling Time 11:02 Sampling End Time 11:05:22 DTW before Sampling 15.74'
 Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☐ Other: _____
 Sampling Observations LIGHT ODR, very poor recharging - 3/24/00



GROUNDWATER SAMPLING FORM

Well Number MW-1

State Permit No. _____

Project Name VIRGIN ISLAND CHEMICAL

Project Number _____

Sampling Date 4.16.00Weather CLOUDY, BREEZY, TEMP IN EGGSSampled by: N. EICHLIN D. SCHNEEL
(initials)

Well Information

Well Type: Monitor ☒ Other: VMPWell Construction ☒ PVC ☐ Steel ☐ Other: _____Well Diameter 4 inches

Well Screened interval _____ to _____ feet below TIC

Well Depth (ft below TIC) 33

Well Headspace Reading (PID/FID) _____

Water Level (ft below TIC) 16.16

Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

$$\left(\text{Well Depth} - \text{Water Level} \right) * \text{Well Diameter (in)}^2 * 0.0408 = \text{gallons}$$
CO₂ = 40 ppm

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____Pump: ☒ Submersible Pump (inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____Pump intake depth: 28 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (mS/cm)	Turb (NTU)	DTW (feet)	Rate (mL/min)	SnL %	TDS g/L	ORP mV	Notes
1049	28.68	7.26	7.17	2.45	57	17.13	1000	0.1	1.57	150	Purge Start
1053	29.00	7.25	6.98	2.47	55	17.58	750	0.1	1.58	113	Flow Adjusted To 600
1100	29.05	7.24	6.82	2.47	55	17.79	500	0.1	1.58	116	
1105	29.14	7.23	6.78	2.47	52	17.99	420	0.1	1.58	117	
1110	29.26	7.21	6.72	2.48	60	18.23	500	0.1	1.59	114	
1115	29.48	7.21	6.66	2.49	51	18.27	500	0.1	1.60	115	
1120	29.62	7.20	6.59	2.50	59	18.33	400	0.1	1.60	115	
1125	29.72	7.19	6.65	2.51	63	18.55	420	0.1	1.61	109	
1130	30.01	7.18	6.54	2.53	68	18.57	420	0.1	1.62	109	
1135	30.30	7.17	6.40	2.54	69	18.55	420	0.1	1.63	110	
1140	30.07	7.16	6.36	2.53	66	18.55	420	0.1	1.62	108	
1145	30.08	7.16	6.31	2.53	68	18.52	420	0.1	1.62	108	
1150	30.13	7.16	6.32	2.53	69	18.50	420	0.1	1.62	109	
Note: Water during sampling was clear. Turbidity probe probably not working accurately.											
1200	30.27	7.19	6.30	2.55	74	19.08	600	0.1	1.63	110	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID MW-1Sampling Time 1155 Sampling End Time 1200DTW before Sampling 18.51Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____

Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number MW-1

State Permit No. _____

Project Name Island Chemical

Project Number _____

Sampling Date 5-3-00Weather Sunny ~80 SunshineSampled by: SC, KR, WR-Etko
(initials)

Well Information

Well Type: ☒ Monitor ☐ Other: _____Well Construction ☒ PVC ☐ Steel ☐ Other: _____

Well Diameter _____ inches

Well Screened interval _____ to _____ feet below TIC

Well Depth (ft below TIC) 33.39 (33.39)

Well Headspace Reading (PID/FID) _____

Water Level (ft below TIC) 17.12

Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

$$\left(\text{Well Depth} - \text{Water Level} \right) \times \left(\text{Well Diameter (in)} \right)^2 \times 0.0408 = \text{gallons}$$

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____Pump intake depth: 28 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☒ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP (mV)	SL (%)	FS (g/L)	Notes
1017	28.86	7.15	12.26	2.06	6	17.93	600	114	.1	1.32	Purge Start 10:13
1020	29.03	7.14	11.59	2.07	22	18.11	550	112	.1	1.32	
1023	29.21	7.14	11.30	2.08	110	18.28	500	108	.1	1.33	
1026	29.35	7.13	11.10	2.08	38		500	106	.1	1.33	
1031	29.41	7.12	10.64	2.08	49	18.68	500	99	.1	1.33	
1036	29.62	7.12	10.36	2.09	70	18.82	450	95	.1	1.34	
1039	29.73	7.11	10.16	2.10	96	18.84	450	95	.1	1.34	
1042	29.71	7.11	10.09	2.09	55	18.85	450	97	.1	1.34	
1045	29.78	7.11	9.97	2.09	58	18.88	450	96	.1	1.34	
1048	29.80	7.11	9.80	2.09	63	18.90		95	.1	1.34	
1051	29.75	7.11	9.77	2.10	65	18.95	400	95	.1	1.34	
											pump stopped 1059
1058	29.69	7.11	9.64	2.10	80	18.99	400	97	.1	1.34	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) U-22 (Horiba)

Sample Information

Groundwater Sample Field ID MW-1 ; voA + sulfateSampling Time 1055 Sampling End Time 1057 DTW before Sampling _____Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☐ Other: _____Sampling Observations D/O = 8.5 CO2 = 25 ppm Fe = 0



GROUNDWATER SAMPLING FORM

Well Number MW-2State Permit No. Project Name Virgin Island Chemical SiteProject Number Sampling Date 3/31/00Weather Sunny, 86°F, humid, 0-Smp^hSampled by: RWJL
(initials)

Well Information

Well Type: ☒ Monitor Other: Well Construction ☒ PVC Steel Other: Well Diameter 4 inchesWell Screened interval to feet below TICWell Depth (ft below TIC) 31Well Headspace Reading (PID/FID) 1.0 ppmWater Level (ft below TIC) 17.16 (After Pump 17.14) Product Level-if present (ft below TIC) Well Notes (Odor, well condition, etc.) Good Cond, No Odor

Volume of Water in Casing (gallons)

$$\left(\text{Well Depth} - \text{Water Level} \right) \times \left(\text{Well Diameter (in)} \right)^2 \times 0.0408 = \text{gallons}$$
CO₂ - 144 mg/l

Purging Information

Purge Method: ☒ Low Flow NJDEP 3 Well Volume Not Purged Other: Pump: ☒ Submersible Pump (2 inch) Peristaltic Positive displacement Other: Pump intake depth: 26' Purge water discharged to: Ground ☒ Drum Other: Tubing: Polypropylene ☒ Teflon-line Other: 1 ☒ New Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mV	SAL ‰	TDS mg/L	Notes
7:39	28.74	6.89	1.16	.223	-8.0	17.32	390	108	.11	1.43	Purge Start
7:44	29.95	6.91	0.58	.225	-6.6	17.32	390	87	.11	1.44	
7:49	30.12	6.92	0.51	.225	-5.6	17.33	410	73	.11	1.44	
7:54	30.30	6.92	0.46	.225	7.4	17.34	410	64	.11	1.44	
7:59	30.32	6.92	0.44	.223	29.8	17.35	410	57	.11	1.43	
8:04	30.41	6.92	0.39	.224	-10.0	17.35	410	52	.11	1.43	
8:09	30.39	6.92	0.37	.224	-10.0	17.35	420	48	.11	1.43	
8:14	30.18	6.93	0.41	.226	-10.0	17.32	420	49	.11	1.45	
8:19	29.66	6.92	0.39	.225	-8.1	17.30	200	49	.11	1.44	change filter to 300
8:24	30.47	6.92	0.40	.225	-9.1	17.32	300	39	.11	1.44	
8:29	30.96	6.92	0.34	.226	-9.2	17.35	300	35	.11	1.44	
8:34	31.30	6.92	0.32	.226	-9.8	17.35	310	38	.11	1.45	
8:39	31.60	6.93	0.30	.226	-9.7	17.35	310	46	.11	1.45	
8:44	31.64	6.93	0.29	.227	-9.2	17.35	290	51	.11	1.46	
8:49	31.64	6.93	0.28	.228	-9.5	17.35	290	55	.11	1.46	Sample 165 in 1 min
9:11	31.71	6.93	0.36	.226	-10	17.27	165	47	.11	1.45	Post-sampling Measurements

Total Volume Purged Water Quality Meter(s) Hanna 1122 Envirotest #05

Sample Information

Groundwater Sample Field ID MW-2/3-31Sampling Time 8:50 Sampling End Time 9:10DTW before Sampling 17.32Sampling Method Bailer (type:) Same as Above ☒ Other: Sampling Observations

305030



GROUNDWATER SAMPLING FORM

Well Number mw-2
 State Permit No. _____
 Project Name Island Chemical
 Project Number _____

Sampling Date 5-4-00
 Weather Sunny, breezy, 80s
 Sampled by: KR, SC, WR (ERTEC)
 (initials)

Well Information

Well Type: ☐ Monitor ☐ Other: _____
 Well Diameter _____ inches
 Well Depth (ft below TIC) 31
 Water Level (ft below TIC) 18.55

Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Screened interval _____ to _____ feet below TIC
 Well Headspace Reading (PID/FID) _____
 Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 26 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☒ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (mL/min)	ORP mV	SAL ‰	MS 3/L	Notes
1003	29.22	7.09	6.86	0.225	53.1	19.04	500	285	.11	1.44	Purge Start 1000
1006	30.08	7.07	4.14	0.226	83.6	19.19	500	265	.11	1.45	
1009	30.25	7.10	4.07	0.227	94.7	19.21	400	271	.11	1.45	Note: bottom is soft
1012	30.89	7.09	3.85	0.227	96.4	19.33	500	257	.11	1.45	+ silty.
1015	30.35	7.10	3.78	0.227	82.8	19.39	500	293	.11	1.46	Raised flowrate slight
1018	30.40	7.09	3.28	0.229	126.0	19.42	500	319	.11	1.46	
1021	30.49	7.09	3.31	0.229	174.0	19.47	500	314	.11	1.46	
1024	30.34	7.07	2.74	0.229	147.0	19.48	500	385	.11	1.47	
1027	30.46	7.06	2.75	0.229	137.0	19.44	500	377	.11	1.47	
1030	30.39	7.06	2.67	0.230	120.0	19.44	500	403	.11	1.47	
1033	30.54	7.06	2.64	0.230	106.0	19.45	500	392	.11	1.47	
											Duplicate taken here @ 1038
1045	30.38	7.07	3.04	0.230	125.0	19.44	500	322	.11	1.47	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID mw-2
 Sampling Time 1035 Sampling End Time 1042 DTW before Sampling 19.45
 Sampling Method Bailer (type: _____) ☐ Same as Above ☐ Other: _____
 Sampling Observations CO₂ = 85 ppm • DO = 2.7 mg/L • Total Dissolved = 0.1 ppm

305031



GROUNDWATER SAMPLING FORM

Well Number MW-3
 State Permit No.
 Project Name Virgin Island Chemical
 Project Number

Sampling Date 3/31/00
 Weather Sunny 74°F, 10-20 mph
 Sampled by: TL RW
 (initials)

Well Information

Well Type: ☒ Monitor ☐ Other: Well Construction ☒ PVC ☐ Steel ☐ Other:
 Well Diameter 4 inches Well Screened interval to feet below TIC
 Well Depth (ft below TIC) 31.68 (4th pipe) Well Headspace Reading (PID/FID) 0.0ppm
 Water Level (ft below TIC) 17.41 17.38 Product Level-if present (ft below TIC) none present
 Well Notes (Odor, well condition, etc.) No Odor

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other:
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other:
 Pump intake depth: 26' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other:
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: ☐ New ☒ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	SPLITS % ml	Notes
11:32	29.98	6.83	0.51	.190	-4.5	17.55	440	-138	0.09/1.21	Purge Start
11:37	30.35	6.83	0.39	.190	-10.0	17.56	—	-141	0.09/1.21	
11:42	30.48	6.83	0.34	.189	-3.7	17.55	484	-141	0.09/1.21	
11:47	30.52	6.84	0.34	.189	-9.5	17.56	—	-139	0.09/1.21	
11:52	30.62	6.84	0.33	.190	-10.0	17.55	500	-138	0.09/1.22	
11:57	30.51	6.83	0.34	.191	-9.3	17.58	—	-137	0.09/1.22	
12:02	30.48	6.83	0.35	.192	0.6	17.56	368	-135	0.09/1.23	Adjusted flow rate to 368 ml/min
12:07	30.32	6.83	0.36	.193	2.6	17.52	—	-134	0.09/1.24	
12:12	30.37	6.83	0.41	.193	8.0	17.54	370	-132	0.09/1.24	
12:17	30.75	6.83	0.51	.193	-10.0	17.55	—	-128	0.09/1.23	
12:22	30.68	6.83	0.52	.193	-4.0	17.55	404	-127	0.09/1.24	
12:27	30.67	6.83	0.52	.195	-10.0	17.54	—	-126	0.09/1.25	
12:32	30.93	6.83	0.53	.195	-10.0	17.54	390	-126	0.09/1.25	
12:37	30.82	6.83	0.55	.195	-10.0	17.57	—	-125	0.09/1.25	
	30				-20					sample flow 188 ml/min
12:54	31.27	6.81	0.59	.196	-2.2	17.48	188	-120	0.09/1.26	Post-sampling Measurements

Total Volume Purged Water Quality Meter(s) HOEIBAT U-22

Sample Information

Groundwater Sample Field ID MW-3/3-31
 Sampling Time 12:45 Sampling End Time 13:00 DTW before Sampling 17.48
 Sampling Method Bailer (type:) Same as Above ☒ Other:
 Sampling Observations

GROUNDWATER SAMPLING FORM



Well Number MW-6
 State Permit No. unknown
 Project Name Virgin Island Chemical Site
 Project Number —

Sampling Date 3/29/00
 Weather Sunny ~ 90°F 15 mph
 Sampled by: JL/RW
 (initials)

Well Information

Well Type: ☒ Monitor ☐ Other: —
 Well Construction ☒ PVC ☐ Steel ☐ Other: —
 Well Diameter 4 inches
 Well Screened interval 20 to 30 feet below TIC
 Well Headspace Reading (PID/FID) 2
 Water Level (ft below TIC) 16.26
 Product Level-if present (ft below TIC) None present
 Well Notes (Odor, well condition, etc.) odor

Volume of Water in Casing (gallons)

(—) - (—) * —² * 0.0408 = — gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: —
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: —
 Pump intake depth: 25' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: —
 Tubing: ☐ Polypropylene ☐ Teflon-line ☐ Other: — ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µm)	Turb (NTU)	DTW (feet)	Rate (m ³ /min)	ORP mV	ORP %	Notes
11:42	—	—	—	—	—	16.26	—	—	—	Purge Start @ 11:46
11:52	30.27	6.64	0.73	.227	9.8	16.29	290	-238	.11	145
11:57	30.80	6.62	0.40	0.227	2.6	16.29	384	-254	.11	146
12:02	30.89	6.63	0.33	.228	7.1	16.29	—	-263	.11	146
12:07	30.90	6.64	0.29	.228	3.3	16.29	344	-272	.11	146
12:12	31.05	6.64	0.27	.228	4.0	16.29	—	-277	.11	146
12:20	30.25	6.66	0.57	.231	1.0	16.29	330	-236	.11	147
12:23	31.06	6.64	.31	.228	25.9	16.29	—	-264	.11	146
12:30	31.26	6.65	.22	.229	25.5	16.29	290	-278	.11	147
12:35	31.32	6.65	.20	.229	20.3	16.29	—	-283	.11	147
12:40	31.42	6.65	.19	.228	18.8	16.28	380	-287	.11	147
12:45	31.09	6.65	.17	.230	36.8	16.28	—	-291	.11	146
12:50	31.06	6.64	.15	.229	40.4	16.28	370	-295	.11	147
12:55	31.11	6.64	.14	.230	36.9	16.28	—	-297	.11	147
13:00	31.12	6.64	.44	.230	39.2	16.28	340	-299	.11	147
13:05	31.16	6.64	.37	.231	39.1	16.28	—	-298	.11	147
Post-sampling Measurements										

Total Volume Purged —Water Quality Meter(s) Hanba U22 Efficient #05

Sample Information

Groundwater Sample Field ID MW-6/3-29
 Sampling Time — Sampling End Time — DTW before Sampling 16.26
 Sampling Method — Bailer (type: —) ☒ Same as Above ☐ Other: —
 Sampling Observations Nothing extraordinary

Well Number MMW-6 continued
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date _____
Weather _____
Sampled by: _____ (initials)

Well Type: Monitor Other:
Well Diameter inches
Well Depth (ft below TIC)
Water Level (ft below TIC)
Well Notes (Odor, well condition, etc.)

Well Construction PVC Steel Other:
Well Screened Interval _____ to _____ feet below TIC
Well Headspace Reading (PID/FID) _____
Product Level-if present (ft below TIC) _____

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) * \frac{\text{Well Diameter (in)}}{2} * 0.0408 = \text{gallons}$$

CO_2 - ~~520~~ ppm 70 ppm

Purge Method: ☐ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
Pump: ☐ Submersible Pump (inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
Pump intake depth: _____ Purge water discharged to: ☐ Ground ☐ Drum ☐ Other: _____
Tubing: ☐ Polypropylene ☐ Teflon-line ☐ Other: _____ / ☐ New ☐ Dedicated

Time	Temp	pH	D.O.	Cond.	Turb	DTW	Rate	ORP	SAL	RDS	Notes
(HH:MM)	(°C)	(pH units)	(mg/L)	(S/M)	(NTU)	(feet)	(L/min)	mV	%		
13:10	31.21	6.64	0.32	.231	37.9	16.28	-	-299	.11	1.48	Pump Start
13:15	31.10	6.64	0.36	.231	18.2	16.28	330	-298	.11	1.48	
13:20	31.20	6.64	0.37	.231	15.9	16.28	-	-298	.11	1.48	
13:25	31.36	6.64	0.40	.231	16.2	16.28		-299	.11	1.48	
13:25	31.69						220				Sampling Flow 220
13:45	31.69	6.67	0.52	.230	29.4	16.26	220	-291	.11	1.47	Post-sampling Measurements

Total Volume Purged	Water Quality Meter(s)

Groundwater Sample Field ID MW-6/3-29
Sampling Time 13:30 Sampling End Time 13:39 DTW before Sampling _____
Sampling Method _____ Bailer (type: _____) ☒ Same as Above _____ Other: _____
Sampling Observations Nothing extraordinary



GROUNDWATER SAMPLING FORM

Well Number MW-6
 State Permit No. _____
 Project Name Island Chemical
 Project Number _____

Sampling Date 5-3-00
 Weather partly cloudy, 80s
 Sampled by: KR, SC, WR (ERTEC)
 (initials)

Well Information

Well Type: ☐ Monitor ☐ Other: _____ Well Construction ☐ PVC ☐ Steel ☐ Other: _____
 Well Diameter _____ inches Well Screened interval 20 to 30 feet below TIC
 Well Depth (ft below TIC) 30.4 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 17.53 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth - Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☒ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (gal/min)	ORP mV	SAL ‰	MS g/L	Notes
0835	29.15	6.73	0.85	2.29	15	17.60	550	-112	.1	1.47	Purge Start 0829
0836	29.64	6.76	0.52	2.31	12			-115	.1	1.48	
0842	29.82	6.77	0.48	2.31	12	17.60	500	-113	.1	1.48	
0845		6.77		2.31	230	(KR)					
0848	29.72	6.77	4.34	2.30	55	17.62	600	-101	.1	1.48	
0853	29.86	6.77	4.47	2.31	61	17.62		-102	.1	1.48	
0856	29.90	6.77	4.04	2.32	21	17.61	600	-103	.1	1.48	
0900	29.91	6.78	3.86	2.32	21	17.61		-103	.1	1.48	Started to rain
0905	29.66	6.77	3.53	2.31	52		550	-103	.1	1.48	
0908	29.70	6.77	3.33	2.32	57	17.62		-103	.1	1.48	
0911	29.76	6.77	3.14	2.33	62		550	-104	.1	1.49	Stopped raining
0915	30.03	6.77	2.98	2.34	96	17.62		-104	.1	1.50	
0922 (KR)						17.63	(KR)				0923 Pump Stopped
0922	30.05	6.78	0.83	2.36	92	17.63	500	-105	.1	1.52	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID MW-6 VS+ Sulfate 920
 Sampling Time 0920 Sampling End Time 0921 DTW before Sampling 17.62
 Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☐ Other: _____
 Sampling Observations D/O = 0.70 mg/L CO2 = 50 ppm Fe = 1.5 ppm

305035



GROUNDWATER SAMPLING FORM

Well Number MW-7
 State Permit No. —
 Project Name Virgin Island Chemical
 Project Number —

Sampling Date 3/31/00
 Weather P Sunny, 85°F, humid, 0-Sun
 Sampled by: RW, JL
 (initials)

Well Information

Well Type: ☒ Monitor — Other: — Well Construction ☒ PVC — Steel — Other: —
 Well Diameter 4 inches Well Screened interval — to — feet below TIC
 Well Depth (ft below TIC) 73.38 Well Headspace Reading (PID/FID) 0.0ppm
 Water Level (ft below TIC) 20.43 (after 2042) Product Level-if present (ft below TIC) none present
 Well Notes (Odor, well condition, etc.) —

Volume of Water in Casing (gallons)

(—) - (—) * 2 * 0.0408 = — gallons
 Well Depth Water Level Well Diameter (in)

CO₂ - 132 mg/L

Purging Information

Purge Method: ☒ Low Flow — NJDEP 3 Well Volume — Not Purged — Other: —
 Pump: ☒ Submersible Pump (2 inch) — Peristaltic — Positive displacement — Other: —
 Pump intake depth: 67' Purge water discharged to: — Ground ☒ Drum — Other: —
 Tubing: — Polypropylene ☒ Teflon-line — Other: — 1 ☒ New — Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mv	SL %	TDS mg/L	Notes
9:44	28.43	7.15	1.30	.218	-10.0	20.51	310	-122	.11	1.44	Purge Start
9:49	28.54	7.01	0.75	.240	-10.0	20.9	310	-79	.12	1.54	
9:54	28.56	7.01	0.64	.242	-10.0	20.51	310	-38	.12	1.55	
9:59	28.53	7.01	0.53	.242	-10.0	20.52	310	-18	.12	1.55	
10:04	29.24	7.01	0.49	.243	-8.3	20.55	310	-4	.12	1.56	
10:09			0.1								Helping other sampler
10:14	29.73	7.01	0.43	.244	-10.0	20.55	380	1	.12	1.56	
10:19	29.73	7.01	0.38	.243	-10.0	20.55	380	4	.12	1.56	
10:24	29.56	7.00	0.37	.243	-7.4	20.59	380	5	.12	1.56	
10:29	29.91	7.00	0.34	.243	-10.0	20.60	380	6	.12	1.56	
10:34	29.93	7.00	0.32	.244	-10.0	20.61	420	7	.12	1.56	
10:39	30.08	7.00	0.30	.243	-10.0	20.62	420	8	.12	1.56	
10:44	30.07	7.00	0.28	.243	-10.0	20.62	410	8	.12	1.56	
10:49	30.15	7.00	0.27	.243	-10.0	20.62	410	8	.12	1.56	
10:54	30.04	7.00	0.26	.243	-10.0	20.62	410	8	.12	1.56	
											Sample at 180 ml/min
11:04	29.54	7.00	0.33	.243	-10.0	20.59	180	-1	.12	1.56	Post-sampling Measurements

Total Volume Purged —Water Quality Meter(s) Horiba U-22 Envirotest #05

Sample Information

Groundwater Sample Field ID MW-7/3-31
 Sampling Time 10:57 Sampling End Time 11:04 DTW before Sampling 20.58
 Sampling Method — Bailer (type: —) — Same as Above — Other: —
 Sampling Observations —

305036



GROUNDWATER SAMPLING FORM

Well Number MW-7
 State Permit No. _____
 Project Name Island Chemical
 Project Number _____

Sampling Date 5-3-00
 Weather Sunny, 80s
 Sampled by: FR, SC, WR (ERTEC)
 (initials)

Well Information

Well Type: ☒ Monitor ☐ Other: _____ Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter _____ inches Well Screened interval _____ to _____ feet below TIC
 Well Depth (ft below TIC) 73.4 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 21.76 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth - Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 67' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (mS/cm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP (mV)	SAL (%)	TDS (g/L)	Notes
1213	29.08	7.10	17.87	2.36	—	22.08	550	-28	0.1	1.54	Purge Start 12:10
1218	28.93	7.00	0.98	2.43	—	21.98		4	0.1	1.55	
1221	29.11	7.01	0.55	2.45	—		550	13	0.1	1.57	
1224	29.29	7.01	0.57	2.46	—	22.00	550	10	0.1	1.57	
1227	29.34	7.01	0.56	2.46	—	22.00	550	9	0.1	1.58	
1230	29.32	7.02	0.41	2.47	—	22.00	550	10	0.1	1.58	
1233	29.28	7.02	0.34	2.47	—	21.99	550	11	0.1	1.58	
1236	29.33	7.02	0.34	2.47	—	21.98	550	11	0.1	1.58	
1239	29.32	7.02	0.27	2.47	—	21.99	550	12	0.1	1.58	
1242		7.02	0.20	2.48	—		600 (KR)				
											1257 Pump Stopped
1248	29.38	7.02	0.29	2.48	—	21.99	600	12	0.1	1.59	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID MW-7 10 + sulfate 1242
 Sampling Time 1242 Sampling End Time 1245 DTW before Sampling _____
 Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____
 Sampling Observations D/O = 3.3 (KR) CO₂ = 35 ppm Fe = 0
D/O = 1.8

GROUNDWATER SAMPLING FORM



Well Number MW-8
 State Permit No. unknown
 Project Name Virgin Island Chemical
 Project Number

Sampling Date 3/29/00
 Weather SUNNY 290°F, 15 mph
 Sampled by: JL/RW
 (initials)

Well Information

Well Type: ☒ Monitor ☐ Other: Well Construction ☒ PVC ☐ Steel ☐ Other:
 Well Diameter 4" inches Well Screened interval to feet below TIC
 Well Depth (ft below TIC) 74.85 Well Headspace Reading (PID/FID)
 Water Level (ft below TIC) 19.34 Product Level-if present (ft below TIC)
 Well Notes (Odor, well condition, etc.) No odor

Volume of Water in Casing (gallons)

() - () * * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

CO₂ = 38 ppm

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other:
 Pump: ☒ Submersible Pump (inch) ☐ Peristaltic ☐ Positive displacement ☐ Other:
 Pump intake depth: 69' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other:
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: ☐ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µM)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mV	SAL	TD5	Notes
1:59	—	—	—	—	—	19.28	—	—	—	—	Purge Start
2:06	29.47	7.08	1.35	169	11.3	19.69	420	-98	.08	1.08	Purge Start
2:11	29.32	7.08	1.18	168	11.9	19.69	—	-97	.08	1.08	
2:16	29.45	7.08	1.04	168	7.1	19.69	450	-96	.08	1.07	
2:21	29.43	7.07	0.84	164	-6.0	19.70	—	-94	.08	1.05	
2:26	29.56	7.06	0.71	162	-4.7	19.70	480	-93	.08	1.04	
2:31	29.59	7.05	0.60	160	2.1	19.68	—	-93	.07	1.03	
2:36	29.57	7.05	.55	160	5.5	19.68	560	-93	.07	1.02	Turn pump down 10.1 to 10.07
2:41	29.63	7.04	.48	158	9.2	19.64	—	-92	.07	1.02	
2:46	29.58	7.04	.47	158	9.7	19.64	470	-90	.07	1.02	
2:51	29.76	7.04	.45	158	10.0	19.64	—	-89	.07	1.01	
2:56	29.50	7.02	.42	158	10.4	19.64	464	-88	.07	1.00	
3:01	29.69	7.03	.40	157	10.4	19.65	—	-86	.07	1.00	
3:06	29.41	7.02	.37	157	10.2	19.64	500	-85	.07	1.00	
3:11	29.59	7.03	0.36	156	10.3	19.64	—	-85	.07	1.00	
3:16	29.63	7.03	0.36	157	10.5	19.64	—	-84	.07	1.00	Stop Purging @ 15:17
3:36	29.80	7.08	0.46	159	35.7	19.49	250	-85	.07	1.02	Post-sampling Measurements

Total Volume Purged Water Quality Meter(s) J-22

Sample Information

Groundwater Sample Field ID MW-8/3-29
 Sampling Time 15:18 Sampling End Time 15:20 DTW before Sampling 19.64
 Sampling Method Bailer (type:) Same as Above ☐ Other:
 Sampling Observations

305038

GROUNDWATER SAMPLING FORM



Well Number DAW-8

State Permit No. _____

Project Name _____

Project Number _____

Sampling Date 5-3-00

Weather Hazy Clouds ~80, Muddy - Rained all

Sampled by: Sc. Kainig
(initials)

Well Information

Well Type: ☒ Monitor ☐ Other:

Well Construction PVC Steel Other.

Well Diameter 4 inches

Well Screened interval _____ to _____ feet below TIC

Well Depth (ft below TIC) 74.85

Well Headspace Reading (PID/FID)

Water Level (ft below TIC)	20.55
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Product Level-if present (ft below TIC)

Well Notes: (Odor, well condition, etc.)

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) * \frac{\text{Well Diameter (in)}}{2}^2 * 0.0408 = \text{gallons}$$

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other:

Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other.

Pump intake depth: 69' Purge water discharged to: Ground ☒ Drum ☐ Other: ☐

Tubing: Polypropylene ☒ Teflon-line Other: / ☒ New Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (mL/min)	ORP mV	SAL ‰	TDS g/L	Notes
8:33						20.61					Purge Start
8:36	27.84	7.18	1.22	0.167	215	21.11	500	99	0.08	1.07	Clear
8:41	28.43	7.17	0.92	0.166	63.5	21.09	500	8	0.08	1.07	
8:46	28.54	7.18	0.81	0.163	15.9	21.095	500	-3	0.08	1.05	
8:52	28.51	7.18	0.72	0.159	0	21.10	500	-7	0.07	1.07	
8:56	28.50	7.17	0.68	0.158	0	21.10	500	-7	0.07	1.01	
9:01	28.41	7.18	0.64	0.157	0	21.12	500	-6	0.07	1.01	
						21.11					
9:11	28.33	7.18	0.76	0.158	0	21.15	500	-3	0.07	1.01	Post-sampling Measurements

Total Volume Purged	Water Quality Meter(s)	No. 022 Euvromet #5
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Sample Information

Groundwater Sample Field ID mw-8 VO + sulfate 9503

CO_2 - Chemedries Kit
 D_2O - Haack Kit
 Fe^{2+} - Chemedries Kit

Sampling Time 9:03 Sampling End Time 9:08

DTW before Sampling

Sampling Method 10 Bailer (type: 10) Same as Above, Other: 10

Sampling Method _____ Sailer (type) _____ Sample _____ Date _____
 Sampling Observations CO₂ = 18 mg/L ; DO = 0.60 mg/L ; 1st det. ; Iron Dissolved = 20 µg/L
0.60 = 6.0 x .1 ; 2nd det. ; 6.0 mg/L ; DO



GROUNDWATER SAMPLING FORM

Well Number MW-10State Permit No. unknownProject Name Virgin Island Chemical SiteProject Number —Sampling Date 3/30/00Weather Sunny 29.0°F, 0-10 mphSampled by: RW/JL
(initials)

Well Information

Well Type: ☒ Monitor — Other: —Well Construction ☒ PVC — Steel — Other: —Well Diameter X inchesWell Screened interval 22 to 32 feet below TICWell Depth (ft below TIC) —Well Headspace Reading (PID/FID) 3 ppmWater Level (ft below TIC) 18.90Product Level-if present (ft below TIC) NoneWell Notes (Odor, well condition, etc.) No Odor

Volume of Water in Casing (gallons)

$$\left(\text{Well Depth} - \text{Water Level} \right) * \text{Well Diameter (in)}^2 * 0.0408 = \text{gallons}$$
CO₂ = 60 ppm

Purging Information

Purge Method: ☒ Low Flow — NJDEP 3 Well Volume — Not Purged — Other: —Pump: ☒ Submersible Pump (— inch) — Peristaltic — Positive displacement — Other: —Pump intake depth: 27' Purge water discharged to: Ground ☒ Drum — Other: —Tubing: — Polypropylene ☒ Teflon-line — Other: — ☒ New — Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	SL %	TD GL	Notes
7:39						18.87					Purge Start After pump in
7:49	29.10	6.60	.68	.259	1.1	19.12	360	76	.13	1.65	Start purge
7:54	29.58	6.60	.61	.259	7.2	19.12	360	70	.13	1.66	
7:59	29.89	6.61	.60	.259	15.5	19.12	420	68	.13	1.66	
8:04	29.99	6.61	.58	.258	25.3	19.15	420	66	.13	1.65	
8:09	30.20	6.60	.55	.257	42.1	19.19	410	63	.13	1.64	
8:14	30.22	6.61	.54	.256	48.6	19.22	410	60	.13	1.64	
8:19	30.33	6.61	.53	.255	52.1	19.18	400	53	.12	1.63	
8:24	30.46	6.61	.51	.253	48.18	19.18	400	50	.12	1.62	
											Rate 220 ml/min to sample @ 8:28
8:43	30.57	6.63	.59	.254	55.0	19.05	220	52	.12	1.63	Post-sampling Measurements

Total Volume Purged —Water Quality Meter(s) Hanna U-22 Enrichment #5

Sample Information

Groundwater Sample Field ID MW-10/3-30Sampling Time 8:25 Sampling End Time 8:39 DTW before Sampling 19.18Sampling Method Bailer (type: —) — Same as Above ☒ Other: —Sampling Observations —



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3-13-00
 Weather Sunny - 80°
 Sampled by: DS NE
 (Initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches
 Well Screened interval 27.63 to 29.33 feet below TIC
 Well Depth (ft below TIC) 29.83
 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 12.82
 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27.2 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	SAL ‰	TDS g/L	Notes
0952						28.84					Purge Start 13.17
0955						20.8					
0956						17.3					
0958						19.3	1150				Start adjusting flow
1006	30.13	7.10	0.96	0.243	170	17.12	500	-166	0.12	1.56	Start low flow purge
1011	30.03	7.11	1.32	0.243	98.6	16.85	500	-163	0.12	1.54	
1016	30.08	7.09	0.34	0.243	100.0	17.04	375	-158	0.12	1.54	
1021	30.11	7.08	0.32	0.243	89.2	16.89	600	-152	0.12	1.54	
1026	30.36	7.08	0.29	0.243	94.7	16.56	500	-142	0.12	1.56	
1031	30.38	7.07	0.28	0.243	98.1	16.45	500	-139	0.12	1.56	
1036	30.64	7.07	0.21	0.243	109	16.10	500	-131	0.12	1.54	
1048	30.31	7.07	0.28	0.245	301	16.20	750	-114	0.12	1.57	Post-Sample Measure.
Post	30.36	7.07		0.242		16.40	500	-132	0.12	1.54	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST-VMP-1D
 Sampling Time 1040 Sampling End Time 1048 DTW before Sampling _____
 Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3/30/00
 Weather Mostly Sunny 80's
 Sampled by: SC, RW
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC Steel Other: _____
 Well Diameter 2 inches Well Screened interval 27.63 to 29.33 feet below TIC
 Well Depth (ft below TIC) 29.83' Well Headspace Reading (PID/FID) 2 ppm
 Water Level (ft below TIC) 14.01' Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) 0

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in) CO₂ = 55 ppm

Purging Information

Purge Method: ☒ Low Flow NJDEP 3 Well Volume Not Purged Other: _____
 Pump: ☒ Submersible Pump (2 inch) Peristaltic Positive displacement Other: _____
 Pump intake depth: 27 Purge water discharged to: Ground ☒ Drum Other: _____
 Tubing: Polypropylene ☒ Teflon-line Other: _____ / ☒ New Dedicated

Time (HH:MM)	Temp (°)	pH (pH units)	D.O. (g/L)	Cond. (uS/cm)	Turb (NTU)	DTW (feet)	Rate (L/min)	Scal	TDS g/L	ORP	Notes
8:20		7.07				13.92	250	1	1.71	-264	Purge Start
8:30	30.83	7.07	.70	267	49	15.04	—	1	1.71	-264	
8:35	31.63	7.05	.60	271	20	14.98	250	0.1	1.74	-256	
8:40	31.40	7.04	.59	272	21	15.01	—	0.1	1.74	-245	
8:45	32.22	7.04	.64	276	1	15.01	284	0.1	1.77	-244	
8:50	32.40	7.04	.66	278	0	15.12	—	0.1	1.78	-246	
8:55	32.07	7.04	.64	277	0	15.13	250	0.1	1.77	-242	
9:00	32.14	7.04	.65	278	0	15.12	—	0.1	1.78	-242	
9:12	32.75	7.05	.65	280	0	15.08	250	0.1	1.79	-241	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST-VMP-1D
 Sampling Time 9:00 Sampling End Time 9:06 DTW before Sampling 15.12
 Sampling Method Bailer (type: _____) Same as Above Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 4.16.00
 Weather CLOUDY, BREEZY, ~80°F
 Sampled by: N. EICHLIN D. SCHWELL
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches
 Well Screened interval 27.63 to 29.33 feet below TIC
 Well Depth (ft below TIC) 29.83'
 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 14.42'
 Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

CO₂ = 70 ppm

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (mS/cm)	Turb (NTU)	DTW (feet)	Rate (mL/min)	SAL %	TDS g/L	ORP(mV)	Notes
0840											Purge Start
0845	29.38	7.3	5.73	2.68	7	16.13	460	.1	1.75	62	
0850	29.66	7.22	4.94	2.86	2990	15.33	—	.1	1.83	46	lost flow, adjusting control
0855											box doesn't seem to be working,
0904	Pump started again w/ new control box										changing out
0908							750				ADJUSTING DOWN
0910	30.26	7.15	5.11	2.94	2990	17.39	500	.1	1.88	13	
0915	30.13	7.09	4.04	2.95	2990	17.46	500	.1	1.89	-16	
0920	30.00	7.10	4.32	2.94	2990	17.34	600	.1	1.89	-6	probe covered - lite
0925	29.97	7.10	4.39	2.95	980	17.45	600	.1	1.89	-9	may have off.
0930	29.95	7.10	4.45	2.95	930	17.35	600	.1	1.89	-10	
0935	30.12	7.09	4.19	2.97	830	17.40	600	.1	1.90	-15	
0940	29.89	7.10	4.07	2.96	690	17.60	600	.1	1.90	-16	
0945	30.00	7.09	4.01	2.97	600	17.58	600	.1	1.90	-19	
0950	30.00	7.10	4.01	2.97	540	17.52	600	.1	1.90	-22	
0955	30.03	7.10	3.97	2.98	480	17.47	650	.1	1.91	-26	
1000	29.94	7.11	4.02	2.97	550	17.38	650	.1	1.90	-22	Post-sampling Measurements

Total Volume Purged _____ Water Quality Meter(s) HORIBA 11-22 ENVIRON-04

Sample Information

Groundwater Sample Field ID AST-VMP-1D
 Sampling Time 1015 Sampling End Time 1025 DTW before Sampling 17.41 → OVER
 Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____
 Sampling Observations _____

1005	30.12	7.09	3.96	2.99	460	17.22	750	-1	1.91	-27	AIR JUST PASSED THRU METER
1010	30.07	7.10	4.17	2.98	430	17.42	900	-1	1.91	-23	FLOW ADJUSTED
1015	30.17	7.10	4.06	2.99	340	17.41	550	-1	1.92	-26	
1026	30.04	7.11	3.79	2.99	330	17.38		-1	1.91	-16	POST-SAMPLING

GROUNDWATER SAMPLING FORM



Well Number AST-VMP-1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 4-29-00
 Weather partly cloudy, 80s
 Sampled by: KR
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Diameter 2 inches
 Well Depth (ft below TIC) 29.83
 Water Level (ft below TIC) 14.94
 Well Notes (Odor, well condition, etc.) _____

Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Screened interval 27.63 to 29.33 feet below TIC
 Well Headspace Reading (PID/FID) _____
 Product Level-if present (ft below TIC) _____

Volume of Water in Casing (gallons)

() - () * * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2-inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27.5' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (mL/min)	ORP mV	Sal ‰	TDS g/L	Notes
1305	32.55	7.24	11.36	0.242	7999		500	71	.12	1.55	Purge Start 1254
1315	35.29	7.27	11.01	0.244	7999	18.15		89	.12	1.59	Trouble maintaining
1320	32.46	7.14	10.83	0.245	7999		600	-11	.12	1.51	flow rate
1325	32.53	7.11	7.95	0.245	7999	19.61		-9	.12	1.57	Air bubbles in tube
1330	32.10	7.11	8.93	0.245	757			-12	.12	1.57	at 1327, took flow-
1335	31.44	7.10	6.68	0.246	568		450	-24	.12	1.58	through cell out of
1340	31.5	7.10	6.88	0.246	432			-22	.12	1.57	sunlight
1345	31.09	7.09	6.69	0.245	336		550	-23	.12	1.57	
1350	31.04	7.10	7.19	0.246	412	18.29		-22	.12	1.58	
1400	31.12	7.10	7.09	0.246	302	18.02		-20	.12	1.58	
1405	30.79	7.11	7.22	0.246	282		600	-21	.12	1.57	
											1410 Samples taken
1415	31.24	7.13	7.53	0.247	239	17.37		-11	.12	1.58	
											Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST-VMP-1D
 Sampling Time 1410 Sampling End Time 1415 DTW before Sampling _____
 Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-ID
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 5-1-00
 Weather Sunny, 90s
 Sampled by: KR
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2.4 inches
 Well Screened interval 27.63 to 29.33 feet below TIC
 Well Depth (ft below TIC) 29.83
 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 15.41
 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27.5 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (gal/min)	ORP mV	DO %L	DO %L	Notes
1522	29.29	7.12	8.33	0.277	765	16.98	450	401	.14	1.77	Purge Start 1520
1525	30.32	7.08	6.32	0.275	426	17.11		302	.14	1.76	
1530	30.76	7.03	4.78	0.275	76.3		450	243	.14	1.76	
1533	30.84	7.02	4.39	0.275	—	17.20		157	.14	1.76	
1536	30.97	7.02	4.17	0.275	1.9			120	.14	1.76	
1539	31.03	7.02	4.07	0.275	1.7		600	70	.14	1.76	Raised flow rate slightly
1542	30.56	7.04	4.80	0.275	1.2	17.24		80	.14	1.76	
1545	30.46	7.02	4.36	0.275	58.7		500	51	.14	1.76	Flow slowed down on its
1548	30.43	7.01	4.07	0.275	22.2	17.74		42	.14	1.76	own.
1551	30.51	7.01	4.02	0.275	11.7		550	39	.14	1.77	
1554	30.48	7.01	3.95	0.276	9.3	17.85		30	.14	1.77	
											Slight odor detected
											while sampling.
											1.02 = 50 mg/L
1602	30.38	7.05	4.56	0.276	3.1	17.75	500	68	.14	1.77	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST-VMP-ID
 Sampling Time 1600 Sampling End Time 1601 DTW before Sampling 17.95
 Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-2D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3-13-00
 Weather Sunny - 80s
 Sampled by: NE, DS
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches Well Screened interval 27.90 to 29.60 feet below TIC
 Well Depth (ft below TIC) 30.10 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 18.12.49 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) Mucky, yellowish water - cloudy - no silt

Volume of Water in Casing (gallons)

() - () * 2 * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27.6 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ML/min)	ORP mV	SAL ‰	TDS ‰	Notes
1120						19.25					Purge Start 1120
1123						20.3					
1124						21.35	1500				
1126						21.26	1500				
1129							1000				Adjust flow
1131	30.46	6.94	1.38	0.263	999	20.70	750	-154	0.13	1.68	Start low flow purging
1136	30.47	6.92	0.35	0.262	999	20.90	7150	-157	0.13	1.68	Adjust flow to 600 ml/min
1141	30.46	6.94	1.84	0.267	999	19.34	750	-160	0.13	1.7	
1146	30.30	6.94	1.85	0.267	653	19.33	750	-156	0.13	1.71	
1151	30.24	6.95	0.32	0.268	490	18.70	750	-151	0.13	1.72	Slow flow down slightly
1156	30.07	6.95	0.27	0.268	461	18.56	750	-148	0.13	1.71	
1201	29.88	6.94	0.26	0.268	435	18.56	750	-148	0.13	1.71	
1206	29.88	6.94	0.25	0.268	436	18.56	750	-149	0.13	1.72	
						18.96					
1245	30.42	6.93	4.98	0.268	999	18.96	500	-128	0.13	1.72	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST-VMP-2D
 Sampling Time 1215 Sampling End Time _____ DTW before Sampling _____
 Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____
 Sampling Observations Duplicate collected - AST-VMP-2D



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-2D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3/30/00
 Weather Sunny - 80's
 Sampled by: JL/RW
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC Steel Other: _____
 Well Diameter 2 inches Well Screened interval 2790 to 2960 feet below TIC
 Well Depth (ft below TIC) 30.10 Well Headspace Reading (PID/FID) Open
 Water Level (ft below TIC) 14.15 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) water is cloudy

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)
 $CO_2 = 830 \times .2 = 166 \text{ mg/L } CO_2$

Purging Information

Purge Method: ☒ Low Flow NJDEP 3 Well Volume Not Purged Other: _____
 Pump: ☒ Submersible Pump (2 inch) Peristaltic Positive displacement Other: _____
 Pump intake depth: 27 Purge water discharged to: Ground ☒ Drum Other: _____
 Tubing: Polypropylene ☒ Teflon-line Other: _____ / ☒ New Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (mS/cm)	Turb (NTU)	DTW (feet)	Rate (L/min)	SAL	TDS	ORP	Notes
10:15						13.94'	320				Purge Start (w/ pump installed)
10:20	32.08	6.77	0.75	3.08	38	14.72	—	0.1	197	-213	
10:25	31.72	6.77	0.64	3.05	140	14.66	364	0.1	195	-212	
10:30	31.67	6.82	0.58	3.03	95	14.67	—	0.1	194	-210	
10:35	31.51	6.85	0.52	3.02	120	14.70	368	0.1	193	-209	
10:40	31.57	6.87	0.46	3.01	79	14.67	—	0.1	192	-209	
10:45	31.68	6.89	0.43	3.01	63	14.67	372	0.1	192	-206	
10:50	31.74	6.90	0.44	3.01	71	14.70	—	0.1	192	-204	
10:55	31.80	6.92	0.45	3.01	44	14.67	376	0.1	192	-202	
11:00	31.99	6.93	0.46	3.02	43	14.69	—	0.1	193	-200	
11:05	32.06	6.93	0.47	3.02	43	14.69	—	0.1	193	-199	
11:20	32.58	6.95	0.50	3.02	46	14.68	232	0.1	193	-198	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) H21BA U-22

Sample Information

Groundwater Sample Field ID AST-VMP-2D
 Sampling Time 1106 Sampling End Time 1110 DTW before Sampling _____
 Sampling Method Bailer (type: _____) Same as Above Other: _____
 Sampling Observations _____

305048



GROUNDWATER SAMPLING FORM

Well Number AST UMP 2D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 5-3-00
 Weather Sunny ~ 80, sun showers
 Sampled by: SC, KR, WR-Erlee
 (initials)

Well Information

Well Type: Monitor ☒ Other: UMP Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches Well Screened interval 27.9 to 29.6 feet below TIC
 Well Depth (ft below TIC) 15.49 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 15.49 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28.0 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☒ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (JTU)	DTW (feet)	Rate (gal/min)	ORP mV	SAL ‰	TDS g/L	Notes
10:05						15.61					Purge Start turbid, silty
10:08	29.06	7.38	10.34	0.261	7999	17.33	250	13.3	0.13	1.62	yellow brown
10:13	29.32	7.27	8.18	0.259	7999	17.14	250	62	0.13	1.65	
10:18	29.46	7.19	6.61	0.257	7999	17.17	250	7	0.13	1.65	starting to change color to white, creamy beige
10:23	29.48	7.19	5.96	0.256	7999	17.23	250	-21	0.13	1.64	
10:28	29.42	7.18	5.62	0.256	860	17.22	250	-29	0.12	1.63	clearing
10:33	29.62	7.18	5.53	0.255	678	17.10	250	-32	0.12	1.63	
10:38	29.82	7.18	5.56	0.255	497	17.04	250	-27	0.12	1.63	
10:43	29.89	7.18	5.60	0.255	440	17.08	250	-22	0.13	1.63	
10:48	29.93	7.18	5.46	0.255	374	17.12	250	-25	0.13	1.63	
10:53	30.06	7.17	5.33	0.255	360	17.10	250	-27	0.13	1.63	
10:58	30.13	7.16	5.30	0.255	354	17.05	250	-31	0.13	1.63	
11:12	30.23	7.15	9.87	0.256	350	17.81	300	-39	0.13	1.63	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST UMP 2D VO+ sulfate 11:00
 Sampling Time 11:00 Sampling End Time 11:10 DTW before Sampling _____
 Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____
 Sampling Observations CO₂ = 35 ppm ; DO = 2.5 mg/L ; Iron Dissolved = 0.4 ppm
2nd Test 5.4 mg/L OK ✓

GROUNDWATER SAMPLING FORM



Well Number AST-VMP-3D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3-13-00
 Weather Sunny 80s
 Sampled by: NEJ
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches Well Screened interval 27.95 to 29.65 feet below TIC
 Well Depth (ft below TIC) 30.15 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 13.37 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) Lt. Brown - no silt color

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28.1 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	Sol ID 70 9/L	Notes
1341						19.0'	1500			Purge Start
1342						20				
1343						20.45	1500			
1345						20.39	750			
1348						18.44	1500			
1356	30.33	6.92	2.90	0.276	999	16.15	750	-139	0.14 1.77	
1401	30.35	6.88	0.35	0.278	999	15.97	750	-140	0.14 1.78	
1406	30.03	6.89	0.32	0.271	732	15.90	775	-136	0.14 1.77	
1411	30.52	6.88	0.31	0.277	555	15.60	750	-133	0.14 1.77	
1416	30.63	6.87	0.28	0.276	590	15.55	750	-132	0.14 1.77	
1421	30.66	6.87	0.30	0.277	575	15.51	600	-131	0.14 1.77	
1430	30.56	6.93	0.33	0.276	252	15.65	750	-134	0.14 1.77	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID AST-VMP-3D
 Sampling Time 1425 Sampling End Time _____ DTW before Sampling _____
 Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☒ Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number AST VMP-3D
 State Permit No. unknown
 Project Name Virgin Island Chemical Site
 Project Number _____

Sampling Date 3/30/00
 Weather Sunny & 85°F, 5-10 mph
 Sampled by: JL, RA
 (initials)

Well Information

Well Type: ☐ Monitor ☒ Other: Vapor Monitoring Pit
 Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches
 Well Screened interval 27.95 to 29.65 feet below TIC
 Well Depth (ft below TIC) 30.15
 Well Headspace Reading (PID/FID) 1.6
 Water Level (ft below TIC) 14.35
 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

CO₂ - 145.2 mg/L

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28.1 ft Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/M)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mV	Seal % 1 705 % 2	Notes
9:21	—	—	—	—	—	14.30	—	—	—	Purge Start After Pump In
9:29	30.08	7.06	1.06	1276	32.6	14.62	260	-258	14 177	Purge Start
9:34	31.11	6.88	1.35	1275	122	14.62	290	-255	13 174	
9:39	31.16	6.90	1.33	1271	89.9	14.62	290	-247	13 174	
9:44	31.28	6.91	0.47	1269	102	14.64	290	-245	13 172	
9:49	31.36	6.92	0.48	1267	61.4	14.64	290	-242	13 171	
9:54	31.34	6.92	0.51	1265	101	14.65	290	-240	13 170	
9:59	31.33	6.93	0.51	1265	131	14.65	290	-239	13 170	
10:04	31.49	6.93	0.51	1264	188	14.65	290	-238	13 169	
10:09	31.40	6.93	0.52	1263	203	14.66	290	-238	13 169	
10:14	31.47	6.93	0.55	1262	203	14.66	290	-239	13 168	
10:18							180			Sample @ 180 m/min
10:30	33.69	6.94	0.92	1270	105	14.53	190	-218	13 172	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) Horiba

Sample Information

Groundwater Sample Field ID _____

Sampling Time 10:20 Sampling End Time 10:27 DTW before Sampling 14.66Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☒ Other: _____Sampling Observations Odor

GROUNDWATER SAMPLING FORM

Well Number AST VMP 3D

State Permit No. _____

Project Name _____

Project Number _____

Sampling Date 5-1-00Weather Sunny ~85-90Sampled by: SC + Carlos
(initials)

Well Information

Well Type: Monitor ☒ Other: VMPWell Construction ☒ PVC ☐ Steel ☐ Other: _____Well Diameter 2 inchesWell Screened interval 29.95 to 29.65 feet below TICWell Depth (ft below TIC) 29.96

Well Headspace Reading (PID/FID) _____

Water Level (ft below TIC) 15.75

Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) Soft bottom

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth} - \text{Water Level}}{\text{Well Diameter (in)}} \right)^2 \times 0.0408 = \text{gallons}$$

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____Pump intake depth: 28.5 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (gal/min)	ORP mV	SL %	TDS g/L	Notes
15:18						15.21					Purge Start
15:21	27.82	7.01	3.27	3.26	7990	18.20	500	-219	0.1	2.09	Soft bottom, Brown, Dark Brown
15:26	31.06	6.92	0.34	3.34	7990	18.98	500	-238	0.1	2.15	
15:31	31.78	6.93	0.36	3.35	7990	18.78	500	-239	0.1	2.14	
15:36	31.92	6.94	0.32	3.31	750	18.80	500	-229	0.1	2.12	
15:41	31.93	6.94	0.30	3.29	530	18.83	500	-218	0.1	2.10	
15:46	32.08	6.94	0.28	3.27	470	18.80	500	-210	0.1	2.09	
15:51	32.12	6.94	0.27	3.26	320	18.79	500	-206	0.1	2.08	
15:56	32.20	6.95	0.25	3.25	260	18.76	500	-204	0.1	2.08	
16:01	32.29	6.95	0.24	3.24	230	18.68	500	-203	0.1	2.07	
16:05	32.38	6.95	0.23	3.23	200	18.62	500	-200	0.1	2.07	
						19.72					
16:12	31.85	6.96	0.22	3.23	380	19.72	500	-197	0.1	2.05	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) Enviro-A 122-04 Hanna

Sample Information

Groundwater Sample Field ID AST VMP 3DSampling Time _____ Sampling End Time 16:07

DTW before Sampling _____

Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____Sampling Observations CO₂ = 50 mg/L

Well Number AST UMP 3D
State Permit No. _____
Project Name _____
Project Number _____

Sampling Date 5-3-00
Weather Sunny ~85°
Sampled by: SC, WR - Ender
(initials)

Well Type: Monitor 6 Other: NMP
Well Diameter 2 inches
Well Depth (ft below TIC) 29.96
Water Level (ft below TIC) 15.71
Well Notes (Odor, well condition, etc.)

Well Construction PVC Steel Other
Well Screened interval 2295 to 2465 feet below TIC
Well Headspace Reading (PID/FID) _____
Product Level-if present (ft below TIC) _____

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) * \frac{\text{Well Diameter (in)}}{2}^2 * 0.0408 = \text{gallons}$$

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
Pump intake depth: 28' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

[illegible]

Total Volume Purged	Water Quality Meter(s)	Horiba U22 Envirotest #05
---------------------	------------------------	---------------------------

Groundwater Sample Field ID AST Vmp 3D HACH DO metering kit
 Sampling Time 12:21 Sampling End Time _____ DTW before Sampling _____
 Sampling Method Bailer (type: _____) Same as Above Other: _____
 Sampling Observations Sampling FOR DO = 1.5 mg/L
15 x .1 = 1.5 mg/L

GROUNDWATER SAMPLING FORM



Well Number AST-VMP-4D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3-13-00
 Weather Sunny 80s
 Sampled by: NEJ/DS
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches Well Screened interval 23.02 to 29.72 feet below TIC
 Well Depth (ft below TIC) 30.22 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 13.56 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28.2 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	Sal TDS ‰ g/L	Notes
1501										Purge Start
1504							2500			
1505						14.7	2500			
1507						14.75	2500			
1509							2500			
1511						15.13	3000			
1515						17.0	500			
1518	30.23	6.99	0.60	0.260	999	17.3	4750	-111	0.13 1.66	Start low flow
1523	30.15	7.00	0.35	0.261	231	14.53	7750	-118	0.13 1.67	Adjust flow
1528	30.27	7.00	0.28	0.261	272	14.32	6000	-115	0.13 1.67	
1533	30.40	7.00	0.26	0.260	307	14.33	6000	-114	0.13 1.67	
1538	30.11	6.99	0.26	0.260	300	14.33	6000	-112	0.13 1.66	
1543	30.46	6.98	0.24	0.260	272	14.25	5800	-106	0.13 1.66	
1548	30.36	6.98	0.24	0.261	286	14.29	4750	-105	0.13 1.67	
						14.		-8		
1602	30.19	6.92	0.22	0.262	188	14.18	6000	-89	0.13 1.68	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID _____
 Sampling Time 1555 Sampling End Time _____ DTW before Sampling _____
 Sampling Method Bailer (type: _____) ☐ Same as Above ☐ Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number ASTVMP4DState Permit No. unknownProject Name Virgin Island Chemical Site

Project Number _____

Sampling Date 3/30/00Weather Sunny, 290°F, 10 mphSampled by: RW, JL
(initials)

Well Information

Well Type: Monitor ☒ Other: Vapor Monitoring PtWell Construction XPVC Steel Other:Well Diameter 2 inchesWell Screened interval 28.0 to 29.2 feet below TICWell Depth (ft below TIC) 30.22Well Headspace Reading (PID/FID) 1 ppmWater Level (ft below TIC) 14.38Product Level-if present (ft below TIC) none presentWell Notes (Odor, well condition, etc.) slight odor

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) - \left(\frac{\text{Well Diameter (in)}}{2} \right)^2 \times 0.0408 = \text{gallons}$$

CO2 - mg/l

Purging Information

Purge Method: ☒ Low Flow NJDEP 3 Well Volume Not Purged Other:Pump: ☒ Submersible Pump (2 inch) Peristaltic Positive displacement Other:Pump intake depth: 28.2 Purge water discharged to: Ground ☒ Drum Other:Tubing: Polypropylene ☒ Teflon-line Other: 100% ☒ New Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	Salinity mg/l	Notes
10:53	—	—	—	—	—	14.35	—	—	—	Purge Start After Pump In
11:00	29.89	7.15	.74	.260	11.5	14.63	390	-192	.13	Purge start
11:05	30.60	7.07	0.38	.262	18.4	14.66	390	-173	.13	
11:10	30.54	7.06	0.30	.259	6.1	14.69	390	-163	.13	
11:15	30.42	7.05	0.27	.255	3.9	14.69	470	-156	.12	
11:20	30.45	7.04	0.24	.253	3.7	14.69	470	-149	.12	
11:25	30.41	7.04	0.22	.251	4.8	14.70	470	-143	.12	
11:30	30.43	7.03	0.22	.250	6.2	14.70	460	-140	.12	
11:35	30.42	7.03	0.20	.249	13.6	14.70	460	-137	.12	
11:40	30.47	7.03	0.20	.248	24.7	14.71	470	-133	.12	
11:45	30.38	7.02	0.16	.249	42.9	14.71	470	-130	.12	
11:50	30.44	7.02	0.16	.246	61.8	14.71	480	-127	.12	
11:55	30.48	7.02	0.15	.246	83.5	14.71	480	-125	.12	
12:00	30.51	7.01	0.17	.245	107	14.72	480	-122	.12	
12:05	30.60	7.01	0.23	.245	105	14.71	450	-120	.12	12:06 flow to 300 ml/min
12:10	30.74	7.01	.21	.244	140	14.63	300	-114	.12	
										Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) Hanna U-22 Envent #5

Sample Information

Groundwater Sample Field ID ASTVMP4D

Sampling Time _____ Sampling End Time _____ DTW before Sampling _____

Sampling Method Bailer (type: _____) ☒ Same as Above Other:Sampling Observations slight odor



**McLaren
Hart** Inc.



GROUNDWATER SAMPLING FORM

Well Number AST-VMP-4D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 5-1-00
 Weather Sunny, 90s
 Sampled by: RR
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches
 Well Screened interval 28.02 to 29.72 feet below TIC
 Well Depth (ft below TIC) 29.85
 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 15.75
 Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

(29.85) - (15.75) * 2 * 0.0408 = _____ gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28.7 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µmS/cm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP (mV)	SAT TDS % g/L	Notes
16:25						15.73				Purge Start S:Hy Lt-brown
16:28	29.13	8.87	0.84	0.256	7999	15.91	380	-78	0.12	1.64
16:33	29.20	7.98	0.80	0.278	7999	16.00	500	-114	0.14	1.79
16:38	29.17	7.50	0.79	0.283	7999	16.01	500	-111	0.14	1.81
16:43	29.21	7.32	0.77	0.283	485	16.02	500	-102	0.14	1.81
16:48	29.26	7.27	0.71	0.282	335	16.03	500	-101	0.14	1.81
16:53	29.38	7.22	0.67	0.282	165	16.03	500	-101	0.14	1.80
16:58	29.52	7.22	0.64	0.281	134	16.02	500	-99	0.14	1.80
17:03	29.59	7.22	0.61	0.281	122	16.03	500	-100	0.14	1.80
17:09	29.29	7.23	0.69	0.281	590	15.91	500	-93	0.14	1.80
										Post-sampling Measurements

Total Volume Purged _____ Water Quality Meter(s) Envirotest U22-0.5 Horiba

Sample Information

Groundwater Sample Field ID AST-VMP-4D
 Sampling Time _____ Sampling End Time 1705 DTW before Sampling _____
 Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☐ Other: _____
 Sampling Observations CO₂ = 40 mg/L



GROUNDWATER SAMPLING FORM

Well Number FPP-VMP-1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3-14-00
 Weather Sunny SDS
 Sampled by: N4/DP
 (initials)

Well Information

Well Type: ☐ Monitor ☒ Other: VMP
 Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches
 Well Screened interval 26.75 to 28.45 feet below TIC
 Well Depth (ft below TIC) 28.95
 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 13.37
 Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27.0' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	Sat TDS % g/L	Notes
1001						13.37				Purge Start
1004						15.4	1000			Set pump at 26.0' to
1005						15.4	1500			remove cloudy water
1007						15.5	2500			
1009						15.1	2500			
1011						15.3	3750			
1020						14.85	3750			Reset pump
* 1027	30.62	7.00	1.61	0.240	670	14.43	500	114	0.1 1.54	Start low flow purger
1032	31.13	7.00	1.32	0.244	920	14.38	500	111	0.1 1.56	
1037	30.71	7.00	1.18	0.241	580	14.37	750	109	0.1 1.54	
1042	30.79	7.01	1.10	0.244	520	14.43	750	110	0.1 1.56	
1047	30.89	7.02	1.09	0.248	470	14.40	7600	111	0.1 1.60	
1052	30.76	7.02	1.05	0.247	200	14.40	750	104	0.1 1.58	
1057	30.80	7.02	0.89	0.248	170	14.43	750	97	0.1 1.59	
1104	30.87	7.01	0.77	0.245	150	14.40	600	84	0.1 1.57	
1112	30.82	7.01	0.72	0.244	140	14.40	600	78	0.1 1.56	
1117	30.85	7.01	0.65	0.244	150	14.41	600	73	0.1 1.56	Post-sampling Measurements

Total Volume Purged 1134 30.71 7.01 1.00 0.247 21 14.40 750 104 0.1 1.54
 Water Quality Meter(s)
 Sample Information

Groundwater Sample Field ID FPP-VMP-1D
 Sampling Time 1120 Sampling End Time _____ DTW before Sampling _____
 Sampling Method ☐ Bailer (type: _____) ☐ Same as Above ☐ Other: _____
 Sampling Observations _____



GROUNDWATER SAMPLING FORM

Well Number FPP-VMP-1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3/30/00
 Weather Sunny, 80's
 Sampled by: JL, RW
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches Well Screened interval 26.75 to 28.45 feet below TIC
 Well Depth (ft below TIC) 28.95 Well Headspace Reading (PID/FID) 0
 Water Level (ft below TIC) 14.88 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) cloudy water

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

CO₂ = 146 mg/l

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☐ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (mL/min)	SAL	TDS	ORP	Notes
16:23	31.72	6.89	0.88	2.75	280	14.89	440	0.1	1.76	74	Purge Start
16:28	31.96	6.88	0.52	2.75	170	14.94	—	0.1	1.76	68	
16:33	32.18	6.88	0.45	2.74	180	14.94	408	0.1	1.76	57	
16:38	32.61	6.88	0.57	2.74	200	14.93	—	0.1	1.75	47	
16:43	32.89	6.88	0.63	2.75	220	14.93	272	0.1	1.76	44	
16:48	32.92	6.89	0.60	2.75	230	14.94	324	0.1	1.76	38	
16:53	32.88	6.88	0.61	2.73	240	14.94	—	0.1	1.75	35	
16:58	32.79	6.89	0.52	2.72	250	14.94	304	0.1	1.74	32	
17:03	32.51	6.89	0.50	2.70	210	14.95	—	0.1	1.72	29	
17:08	32.13	6.89	0.48	2.68	340	14.97	—	0.1	1.71	25	
17:13	32.26	6.89	0.47	2.68	350	14.97	300	0.1	1.71	23	
17:18	32.86	6.90	0.46	2.68	380	14.97	—	0.1	1.72	21	
17:23	32.54	6.90	0.43	2.66	390	14.96	348	0.1	1.70	19	
17:28	32.25	6.89	0.40	2.65	380	14.96	—	0.1	1.69	17	
17:33	32.13	6.90	0.39	2.62	410	14.97	—	0.1	1.68	15	
							218	0.1	1.73		Sample Flow
17:45	32.04	6.90	0.39	2.70	368	14.98	218	0.1		13	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) HORIBA U-22 ENVIRON #404

Sample Information

Groundwater Sample Field ID FPPVMP1D
 Sampling Time 17:38 Sampling End Time 17:45 DTW before Sampling 14.97
 Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____
 Sampling Observations _____



**McLaren
Hart, Inc.**

Sampling Date 4-30-00
Weather Sunny 90S
Sampled by: KR
(initials)

Well Construction ☒ PVC ☐ Steel ☐ Other: _____
Well Screened interval 26.75 to 28.45 feet below TIC
Well Headspace Reading (PID/FID) _____
Product Level-if present (ft below TIC) _____

305062



GROUNDWATER SAMPLING FORM

Well Number FPPVMP 1D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 5-1-00
 Weather Sunny 90s
 Sampled by: KR
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Diameter 2 inches
 Well Depth (ft below TIC) 28.23
 Water Level (ft below TIC) 16.24

Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Screened interval 26.75 to 28.45 feet below TIC
 Well Headspace Reading (PID/FID) _____
 Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

(28.23) - (16.24) * 2 * 0.0408 = _____ gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (mL/min)	ORP mV	Sal ‰	pH	Notes
1110	30.91	7.45	10.43	2.53	>990	16.28	400	133	-1	1.63	Purge Start 1108
1113	31.19	7.33	7.89	2.59	>990			138	-1	1.64	Very Silty
1116	30.88	7.05	7.36	2.59	>990	16.31	500	143	-1	1.66	Slightly Increased flow
1119	30.76	6.93	7.20	2.60	>990	16.34		148	-1	1.67	rate, as water is becoming
1122	30.78	6.31	7.15	2.61	>990	16.34	500	152	-1	1.67	less turbid.
1125	30.99	5.99	7.13	2.63	620	16.33		155	-1	1.68	
1128	31.02	5.84	7.13	2.63	510	16.33		157	-1	1.67	
1131	31.10	5.69	7.11	2.64	500	16.33	550	158	-1	1.67	
1134	31.24	5.55	7.10	2.65	420	16.33		160	-1	1.69	
1137	31.46	5.46	7.10	2.66	450	16.33	500	160	-1	1.70	
1140	31.56	5.39	7.09	2.66	330	16.33		160	-1	1.70	
		5.3	7.06	2.66	>990	(K.A.)					CO ₂ = 40 mg/L
1148	30.77	5.08	7.06	2.61	>990	16.40	500	165	-1	1.67	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) u-22 (Horiba)

Sample Information

Groundwater Sample Field ID FPP-VMP-1DSampling Time 1145 Sampling End Time 1147 DTW before Sampling _____Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____

Sampling Observations _____



**McLaren
Hart, Inc.**

- See Page 2 of 2 for Groundwater Sampling Parameters

Well Number FPP-VMP-2D
 State Permit No. _____
 Project Name _____
 Project Number _____

Weather

Sampled by:

(initials)

Well Type: ☐ Monitor ☒ Other: VMP

Well Diameter 2 inches

Well Depth (ft below TIC)

Water Level (ft below TIC)

Well Notes (Odor, well condition, etc.)

Well Construction ☒ PVC ☐ Steel ☐ Other:

Well Screened interval to feet below TIC

Well Headspace Reading (PID/FID)

Product Level-if present (ft below TIC)

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) * \frac{\text{Well Diameter (in)}}{2}^2 * 0.0408 = \text{gallons}$$

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
Pump intake depth: _____ Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (mL/min)	ORP mv	Sd TDs g/g	Notes
1215						12.2				Purge Start
1217						13.4	750			
1218						14.5				
1221						19.6	600			
1225						18.8				Shut pump off
1227						18.7				
1232						18.7				No Recharge
										Norma bailed well
1315						21.56'				DIR 23.41'
1430						14.90'				
										No sample Collected
										Post-sampling Measurements

Total Volume Purged

Water Quality Meter(s)

Groundwater Sample Field ID

Sampling Time

Sampling End Time

DTW before Sampling

Sampling Method Bailer (type: _____) Same as Above Other: _____

Sampling Observations



**McLaren
Hart, Inc.**

Well Number EPP-VMP-2D
State Permit No. unknown
Project Name Virgin Island Chemical Co.
Project Number

Sampling Date 3/30/00
Weather Sunny 28°C 5-10 mph
Sampled by: RW, JL
(initials)

Well Type: ☐ Monitor ☒ Other: Upper Monitoring Pt Well Construction ☒ PVC ☐ Steel ☐ Other: ☐

Well Diameter 2 inches Well Screened interval to feet below TIC

Well Depth (ft below TIC) 25 Well Headspace Reading (PID/FID) 1 ppm

Water Level (ft below TIC) 14.78 Product Level-if present (ft below TIC)

Well Notes (Odor, well condition, etc.) Slight Odor

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) - \left(\frac{\text{Well Diameter (in)}}{2} \right) \times 0.0408 = \text{gallons}$$

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
Pump intake depth: 13' 8" BOP Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

[illegible]

Total Volume Purged	Water Quality Meter(s)	Apk 11-22 Equipment # 125
---------------------	------------------------	---------------------------

Groundwater Sample Field ID FPPUMP 2D
Sampling Time _____ Sampling End Time _____ DTW before Sampling _____
Sampling Method Bailer (type:) Same as Above Other:
Sampling Observations _____



**McLaren
Hart, Inc.**

Well Number **FPP-VMP-2D**

State Permit No. _____

Project Name _____

Project Number _____

Sampling Date 4-29-00

Weather

Sampled by:

(initials)

Well Information

Well Type: Monitor ☒ Other: ☐ VMP

Well Construction ☒ PVC ☐ Steel ☐ Other: ☐

Well Diameter 2 inches

Well Screened interval _____ to _____ feet below TIC

Well Depth (ft below TIC)

Well Headspace Reading (PID/FID)

Water Level (ft below TIC)	1.60
----------------------------	------

Product Level-if present (ft below TIC)

Well Notes (Odor, well condition, etc.)

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) * \frac{\text{Well Diameter (in)}}{2}^2 * 0.0408 = \text{gallons}$$

Purging Information

Purge Method: Low Flow NJDEP 3 Well Volume Not Purged Other:

Pump: A Submersible Pump (20 inch) Peristaltic Positive displacement Other:

Pump intake depth: 21.8 Purge water discharged to: Ground ☒ Drum Other: _____

Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☒ Dedicated

[illegible]

Total Volume Purged

Water Quality Meter(s)

Sample Information

Groundwater Sample Field ID

Sampling Time Sampling End Time DTW before Sampling _____

Sampling Method Bailer (type:) Same as Above Other:

Sampling Observations



GROUNDWATER SAMPLING FORM

Well Number FPPUMP 2D
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 5-1-00
 Weather Sunny ~30's
 Sampled by: SL
 (initials)

Well Information

Well Type: Monitor ☒ Other: UMP
 Well Construction PVC ☒ Steel ☐ Other: _____
 Well Diameter 2 inches
 Well Screened interval _____ to _____ feet below TIC
 Well Depth (ft below TIC) 26.90*
 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 16.58
 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) Precious TD @ 25'

Volume of Water in Casing (gallons)

() - () * 2 * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 25 - Re-set to 24 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☒ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	SL %	TDS g/L	Notes
10:20						15.62					Purge Start
10:28	31.10	8.08	8.57	0.216	>999	16.96	500	89	0.1	1.39	stabilized flow, Silky-yellow brown
10:33	31.74	7.81	8.51	0.216	>999	17.01	500 ^A	111			① Silky, trouble getting flow
10:38	31.97	7.74	8.33	0.215	>999	16.98	500 ^A	115			adjusted to push through cell
10:40											pump vibrating, flow adjustment
10:45						16.03					pump stopped pumping
11:07						16.58					re-set intake to 24' + re-set
11:11	31.83	7.57	8.78	0.217	>999	17.39	500	124	0.1	1.38	#1
11:16	31.99	7.46	8.11	0.217	>999	16.89	500 ^A	112	0.1	1.39	
11:20											pump stopped pumping
11:40						16.75					re-start #2
11:41	31.36	7.48	8.25	0.223	>999	17.49	500	115	0.1	1.42	air bubbles in tubing
11:45	31.54	7.43	8.39	0.221	>999	17.41	500 ^A	120	0.1	1.41	adjusted flow rate
11:48	32.82	7.46	8.39	0.222	>999	17.65	500 ^A	105	0.1	1.42	difficultly adj. flow rate
12:00						16.18	← water available				→ 2nd Pump Connected @ same depth
12:13	33.01	7.45	9.10	0.224	>990	17.28	500	134	0.1	1.42	
* water was available in well, but not able to pump continuously *											Post-sampling Measurements
Total Volume Purged						Water Quality Meter(s) <u>Hanna U22 Enverest #5</u>					

Sample Information

Groundwater Sample Field ID FPPUMP 2D - VO and CO2 = 14 mg/L
 Sampling Time _____ Sampling End Time 12:08 DTW before Sampling _____
 Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____
 Sampling Observations ① Silky, had trouble adjusting flow to push silky water through flow cell while keeping @ 500 ml/min; couldn't get a lower flow due to back pressure - Stop @ 11:48
2nd Pump attached and set to 24' started @ 12:00



GROUNDWATER SAMPLING FORM

Well Number FPP-VMP-3D

State Permit No. _____

Project Name _____

Project Number _____

Sampling Date 3-10-00Weather Sunny ~90°Sampled by: SE, NE, DS
(initials)

Well Information

Well Type: Monitor ☒ Other: VMPWell Construction ☒ PVC ☐ Steel ☐ Other: _____Well Diameter 2 inchesWell Screened interval 27.55 to 29.35 feet below TIC 1.7' screenWell Depth (ft below TIC) 29.89

Well Headspace Reading (PID/FID) _____

Water Level (ft below TIC) 14.18

Product Level-if present (ft below TIC) _____

Well Notes (Odor, well condition, etc.) Top of Screen is 2.45' from bottom

Volume of Water in Casing (gallons)

$$(\text{Well Depth}) - (\text{Water Level}) * \text{Well Diameter (in)}^2 * 0.0408 = \text{gallons}$$

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____Pump intake depth: 27.4' Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ ☐ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/m)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mV	SAT	TDS	Notes
1435						13.15					Purge Start
1438						18.57	3 gal/min to develop before sampling (57.1 in)				
1441	29.75	7.06	0.86	0.190	53.5	15.57	500	10	0.09	1.22	
1446	30.07	7.04	0.46	0.196	99.5	15.43	500	7	0.09	1.26	
1451	30.22	6.98	0.37	0.209	89.6	15.44	500	12	.1	1.34	
1456	30.24	6.96	0.31	0.211	83.1	15.32	500	15	.1	1.36	
1501	30.73	6.95	0.39	0.212	98.4	15.20	500	16	.1	1.35	
1509	30.53	6.95	0.32	0.220	172.0	14.91	500	13	.1	1.42	
1511	30.58	6.95	0.32	0.228	201.0	14.82	500	11	.1	1.46	
1516	31.23	6.94	0.47	0.226	279.0	14.82	500	13	.1	1.32	adjusted DTW from 300
1521	30.64	6.94	0.33	0.213	334.0	15.16	500	13	.1	1.37	
1526	30.29	6.93	0.27	0.217	387.0	15.39	500	17	.1	1.39	
1531	30.21	6.92	0.25	0.219	488.0	15.48	500	18	.1	1.40	
1532											Set up to Sample
DS											
1537	30.21	6.92	0.24	0.218	649.0	15.45	500	18	.1	1.40	Post-sampling Measurements

Total Volume Purged 57+28 = ~85 liters Water Quality Meter(s) Hanba U-22

Sample Information

Groundwater Sample Field ID FPP-VMP-3D - 1535 VD only (+ CO2 kit)Sampling Time 1535 Sampling End Time _____ DTW before Sampling _____Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____

Sampling Observations _____

1 gal = 3.79 Liters



GROUNDWATER SAMPLING FORM

Well Number FPP-VMP-3DState Permit No. unknownProject Name Virgin Island Chemical SiteProject Number Sampling Date 3/20/00Weather SunnySampled by: RW, JL
(initials)

Well Information

Well Type: Monitor ☒ Other: VMPWell Construction ☒ PVC Steel Other: Well Diameter 2 inchesWell Screened interval 22.55 to 29.25 feet below TICWell Depth (ft below TIC) 29.89Well Headspace Reading (PID/FID) 3.0Water Level (ft below TIC) 15.04Product Level-if present (ft below TIC) Well Notes (Odor, well condition, etc.) Slight Odor

Volume of Water in Casing (gallons)

$$\left(\frac{\text{Well Depth}}{\text{Water Level}} \right) - \left(\frac{\text{Well Diameter (in)}}{2} \right)^2 \times 0.0408 = \text{gallons}$$
CO2 - 150 mg/l

Purging Information

Purge Method: ☒ Low Flow NJDEP 3 Well Volume Not Purged Other: Pump: ☒ Submersible Pump (2 inch) Peristaltic Positive displacement Other: Pump intake depth: 27 Purge water discharged to: Ground ☒ Drum Other: Tubing: Polypropylene ☒ Teflon-line Other: ☒ New Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (% I)	Cond. (% m)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mV	SAL %	TDS mg/L	Notes
13:48	—	—	—	—	—	14.78	—	—	—	—	Purge Start After Pump
13:54	27.12	6.85	2.92	.197	11.8	15.34	310	-48	.09	1.24	Purge Start
18:59	31.06	6.81	.54	.220	5.7	15.34	310	-24	.11	1.40	
14:04	31.19	6.82	.43	.224	4.9	15.37	280	-13	.11	1.44	
14:09	31.25	6.82	.38	.225	2.3	15.35	280	-9	.11	1.44	
14:14	31.30	6.82	.34	.224	6.6	15.37	280	-5	.11	1.44	
14:19	31.28	6.82	.31	.224	15.6	15.37	290	-6	.11	1.43	
14:24	31.17	6.83	.26	.223	51.9	15.40	280	-7	.11	1.43	
14:29	31.16	6.83	.21	.222	96.0	15.40	280	-6	.11	1.42	
14:34	31.28	6.83	.19	.222	3.7	15.40	280	-6	.11	1.42	
14:39	31.27	6.83	.18	.222	3.6	15.36	280	-5	.11	1.42	
14:44	31.44	6.83	.17	.222	5.7	15.38	280	-5	.11	1.42	
14:49	31.34	6.83	.16	.222	6.2	15.38	270	-4	.11	1.42	
14:54	31.46	6.84	.16	.221	6.0	15.38	270	-4	.11	1.42	
14:59											Sample Flow 2.15 m ³ /hr
15:05	31.25	6.84	.16	.223	44.0	15.30	285	-2	.11	1.40	Post-sampling Measurements

Total Volume Purged Water Quality Meter(s)

Sample Information

Groundwater Sample Field ID FPP-VMP-3DSampling Time 15:00 Sampling End Time 15:03DTW before Sampling 15.37Sampling Method Bailer (type:) ☒ Same as Above Other: Sampling Observations Slight Odor

305071



GROUNDWATER SAMPLING FORM

Well Number FPP-VMP-3D
 State Permit No. _____
 Project Name Island Chemical
 Project Number _____

Sampling Date 5-1-00
 Weather Sunny, 80s
 Sampled by: RR (initials)

Well Information

Well Type: Monitor ☒ Other: VMP
 Well Diameter 2 inches
 Well Depth (ft below TIC) 129.89
 Water Level (ft below TIC) 17.66
 Well Notes (Odor, well condition, etc.) _____

Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Screened interval 27.55 to 29.25 feet below TIC
 Well Headspace Reading (PID/FID) _____
 Product Level-if present (ft below TIC) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 28 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (gal/min)	ORP mV	2x / 10x	Notes
0902	29.05	8.23	9.47	2.34	2990	19.95		65	11.52	Purge Start 0900
0905	30.30	8.19	9.03	2.38	2990		450	76	11.53	
0908	30.58	8.09	9.03	2.38	2990			86	11.52	
0911	31.04	8.00	9.04	2.41	2990	19.15		96	11.54	
0920	31.53	7.91	8.77	2.47	710		500	117	11.56	Having trouble getting
0923	31.53	7.91	8.77	2.47	710			117	11.56	flow to stabilize
1030	29.92	7.02	10.06	2.54	8720	17.62	550	116	11.63	0933 DTW = 04 or
1035	30.17	7.30	9.02	2.52	2990	17.75		116	11.63	below pump. Stopper
1040	30.26	7.30	9.37	2.47	720	17.71	600	112	11.58	pump; need to let
1045	30.33	7.31	9.26	2.47	440	18.04	600	110	11.58	recharge.
										1026 water level 17.80
										1027 pump start
1052	30.49	7.55	9.21	2.49	450	17.93	600	108	11.60	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) 4-22 (Hanna)

Sample Information

Groundwater Sample Field ID FPP-VMP-3D
 Sampling Time 1050 Sampling End Time 1051 DTW before Sampling 18.04
 Sampling Method Bailer (type: _____) Same as Above ☐ Other: _____
 Sampling Observations CO₂ = 25 mg/L



GROUNDWATER SAMPLING FORM

Well Number FPP-VMP-40
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3-10-00
 Weather Sunny - 90°
 Sampled by: SC, DE, DS
 (initials)

Well Information

Well Type: Monitor ☒ Other: VMP Well Construction ☒ PVC ☐ Steel ☐ Other: _____
 Well Diameter 2 inches Well Screened interval 27.5 to 29.6 feet below TIC
 Well Depth (ft below TIC) 29.66 Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) 15.30 Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: 27.6 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☐ Teflon-line ☐ Other: _____ ☐ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (S/cm)	Turb (NTU)	DTW (feet)	Rate (ml/min)	ORP mV	SPH/TDS 1/100L	Notes
14:53						14.32				Purge Start Yellow Color
14:56						19.82	5 gal/min			Extremely Turbid, Not Silty 87
15:03						20.85				6.12
15:05						21.88				Continue Pumping Rate until clear of the cage for pump intake
* 15:07						22.13				* Start ↓ flow for sampling *
15:09				0.257	999	19.00	750			adjust flow
15:10	29.80	7.11	0.87	0.260	990	18.85	500	78	1.166	
15:15	30.28	7.10	0.81	0.268	990	17.95	375	55	1.117	adjust to 500
15:20	30.50	7.10	0.78	0.265	990	18.40	500	43	1.117	
15:25	30.56	7.09	0.81	0.266	930	18.23	500	37	1.117	
15:30	30.61	7.09	0.81	0.265	880	18.11	500	27	1.117	
15:35	30.65	7.08	0.79	0.266	780	17.90	500	17	1.117	
15:40	30.73	7.08	0.74	0.266	740	17.91	500	15	1.117	
15:45	30.71	7.07	0.71	0.266	660	18.05	500	11	1.117	
15:50	30.71	7.07	0.67	0.266	510	17.90	500	2	1.117	
16:00	30.64	7.06	0.64	0.263	990	19.22	575	6	1.163	adjust flow ↓ to 500
16:03	30.14	7.06	0.61	0.261	990	19.25	500	15	1.163	
16:07	30.49	7.07	0.57	0.266	910	19.65	500	16	1.117	Post-sampling Measurements

Total Volume Purged 265 + 31 = ~296 L Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID FPP-VMA-40
 Sampling Time 16:05 Sampling End Time _____ DTW before Sampling 19.05
 Sampling Method Bailer (type: _____) ☒ Same as Above ☐ Other: _____
 Sampling Observations (1 gal = 3.79 L) 14 min x 5 gal = 265 L



GROUNDWATER SAMPLING FORM

Well Number FPPUMP4D
 State Permit No.
 Project Name Virgin Island Chemical Site
 Project Number

Sampling Date 3/31/00
 Weather Sunny, 280°F, humid, 0-Sunp
 Sampled by: JL, RU
 (initials)

Well Information

Well Type: Monitor ☒ Other: Upper Monitoring Pt Well Construction XPVC Steel Other:
 Well Diameter 2 inches Well Screened interval 2755 to 2912 feet below TIC
 Well Depth (ft below TIC) 29.66' Well Headspace Reading (PID/FID) 0
 Water Level (ft below TIC) 16.40' Product Level-if present (ft below TIC) none present
 Well Notes (Odor, well condition, etc.)

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in) 10.0 CO₂ - 680 * 0.2 mg/l = 136 mg/l

Purging Information

Purge Method: X Low Flow NJDEP 3 Well Volume Not Purged Other:
 Pump: X Submersible Pump (2 inch) Peristaltic Positive displacement Other:
 Pump intake depth: 27.6 Purge water discharged to: Ground X Drum Other:
 Tubing: Polypropylene X Teflon-line Other: 1 X New Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (L/min)	ORP mV	SAL %	TDS mg/L	Notes
7:40						16.01					Purge Start
7:46	30.12	7.12	0.91	2.50	250	17.36	312	23	0.1	1.61	
7:51	30.39	7.09	0.81	2.60	320	17.27	—	19	0.1	1.66	
7:56	30.37	7.09	0.77	2.61	260	17.13	—	4	0.1	1.67	
8:04	30.68	7.09	0.79	2.62	230	17.13	280	-23	0.1	1.67	
8:06	31.75	7.10	0.74	2.65	210	17.11	—	-12	0.1	1.69	
8:14	31.60	7.09	0.76	2.66	220	17.20	330	-10	0.1	1.70	
8:19	32.04	7.09	0.67	2.68	200	—	—	-14	0.1	1.72	
8:24	32.13	7.09	0.66	2.68	180	17.06	—	-13	0.1	1.72	
8:29	32.05	7.09	0.58	2.67	170	17.60	240	-7	0.1	1.71	
8:34	31.33	7.09	0.50	2.67	620	16.98	—	-19	0.1	1.71	
8:39	32.21	7.09	0.61	2.67	510	17.39	284	-26	0.1	1.71	
8:44	32.18	7.09	0.59	2.66	440	17.17	—	-16	0.1	1.70	
8:49	32.01	7.09	0.57	2.66	460	16.95	—	-12	0.1	1.70	
8:54	33.38	7.09	0.67	2.65	500	17.51	372	-21	0.1	1.70	Adjusting flow rate
8:59	32.94	7.09	0.60	2.68	530	17.54	372	-26	0.1	1.72	
Post-sampling Measurements											

Total Volume Purged Water Quality Meter(s)

Sample Information

Groundwater Sample Field ID FPPUMP4D
 Sampling Time Sampling End Time DTW before Sampling
 Sampling Method Bailer (type:) Same as Above Other:
 Sampling Observations

GROUNDWATER SAMPLING FORM



Well Number FPP-VMP-4D (cont.)
 State Permit No. _____
 Project Name _____
 Project Number _____

Sampling Date 3/31/00
 Weather Sunny
 Sampled by: _____
 (initials)

Well Information

Well Type: ☐ Monitor ☐ Other: _____ Well Construction ☐ PVC ☐ Steel ☐ Other: _____
 Well Diameter _____ inches Well Screened interval _____ to _____ feet below TIC
 Well Depth (ft below TIC) _____ Well Headspace Reading (PID/FID) _____
 Water Level (ft below TIC) _____ Product Level-if present (ft below TIC) _____
 Well Notes (Odor, well condition, etc.) _____

Volume of Water in Casing (gallons)

() - () * ² * 0.0408 = gallons
 Well Depth Water Level Well Diameter (in)

Purging Information

Purge Method: ☐ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
 Pump: ☐ Submersible Pump (inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
 Pump intake depth: _____ Purge water discharged to: ☐ Ground ☐ Drum ☐ Other: _____
 Tubing: ☐ Polypropylene ☐ Teflon-line ☐ Other: _____ / ☐ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (L/min)	OLP	SAL/TDS	Notes
9:04	32.69	7.09	0.57	267	530	17.18	-	-19	0.1/1.71	Purge Start
9:09	33.01	7.09	0.62	266	440	17.86	352	-14	0.1/1.70	
9:14	31.53	7.08	0.45	2.66	570	18.75	400	-16	0.1/1.70	
9:19	30.75	7.08	0.46	2.56	870	18.69	-	-6	0.1/1.70	
9:24	30.60	7.08	0.39	2.58	920	17.12	-	-28	0.1/1.65	
9:29	32.24	7.08	0.41	2.64	860	17.45	-	-32	0.1/1.69	
9:34	32.57	7.09	0.56	2.65	670	18.01	-	-16	0.1/1.66	
9:39	31.29	7.08	0.43	2.58	610	18.22	480	-8	0.1/1.65	
9:44	31.19	7.08	0.39	2.57	720	17.79	300	-11	0.1/1.64	
9:49	31.99	7.08	0.38	2.58	710	18.19	-	-21	0.1/1.64	
9:54	31.48	7.09	0.39	2.57	740	17.52	-	-14	0.1/1.64	
10:09	32.91	7.10	0.56	2.61	560	16.71	2150	8	0.1/1.67	Post-sampling Measurements

Total Volume Purged _____

Water Quality Meter(s) _____

Sample Information

Groundwater Sample Field ID _____

Sampling Time 10:06 Sampling End Time 10:10 DTW before Sampling 16.71Sampling Method ☐ Bailer (type: _____) ☒ Same as Above ☐ Other: _____

Sampling Observations _____

305077

**McLaren
Hart, Inc.**

Sampling Date 4-30-00
Weather Sunny ~80
Sampled by: SC
(initials)

Well Type: Monitor Other: _____ Well Construction PVC Steel Other: _____
Well Diameter 2 inches Well Screened interval _____ to _____ feet below TIC
Well Depth (ft below TIC) 29.46 Well Headspace Reading (PID/FID) _____
Water Level (ft below TIC) 17.19 Product Level-if present (ft below TIC) _____
Well Notes (Odor, well condition, etc.) Extremely Silty, Very Fine Silt, Yellow-Brown Color; samples not gritty
Volume of Water in Casing (gallons) Pumping Very Slowly because this is 3rd attempt in 3 days.
() - () * ² * 0.0408 = gallons
Well Depth - Water Level Well Diameter (in)

Purge Method: ☒ Low Flow ☐ NJDEP 3 Well Volume ☐ Not Purged ☐ Other: _____
Pump: ☒ Submersible Pump (2 inch) ☐ Peristaltic ☐ Positive displacement ☐ Other: _____
Pump intake depth: 27.5 Purge water discharged to: ☐ Ground ☒ Drum ☐ Other: _____
Tubing: ☐ Polypropylene ☒ Teflon-line ☐ Other: _____ / ☒ New ☐ Dedicated

Time (HH:MM)	Temp (°C)	pH (pH units)	D.O. (mg/L)	Cond. (µS/cm)	Turb (NTU)	DTW (feet)	Rate (gal/min)	ORP mV	SAL	TDS	Notes
15:35						17.19					Purge Start
15:37	29.64	7.43	8.10	2.62	7990	18.11	250	122	0.1	168	S. 1 kg. filling flow rate
15:44	29.78	7.38	7.94	2.65	7990	18.20	250	116	0.1	170	
15:48	29.92	7.35	7.94	2.66	7990	18.31	250	101	0.1	171	
15:52	30.63	7.34	7.82	2.70	7990	18.39	250	94	0.1	173	
15:58	31.21	7.33	7.79	2.74	7990	18.39	250	88	0.1	175	
16:03	31.73	7.32	7.77	2.77	7990	18.41	250	91	0.1	177	
16:08	31.78	7.32	7.70	2.74	7990	18.45	250	94	0.1	175	
16:17	31.34	7.32	7.78	2.75	7990	18.53	275	92	0.1	175	Post-sampling Measurements

Sample Information

Groundwater Sample Field ID FPP-VMP-40
Sampling Time _____ Sampling End Time 1610 DTW before Sampling 1845
Sampling Method Bailer (type:) ☒ Same as Above Other:
Sampling Observations _____

APPENDIX D
Chain of Custody Forms

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517694

Required Client Information:

Section A

Required Client Information:

Section B

Page: 1 of 1

To Be Completed by Pace Analytical and Client

Section C

Company: <u>MOLLEN/HOLT</u>		Report To: <u>NORMA EICHLIN</u>
Address: <u>25 INDEPENDENCE BLVD.</u> <u>WARREN, NJ 07059</u>		Invoice To: <u>JOSE AGRELLO, SUTEC</u>
Phone: <u>908/677-8111</u>		Project Name: <u>VIRGIN ISLAND CHEM. SITE</u>
Fax: <u>908/677-8162</u>		Project Number:

Client Information (Check quote/contract):	
Requested Due Date:	*TAT:
• Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge. Turn Around Time (TAT) in calendar days.	

Quote Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

ITEM #	Section D Required Client Information:													Valid Matrix Codes MATRIX WATER SOIL OIL WIPE AIR TISSUE OTHER	CODE WT SL OL WP AR TS OT	MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh:mm a/p	# Containers	Preservatives					SITE TARGET COMPOUNDS	Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	SAMPLE ID One character per box. (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE																			Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH			Na ₂ S ₂ O ₃																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			U.S. Vehicle Mollen/Holt	3-9-00	14:00	FEDERAL EXPRESS	3-9-00	14:00
Received on ICE:	Y / N		FEDERAL EXPRESS					
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments: Site Target Compounds: acetone, methylene chloride, chloroform, toluene, ethylbenzene, total xylenes

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	<u>NORMA L. EICHLIN</u>
SIGNATURE of SAMPLER:	<u>Norma L. Eichlin</u>
DATE Signed: (MM / DD / YY)	<u>3-9-00</u>

305080

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517695

Required Client Information: Section A

Required Client Information: Section B

Page: 1 of 2

To Be Completed by Pace Analytical and Client: Section C

Company: McLennan/Hill
 Address: 25 Independence Blvd.
Wallen, NJ 07057
 Phone: 908/647-8111
 Fax: 908/647-8162

Report To: Norma Eichen
 Invoice To: Jose Aguilar, CITEC
 P.O.: Virgin Islands Chem. Serv
 Project Name: Virgin Islands Chem. Serv
 Project Number:

Client Information (Check quote/contract):
 Requested Due Date: TAT:
 * Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.
 Turn Around Time (TAT) in calendar days.

Quote Reference:
 Project Manager:
 Project #:
 Profile #:
 Requested Analysis: Site Target Compounds

Section D Required Client Information:

ITEM #	SAMPLE ID	Valid Matrix Codes	MATRIX CODE	DATE COLLECTED	TIME COLLECTED	Preservatives						Containers	Remarks / Lab ID
						Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃		
1	TB030700	WT	3.4.00	5:00p	3								
2	TB031000	WT	3.10.00	7:00a	2								
3	FB031000	WT	3.10.00	7:30a	3								
4	MW-12	WT	3.10.00	9:30a	3								
5	MW-14	WT	3.10.00	10:50a	3								
6	FW-VMP-3D	WT	3.10.00	3:35p	3								high chloroform
7	FW-VMP-4D	WT	3.10.00	4:05p	3								cones. likely
8	MW-15	WT	3.7.00	7:36a	1								
9	MW-13	WT	3.7.00	1:55p	1								
10	MW-11	WT	3.8.00	9:25a	1								
11	MW-3	WT	3.8.00	11:15a	1								
12	MW-7	WT	3.9.00	3:25a	1								

Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:								
Received on ICE:	Y / N		U. J. Hill - McLennan/Hill	3-13-00	1600	FEDERAL EXPRESS	3-13-00	1600
Sealed Cooler:	Y / N		FEDERAL EXPRESS					
Samples Intact:	Y / N							

Additional Comments: SITE TARGET COMPOUNDS: acetone, methylene chloride, chloroform, toluene, ethylbenzene, total xylene

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Norma Eichen
 SIGNATURE of SAMPLER: Norma Eichen
 DATE Signed: (MM / DD / YY) 3.10.00

SEE REVERSE SIDE FOR INSTRUCTIONS

305081

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517697

Required Client Information:

Section A

Required Client Information:

Section B

Page: 1 of 1

To Be Completed by Pace Analytical and Client Section C

Company: <u>Melrose/Hinet</u>		Report To: <u>N. L. EICHEN</u>
Address: <u>25 Independence Blvd</u>		Invoice To: <u>Jess Hinkel, CTEC</u>
<u>Union, NJ 07059</u>		P.O.
Phone: <u>908/647-8111</u>	Fax: <u>908/647-8162</u>	Project Name: <u>VIRGIN ISLAND Chem Site</u>
Project Number:		

Client Information (Check quote/contract):

Requested Due Date: _____ TAT: _____

• Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

Quote Reference: _____

Project Manager: _____

Project #: _____

Profile #: _____

Section D		Required Client Information:	
ITEM #	SAMPLE ID	MATRIX CODE	DATE COLLECTED
One character per box. (A-Z, 0-9 / -)			
Sample IDs MUST BE UNIQUE			

MATRIX	CODE
WATER	WT
SOIL	SL
OIL	OL
WIPE	WP
AIR	AR
TISSUE	TS
OTHER	OT

DATE COLLECTED	TIME COLLECTED	# Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃
mm / dd / yy	hh:mm a/p							

Requested Analysis: _____

Remarks / Lab ID

ITEM #	SAMPLE ID	MATRIX CODE	DATE COLLECTED	TIME COLLECTED	# Containers	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Remarks / Lab ID
1	S O I L	P I L E	# 1	3-9-00	10:00a	3	✓					✓
2	S O I L	P I L E	# 2	3-9-00	10:15a	3	✓					✓
3	S O I L	P I L E	# 3	3-9-00	10:30a	3	✓					✓
4	S O I L	P I L E	# 4	3-9-00	10:45a	3	✓					✓
5												
6												
7												
8												
9												
10												
11												
12												

Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:								
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

N. L. EICHEN

SIGNATURE of SAMPLER:

N. L. EICHEN

DATE Signed: (MM / DD / YY)

3-9-00

SEE REVERSE SIDE FOR INSTRUCTIONS

Pace Analytical Services, Inc. Form COC01.XLS 12/99

305082

517698

Required Client Information:

Section A

Required Client Information:

Section B

Page: 1 of 1

To Be Completed by Pace Analytical and Client

Section C

Company: McLUREN/HURT
 Address: 25 INDEPENDENCE BLVD.
WILMINGTON, NJ 07059
 Phone: 908/647-8111 Fax: 908/647-8162
 Report To: NORMA EICHLIN
 Invoice To: JOSE PERLOT (ERTCO)
 P.O.:
 Project Name: VIRGIN ISLAND CHEM. SITE
 Project Number:

Client Information (Check quote/contract):
 Requested Due Date: TAT:
 • Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.
 Turn Around Time (TAT) in calendar days.
 Quote Reference:
 Project Manager:
 Project #:
 Profile #:
 Requested Analysis:

Section D										Required Client Information:										Valid Matrix 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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:								
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

SITE TARGET COMPOUNDS: HEPTANE, METHYLENE CHLORIDE, CHLOROFORM, TOLUENE, ETHYLBENZENE, TOTAL XYLENES

SEE REVERSE SIDE FOR INSTRUCTIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

NORMA L. EICHLIN

SIGNATURE of SAMPLER:

Norma L. Eichlin

DATE Signed: (MM / DD / YY)

3-7-00

305083

517699

Required Client Information:

Section A

Required Client Information:

Section B

Page: / of /

To Be Completed by Pace Analytical and Client

Section C

Company <i>McLaren/Hort</i>	Report To: <i>Norma Eichlin</i>
Address <i>25 Independence Blvd</i>	Invoice To: <i>Jose Aguiar, Esq.</i>
<i>Warron NJ 07059</i>	P.O.
Phone <i>908/647-8111</i>	Project Name: <i>Virgin Island Chemical Site</i>
Fax <i>908/647-8162</i>	Project Number:

Client Information (Check quote/contract):

Requested Due Date:

*TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

Quote Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

Section D										Required Client Information:										Valid Matrix Codes ←		Preservatives						Side Target Comp										Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			Roy Wenzel / McLaren/Hort	3/30/00	17:00	Federal Express	3/30/00	17:00
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

Site Target Compounds: acetone, methylene chloride, chloroform
toluene, ethylbenzene, total xylenes

2 Coolers in Shipment

SEE REVERSE SIDE FOR INSTRUCTIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

Roy Wenzel / John Lufe

SIGNATURE of SAMPLER:

3/30/00

DATE Signed: (MM / DD / YY)

3/30/00

517700

Required Client Information: Section A

Company: McLaren/Hort
Address: 25 Independence Blvd
Warren NJ 07059
Phone: 908/647-8111 Fax: 908/647-8162

Required Client Information: Section B

Report To: Norma Exblin
Invoice To: Jose Aguilar - Ertex
P.O.:
Project Name: Virgin Island Chemical Site
Project Number:

Page: / of /

To Be Completed by Pace Analytical and Client: Section C

Quote Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

ITEM #	Section D										Required Client Information:										Valid Matrix Codes		MATRIX CODE	DATE COLLECTED	TIME COLLECTED	# Containers	Preservatives						Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			Roy Wenzel / McLaren/Hort	3/31/00	17:00	Federal Express	3/31/00	17:00
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments: Site Target Compounds: acetone, methylene chloride, chloroform, toluene, ethylbenzene, total xylenes

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Roy Wenzel / John Lute
SIGNATURE of SAMPLER: [Signature]
DATE Signed: (MM / DD / YY) 3/31/00

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517766

Required Client Information: Section A

Company: Malvern/MT
 Address: 13 Independence Blvd.
Walling NJ 07059
 Phone: 908/477-8111 Fax: 908/477-8162

Required Client Information: Section B

Report To: Norman E. Eklund, N/A
 Invoice To: Steve Aspelot, EPTCO
 P.O.:
 Project Name: Virgin Island Air Site
 Project Number:

Page: 1 of 1

To Be Completed by Pace Analytical and Client Section C

Quote Reference:
 Project Manager:
 Project #:
 Profile #:
 Requested Analysis:

Section D										Required Client Information:										Valid Matrix Codes		MATRIX CODE	DATE COLLECTED	TIME COLLECTED	# Containers	Preservatives					Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			<u>4-17-00</u> <u>M/H</u>	<u>4-17-00</u>	<u>1700</u>	<u>FSCX</u>		
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: Norman E. Eklund
 SIGNATURE of SAMPLER: [Signature] DATE Signed: (MM / DD / YY) 4-17-00

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

Section C

Client Information (Check quote/contact): Requested Due Date: TAT:		Quote Reference:
* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge. Turn Around Time (TAT) in calendar days.		Project Manager:
		Project #:
		Profile #:
		Requested Analysis:

Sample Condition		Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:				STEPHANIE STONE / MCL LABORATORY	5/4/01		FEDERAL EXPRESS		
Received on ICE:	Y / N								
Sealed Cooler:	Y / N								
Samples Intact:	Y / N								

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

STEPHANIE @ KIM

SIGNATURE of SAMPLER:

DATE Signed: (MM / DD / YY)

4/30/00

SEE REVERSE SIDE FOR INSTRUCTIONS

Pace Analytical Services, Inc. Form COC01.XLS 12/99

305087

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517529

Required Client Information: Section A

Company: McLaren / Host

Address: 25 Linden Avenue Blvd
Warren NJ 07059

Phone: (908) 647 8111 Fax: (908) 647 8162

Required Client Information: Section B

Report To: Norma Eichel

Invoice To: Jose Agrelo (ERTEC)

P.O.:

Project Name: Virgin Island Chemical Site

Project Number:

Page: 2 of 2

To Be Completed by Pace Analytical and Client **Section C**

Quote Reference:

Project Manager:

Project #:

Profile #:

Client Information (Check quote/contract):

Requested Due Date:

*TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.

Turn Around Time (TAT) in calendar days.

Requested Analysis:

ITEM #	Section D										Required Client Information:										Valid Matrix Codes ←		MATRIX CODE	DATE COLLECTED	TIME COLLECTED	Preservatives						Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			STEPHANIE CHOW	5/4/00		FEDERAL EXPRESS		
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

STEPHANIE CHOW

SIGNATURE of SAMPLER:

Stephanie Chow

DATE Signed: (MM/DD/YY)

4/30/00

517530

Required Client Information: Section A

Company: McLaren/Hart
Address: 25 Independence Blvd
Warren, NJ 07059
Phone: (908) 647-8111 Fax: (908) 647-8162

Required Client Information: Section B

Report To: Norma Eichlin
Invoice To: Jose Agrelot (ERTEC)
P.O.:
Project Name: Virgin Island Chemical Site
Project Number:

Page: 1 of 1

To Be Completed by Pace Analytical and Client Section C

Quote Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

Section D										Required Client Information:										Valid Matrix Codes		MATRIX CODE	DATE COLLECTED	TIME COLLECTED	# Containers	Preservatives					Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			Stephanie Chow	5/2/00	1400	FEDERAL EXPRESS	5/2/00	1400
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

- Site Target Compounds: Acetone, Methylene Chloride, Chloroform, Toluene, Ethylbenzene, total Xylenes

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: STEPHANIE CHOW
SIGNATURE of SAMPLER: *Stephanie Chow*
DATE Signed: (MM/DD/YY) 5/1/00

CHAIN-OF-CUSTODY / Analytical Request Form

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517527

Required Client Information: Section A

Company: McLaren/Hart
Address: 25 Independence Dr.
Warren, NJ 07059
Phone: (908) 647-8111 Fax: (908) 647-8162

Required Client Information: Section B

Report To: Norma Eichlin
Invoice To: Jose Agrelo (ERTEC)
P.O.:
Project Name: Virgin Island Chemical Site
Project Number:

Page: 1 of

To Be Completed by Pace Analytical and Client Section C

Quote Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

ITEM #	Section D										Required Client Information:										Valid Matrix Codes ←		MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh:mm a/p	# Containers	Preservatives					Site Target Conf	Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:								
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

Site Target Compounds: Acetone, Methylene Chloride, Chloroform, Toluene, Ethylbenzene, total Xylenes

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER:

DATE Signed: (MM / DD / YY)

SEE REVERSE SIDE FOR INSTRUCTIONS

Pace Analytical Services, Inc. Form COC01.XLS 12/99

305090

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

517901

Required Client Information:

Section A

Company: McLAREN/HART
 Address: 25 INDEPENDENCE BLVD
WHITEN, NJ 07059
 Phone: 908/647-4411 Fax: 908/647-8162

Required Client Information:

Section B

Report To: NORMA EICHLIN
 Invoice To: JOSE AGUILAR, ELITE
 P.O.: VIRGIN ISLAND CHAM. SAG
 Project Name: VIRGIN ISLAND CHAM. SAG
 Project Number:

Page: 2 of 2

To Be Completed by Pace Analytical and Client

Section C

Quote Reference:
 Project Manager:
 Project #:
 Profile #:
 Requested Analysis:

Section D										Required Client Information:										Valid Matrix Codes ←		MATRIX CODE	DATE COLLECTED	TIME COLLECTED	# Containers	Preservatives					REMARKS / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
ITEM #	SAMPLE ID										One character per box. (A-Z, 0-9 / -)										Sample IDs MUST BE UNIQUE											MATRIX	CODE	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			<u>NORMA EICHLIN</u>	<u>3-13-00</u>	<u>1600</u>	<u>FEDERAL EXPRESS</u>	<u>3-13-00</u>	<u>1600</u>
Received on ICE:	Y / N		<u>FEDERAL EXPRESS</u>					
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

NORMA EICHLIN

SIGNATURE of SAMPLER:

[Signature]

DATE Signed: (MM / DD / YY)

3-10-00

SEE REVERSE SIDE FOR INSTRUCTIONS

Pace Analytical Services, Inc. Form COC01.XLS.12/99

305091

517902

Required Client Information: Section A

Company: McLaren/Hart
 Address: 25 INDEPENDENCE BLVD.
WALTON, NJ 07059
 Phone: 908/647-8111 Fax: 908/647-8162

Required Client Information: Section B

Report To: NORMA EICHUN
 Invoice To: Jesse Agrelet, EPTAC
 P.O.: Virgin Island Chem Site
 Project Name: Virgin Island Chem Site
 Project Number:

Page: 1 of 1

To Be Completed by Pace Analytical and Client: Section C

Quote Reference:
 Project Manager:
 Project #:
 Profile #:
 Requested Analysis:

Section D										Required Client Information:										Valid Matrix Codes		MATRIX CODE	DATE COLLECTED	TIME COLLECTED	# Containers	Preservatives					Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:			<u>J. Agrelet - McLaren/Hart</u>	<u>3-14-00</u>	<u>1600</u>	<u>FEDERAL EXPRESS</u>	<u>3-14-00</u>	<u>1600</u>
Received on ICE:	Y / N		<u>Federal Express</u>	<u>3-15-00</u>			<u>3-15-00</u>	
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

SITE TARGET COMPOUNDS: acetone, methylene chloride, chloroform, toluene, ethylbenzene, & total xylenes

SEE REVERSE SIDE FOR INSTRUCTIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: NORMA L. EICHUN
 SIGNATURE of SAMPLER: [Signature] DATE Signed: (MM / DD / YY) 3-14-00

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

529258

Required Client Information:

Section A

Company: McLaren/Hart
 Address: 28 Independence Blvd
Union NJ 07059
 Phone: 908 647 8111 Fax: 908 647 8162

Required Client Information:

Section B

Report To: Norma Eicklin
 Invoice To: State Dept (ERTC)
 P.O.:
 Project Name: Virgin Island Chemical Site
 Project Number:

Page: 1 of 2

To Be Completed by Pace Analytical and Client - Section C

Quote Reference:
 Project Manager:
 Project #:
 Profile #:
 Requested Analysis:

ITEM #	Section D										Required Client Information:										Valid Matrix Codes		MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh:mm a/p	# Containers	Preservatives						Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:								
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments:

Site Target Compounds: Acetone, Methylene Chloride, Chloroform
 Toluene, Ethylbenzene, Total Xylenes

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:
 SIGNATURE of SAMPLER: Stephanie Chow
 DATE Signed: (MM/DD/YY) 5/1/00

SEE REVERSE SIDE FOR INSTRUCTIONS

Pace Analytical Services, Inc. Form COC01 02/00

305093

517767

Required Client Information:

Section A

Required Client Information:

Section B

Page: 2 of 2

To Be Completed by Pace Analytical and Client

Section C

Company: <i>Milliken Inc.</i>		Report To: <i>Norma Eichlin</i>
Address: <i>25 Independence Blvd</i>		Invoice To: <i>Joe Agre (10760)</i>
<i>Wilmington NJ 07059</i>		P.O.
Phone: <i>708 647 8111</i>	Fax: <i>908 647 8162</i>	Project Name: <i>Vigin Island Chemical Site</i>
		Project Number:

Client Information (Check quote/contract):

Requested Due Date: *TAT:

* Turn around times less than 14 days subject to laboratory and contractual obligations and may result in a Rush Turnaround Surcharge.
Turn Around Time (TAT) in calendar days.

Quote Reference:
Project Manager:
Project #:
Profile #:
Requested Analysis:

ITEM #	Section D										Required Client Information:										Valid Matrix Codes ←		MATRIX CODE	DATE COLLECTED mm / dd / yy	TIME COLLECTED hh:mm a/p	# Containers	Preservatives					Remarks / Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Sample Condition	Sample Notes	Item No.	Relinquished By / Company	Date	Time	Accepted By / Company	Date	Time
Temp in °C:								
Received on ICE:	Y / N							
Sealed Cooler:	Y / N							
Samples Intact:	Y / N							

Additional Comments: *See Target Compounds: Acetone, Methylene Chloride, Chloroform, Toluene, Ethylbenzene, Xylenes*

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	
SIGNATURE of SAMPLER:	
DATE Signed: (MM / DD / YY)	<i>5/4/00</i>

305094

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

PAGE 1 of 2

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Company Name: McLAREN/HART
Address: 25 INDEPENDENCE BLVD. WARREN, NJ 07059
Proj. Manager: NORMA EICHLIN / JOSE AGELOT (ELTEC)
Proj. Location: VIRGIN ISLAND CHEM. SITE
Proj. Number: _____
Phone #: 908/447-8111 Fax #: 908/447-8162

Sampler's signature: [Signature]

Site Target Compounds: acetone, methylene chloride, chloroform, toluene, ethylbenzene, total xylenes.

Collection		Number of	"Summa" #	Sample	Sample	Requested Analyses					Remarks	
Date	Time	Containers	if Can. used	Type	Identification	(Other)						
3-14-00	1627	2		Soil Gas	AST-SVE-1 BASE						Site Target Compounds	
	1624				AST-VMP-1T BASE							
	1620				AST-VMP-1D BASE							
	1512				AST-VMP-2S BASE							
	1546				AST-VMP-2T BASE							
	1550				AST-VMP-2D BASE							
	1555				AST-VMP-3S BASE							
	1600				AST-VMP-3T BASE							
	1605				AST-VMP-3D BASE							
	1609				AST-VMP-4S BASE							
	1613				AST-VMP-4T BASE							
	1616				AST-VMP-4D BASE							

Results to:

NORMA EICHLIN, McLaren/Hart

Invoice to:

JOSE AGELOT, ELTEC

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>[Signature]</u>	<u>McLAREN/HART</u>	<u>3/14/00</u>	<u>1700</u>				
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305095

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

Analysis Options

Company Name: Mc LAIN/HART
Address: 25 INDEPENDENCE BLVD WAGEN, NJ 07059
Proj. Manager: NEMMI FICHLIN/JOSE AGRELLO (5272C)
Proj. Location: VIRGIN ISLAND CHEMICAL SITE
Proj. Number: _____
Phone #: 908/647-8111 Fax #: 908/647-8162

Sampler's signature : James L. Smith

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

Available upon request.

716
SITE TARGET COMPOUNDS: acetone, methylene chloride, chloroform, toluene, ethylbenzene

[illegible]

Results 10 :

NOEMA EICHLIN, McLAREN/HART

Invoice to :

JOSE AGUELOT, ELTEC

Relinquished by : <i>[Signature]</i>	Company : McLAREN/HART	Date : 3-14-00	Time : 1700	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return

YES I OWN COPY - 1 shown to me

DIVY CONV . **o.k.!**

305096

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Company Name: McLAREN/HART
Address: 25 INDEPENDENCE BLVD. WARREN, NJ 07059
Proj. Manager: NORMA EICHLIN / JEFF AGRILOT (ELTEC)
Proj. Location: VIRGIN ISLAND CRUISE SITE
Proj. Number: _____
Phone #: 908/647-8111 Fax #: 908/647-8162

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Sampler's signature: [Signature]

SITE TARGET COMPOUNDS: acetone, methylene chloride, chloroform, toluene, ethylbenzene, total xylenes

Collection Date	Time	Number of Containers	*Summa* # if Can. used	Sample Type	Sample Identification	Requested Analyses	(Other)	Remarks
3-15-00	1251	2		Soil Gas	FPP-SVE-1 BASE			SITE TARGET COMPOUNDS
	1118				FPP-VMP-1E BASE			
	1123				FPP-VMP-1D BASE			
	1104				FPP-VMP-2S BASE			
	1108				FPP-VMP-2I BASE			
	1113				FPP-VMP-2D BASE			
	1049				FPP-VMP-3S BASE			
	1055				FPP-VMP-3I BASE			
	1059				FPP-VMP-3D BASE			
	1036				FPP-VMP-4S BASE			
	1040				FPP-VMP-4I BASE			
	1045				FPP-VMP-4D BASE			

Results to:

NORMA EICHLIN

Invoice to:

JOSE AGRILOT (ELTEC)

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>[Signature]</u>	<u>McLAREN/HART</u>	<u>3-15-00</u>	<u>1600</u>				
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

BLACK COPY: Submitter

305097

Phone: (412) 826-5245 Fax: (412) 826-3433

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

Company Name: McLAREN/HUNT
Address: 25 INDEPENDENCE BLVD. WARREN, NJ 07059
Proj. Manager: NORRIS EICHEN / JOSE AGUILAR (CETEC)
Proj. Location: VIRGIN ISLAND / CHEMICAL SITE
Proj. Number: _____
Phone #: 908/647-8111 Fax #: 908/647-8162

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

Available upon request.

Sampler's signature : Thomas D. Welch

Available upon request.

SITE TARGET COMPOUNDS: acetone, methylene chloride, chloroform, toluene, ethyl benzene, total xylenes

[illegible]

Norma Eichlin, McLean/HART

JOSE AGUILAR, ETEC

Relinquished by : <i>[Signature]</i>	Company : MELIKEN/HART	Date : 3-15-00	Time : 1700	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

PINK COPY : Submitter

305098

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

Page 1 of 2

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

ethylbenzene, total xylenes

Site Target Compounds: acetone, methylene chloride, chloroform, toluene

Company Name: McLaren/Hart
Address: 25 Independence Blvd. Warren, NJ 07059
Proj. Manager: Norma Eichlin/Jose Agiclot (Ertec)
Proj. Location: Virgin Island Chemical Site
Proj. Number: _____
Phone #: 908-647-8111 Fax #: 908-647-8162

Sampler's signature: [Signature]

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses				(Other)	Remarks
Date	Time										
3-21-00	14:55	1		Soil Gas	FPPSVE1-BASE						Site Target Compounds
3-21-00	15:34	1			FPPSVE1-1.5						
3-21-00	18:10	1			FPPSVE1-3.0						
3-21-00	20:14	1			FPPSVE1-5.0						
3-21-00	20:15	1			FPPSVE1-5.5						
3-21-00	15:00	1			ASTSVE1-BASE						
3-21-00	15:52	1			ASTSVE1-1.5						
3-21-00	20:11	1			ASTSVE1-5.0						
3-21-00	20:10	1			ASTSVE1-5.5						
3-21-00	18:07	1			ASTSVE1-3.0						
3-21-00	15:07	1			INLET-BASE						
3-21-00	15:45	1		✓	INLET-1.5					✓	

Results to: Norma Eichlin, McLaren/Hart

Invoice to: Jose Agiclot, Ertec

Relinquished by: <u>[Signature]</u>	Company: <u>McLaren/Hart</u>	Date: <u>3-22-00</u>	Time: <u>17:00</u>	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

305099

Phone: (412) 826-5245 Fax: (412) 826-3433

Page 2 of 2

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

•• Available upon request. *toluene, ethylbenzene, total xylenes.*

Site Target Compounds: acetone, methylene chloride, chloroform,

Company Name: McLaren/Hart
Address: 25 Independence Blvd. Warren, N.J 07059
Proj. Manager: Norma Eichlin / Jose Agre lot (Ertac)
Proj. Location: Virgin Island Chemical Site.
Proj. Number: _____
Phone #: 908-647-5111 Fax #: 908-647-8162

Sampler's signature :

[illegible]

Results to: Norma Eichlin, McLaren/Hart

Invoice to : Jose Agrelot, Erttec

Relinquished by : <i>W.A. Nyl3'</i>	Company : <i>McLaren / Helt</i>	Date : <i>3.21.00</i>	Time : <i>17.00</i>	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

305100

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

Page 1 of 2

CHAIN-OF-CUSTODY RECORD No. 1001

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options

Note: If analysis D, E, or K is selected, scratch (option) NOT wanted.

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request. ethylbenzene, toluene, xylene

Site Target Compounds: acetone, methylene chloride, chloroform, toluene

Company Name: McLaren/Hart
Address: 25 Independence Blvd. Warren NJ 07059
Proj. Manager: Norma Eichlin/Jose Agielot
Proj. Location: Virgin Island Chemical Site
Proj. Number: _____
Phone #: 908-647-8111 Fax #: 908-647-8162

Sampler's signature: [Signature]

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses	(Other)	Remarks
3/23/00	12:10	2		Soil/Gas	FPPSVE1			Site Target Comp
	12:12				FPPSVE1-A			
	12:15				FPPVUMP 1Z			TAT - 24 Hours
	12:11				FPPVUMP 1D			Any questions
	12:16				FPPVUMP 2Z			call Norma
	12:18				FPPVUMP 2S			908-647-8111
	12:20				FPPVUMP 2S-A			
	12:18				FPPVUMP 2D			
	12:26				FPPVUMP 3S			
	12:24				FPPVUMP 3Z			
	12:21				FPPVUMP 3D			
	12:29				FPPVUMP 4S			

Results to:

Norma Eichlin - McLaren/Hart

Invoice to:

Jose Agielot - Ertac

Relinquished by: <u>[Signature]</u>	Company: <u>M/H</u>	Date: <u>3/23/00</u>	Time: <u>17:00</u>	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305101

Phone: (412) 826-5245 Fax: (412) 826-3433

Page 2 of 2

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

Company Name:

Address:

Proj. Manager:

Proj. Location:

Proj. Number:

Phone # :

Fax # :

Sampler's signature :

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

**** Available upon request.**

[illegible]

Results to :

50 mic

Invoice to :

Some

Relinquished by : <i>H. O. N. J. 3</i>	Company : <i>M/H</i>	Date : <i>3/22/00</i>	Time : <i>17:00</i>	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return.

YELLOW COPY : Laboratory

PINK COPY - Submittal

305102

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD No. 1002

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options

Note: If analysis D, E, or K is selected, scratch (option) NOT wanted.

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request. ethylbenzene, total xylene

Site Target Compounds: acetone, methylene chloride, chloroform, toluene

Company Name: McLaren/Hart
Address: 25 Independence Blvd Union NJ 07059
Proj. Manager: Norma Eichlin / Jose Agielot
Proj. Location: Virgin Island Chemical
Proj. Number: _____
Phone #: 908-647-8111 Fax #: 908-647-8162

Sampler's signature: [Signature]

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses (Other)						Remarks
Date	Time											
3/23/00	12:30	2		Soil/Gas	AST SVE 1							Site Target Compounds HOLD until given authorization to analyse by Norma. Any questions call Norma 1-908-647-8111
	12:33				AST 40 VMP 12							
	12:32				AST VMP 10							
	12:36				AST VMP 25							
	12:36				AST VMP 20							
	12:39				AST VMP 35							
	12:43				AST VMP 32							
	12:41				AST VMP 30							
	12:48				AST VMP 42							
↓	12:46	↓		↓	AST VMP 40						↓	

Results to:

Norma Eichlin - McLaren/Hart

Invoice to:

Jose Agielot - Ertac

Relinquished by: <u>[Signature]</u>	Company: <u>M/H</u>	Date: <u>3/23/00</u>	Time: <u>17:00</u>	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305103

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD No 1003

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Company Name: McLaren/Holt
 Address: 25 Independence Blvd Warren NJ 07059
 Proj. Manager: Norma Eicklin/Jose Agrelot (Ertach)
 Proj. Location: Virgin Island Chemical Co Site
 Proj. Number: _____
 Phone #: 908-647-8111 Fax #: 908-647-8162

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request. ethylbenzene, toluene, xylene

Sampler's signature: [Signature]

Site Target Compounds: Aroclors; Methylene chloride; chloroform; toluene

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses	(Other)	Remarks
3/23/00	18:14	2		Soil Gas	FPPSUE1			Site-Target Compounds
3/23/00	18:19				FPPVMP12			
3/23/00	18:42				INTAKE			TAT - 24 Hours
3/23/00	18:45				EXHAUST			If any questions
3/23/00	18:00				ASTSUE1			call Norma
3/23/00	17:49				ASTVMP12			908 647 8111
3/23/00	17:56				ASTVMP21			
3/24/00	6:35				ASTSUE1			
3/24/00	6:48				FPPSUE1			
3/24/00	6:54				INTAKE			
3/24/00	6:57				EXHAUST			
3/24/00	6:55				DOWNGRD			

Results to: Norma Eicklin, McLaren/Holt

Invoice to: Jose Agrelot, Ertach

Relinquished by: <u>[Signature]</u>	Company: <u>M/H</u>	Date: <u>3/24/00</u>	Time: <u>17:00</u>	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305104

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD No. 1004

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D, E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Company Name: H. L. Linn / H&H
 Address: 25 Independence Blvd. Adams NJ 07002
 Proj. Manager: Norma Eubank / Jose A. Cortez (CERTCO)
 Proj. Location: Village of West Chester, Ohio
 Proj. Number: 1004
 Phone #: 900-647-8111 Fax #: 208-647-8162

Sampler's signature: B. J. J. 1/5

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses	(Other)	Remarks
03/24/00	17:30	2		Soil/Gas	AST SVE 1			Site to soil/Gas
03/24/00	17:55	2		Soil/Gas	AST SVE 1-A			Site to soil/Gas
03/24/00	17:41	2		Soil/Gas	FPP SVE 1			Site to soil/Gas
03/24/00	17:56	2		Soil/Gas	Exhaust			Site to soil/Gas
03/24/00	18:00	2		Soil/Gas	Intake			Site to soil/Gas
03/24/00	7:39	2		Soil/Gas	AST SVE 1			Site to soil/Gas
03/24/00	7:46	2		Soil/Gas	FPP SVE 1			Site to soil/Gas
03/24/00	7:55	2		Soil/Gas	Exhaust			Site to soil/Gas
03/24/00	8:06	2		Soil/Gas	Intake			Site to soil/Gas
03/24/00	8:00	2		Soil/Gas	Unlogged			Site to soil/Gas

Results to:

Invoice to:

Relinquished by:

Company:

Date:

Time:

Received by:

Company:

Date:

Time:

Relinquished by:

Company:

Date:

Time:

Received by:

Company:

Date:

Time:

Relinquished by:

Company:

Date:

Time:

Received by:

Company:

Date:

Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Customer

305105

Phone: (412) 826-5245 Fax: (412) 826-3433

Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

Company Name: St. Louis / Phil
Address: 12444 1st St. Newark, NJ 07102
Proj. Manager: James E. H. / Joe A. / C. E. H.
Proj. Location: Vogel Industrial Chemical Site
Proj. Number: _____
Phone #: 908-647-8111 Fax #: 908-647-8162

Sampler's signature : *Kaplan*

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

•• Available upon request.

5. Site Treated Compounds: carbamate, neotin, nixol, dieldrin, cyfluthrin, ethion, malathion

[illegible]

Results to :

Invoice to :

Neocentropus melanogaster

Jose Acosta / ERTCC

Relinquished by :

Company :

Date :

Time :

Received by :

Company :

Date :

Time :

Relinquished by:

Company :

Date :

Time :

Received by :

Company :

Date :

Time :

Relinquished by :

Company :

Date :

Time :

Received by :

Company :

Date :

Time :

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD No 1005

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	I	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Company Name: McLaren/Hort
Address: 25 Independence Blvd Union NJ 07059
Proj. Manager: Norma Eichlin/Jose Agiclot (Ertac)
Proj. Location: Union Island Chemical Site
Proj. Number:
Phone #: 908-647-8111 Fax #: 908-647-8162

Sampler's signature: Norma Eichlin

Side Target Compounds: acetone, methylbenzene, chloroform, toluene

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses					(Other)	Remarks
Date	Time											
3/26	8:17	2		5-16-95	FPPSVE1						Side Target Compounds	
3/26	7:55				BLANK - 3/26							
3/26	8:13				FPPVMP1E							
3/26	8:15				FPPVMP1D							
3/26	8:20				FPPVMP2S							TAT- 24 Hours
3/26	8:22				FPPVMP2I							Any questions call Norma
3/26	7:59				FPPVMP2I-A							908-647-8111
3/26	8:24				FPPVMP2D							
3/26	8:26				FPPVMP3S							
3/26	8:28				FPPVMP3I							
3/26	8:31				FPPVMP3D							
3/26	8:31				FPPVMP4S							

Results to:

Norma Eichlin (McLaren/Hort)

Invoice to:

Jose Agiclot (Ertac)

Relinquished by: <u>Norma Eichlin</u>	Company: <u>M/H</u>	Date: <u>3/28/95</u>	Time: <u>17:00</u>	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305107

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD No 1005

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D, E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Company Name: McLaren/Hart
Address: 25 Independence Blvd. Wallen NJ 07039
Proj. Manager: Norma Eichlin / Jose Agrelot (Ertac)
Proj. Location: Virgin Island Chemical Site
Proj. Number:
Phone #: 908-647-8111 Fax #: 908-647-8162

Sampler's signature: Norma Eichlin

Site Target Compounds: cyclohexane, naphthalene, chlorobenzene, chloroform, toluene

Collection		Number of	"Summa" #	Sample	Sample	Requested Analyses								(Other)	Remarks
Date	Time	Containers	if Can. used	Type	Identification										
3/26	8:36	2		Sw/Can	FPPVMP4I									Site Target Compounds	
3/26	8:38				FPPVMP4D										
3/26	7:57				AST VMP2I										
3/26	7:59				AST VMP2I-A									TAT- 24 Hours	
3/26	7:52				AST SVE1									Any questions	
3/26	7:51				AST SVE1-A									call Norma	
3/26	7:52				AST SVE1									908-647-8111	
3/26	7:58				AST VMP1I										
3/26	8:00				AST VMP1D										
3/26	7:56				AST VMP2S										
3/26	8:03				AST VMP2D										
3/26	8:02				AST VMP3S										

Results to:

Norma Eichlin (McLaren/Hart)

Invoice to:

Jose Agrelot (Ertac)

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Norma Eichlin</u>	<u>M/H</u>	<u>3/29/00</u>	<u>17:00</u>				
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305108

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD No. 1005

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D, E, or K is selected, scratch (option) NOT wanted.

Company Name: McLoren/Hart
 Address: Same
 Proj. Manager: Same
 Proj. Location: Same
 Proj. Number: _____
 Phone #: Same Fax #: _____

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Sampler's signature: [Signature]

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses						(Other)	Remarks
Date	Time												
3/26	8:07	2		SW/Gas	ASTVMP3I							Site Target/Comp	
3/26	8:05	2			ASTVMP3D								
3/26	8:07	2			ASTVMP4S								
3/26	8:09	2			ASTVMP4T								24 Hour TAT
3/26	8:09	2			ASTVMP4D								

Results to: Norma Eichlin

Invoice to: Jose Agrelo

Relinquished by: <u>[Signature]</u>	Company: <u>M/H</u>	Date: <u>3/28</u>	Time: <u>17:00</u>	Received by: _____	Company: _____	Date: _____	Time: _____
Relinquished by: _____	Company: _____	Date: _____	Time: _____	Received by: _____	Company: _____	Date: _____	Time: _____
Relinquished by: _____	Company: _____	Date: _____	Time: _____	Received by: _____	Company: _____	Date: _____	Time: _____

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305109

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

ETHYLBENZENE, XYLENES
SITE TARGET COMPOUNDS: HEPTANE, METHYLENE CHLORIDE, CHLOROFORM, TOLUENE

Company Name: MOOREHEAD/HUNT
Address: 25 WILSON RD WILSON PA 15394
Proj. Manager: NEIL E. EICHUN
Proj. Location: VIRGINIA MARSH CRASSOIA SITE
Proj. Number: _____
Phone #: 412-826-5245 Fax #: 412-826-3433

Sampler's signature: Neil E. Eichun

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses				(Other)	Remarks
10/20/01	10:20	2		Soil-Gas	EXTRA PUMP/SCOUT- PUMP II					Site Target Compounds	
	10:40	1			EXTRA #1 - PUMP II						
	10:45	1			INTOX #1 - PUMP II						
	11:00	1			FFP-VM/2D- #1 PUMP II						
	11:05	1			FFP-SVE1- #1 PUMP II						
	11:25	1			AST-VM/IT- #1 PUMP II						
11/1/01	12:20	2		Soil-Gas	EXTRA PUMP/SCOUT #2 - PUMP II						
	12:40	1			EXTRA #2 - PUMP II						
11/1/01	12:50	1			EXTRA #2 - PUMP II						
11/1/01	12:55	1			AST-VM/2D- #2 PUMP II						
11/1/01	1:02	1			AST-SVE1- #2 PUMP II						

Results to:

Neel E. Eichun, Moorehead/Hunt

Invoice to:

Jose Rioser, ETEC

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Neil E. Eichun</u>	<u>Moorehead/Hunt</u>	<u>11/7/01</u>	<u>1700</u>		<u>FEDEX</u>		
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305110

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Page 1 of 2

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options

Note: If analysis D, E, or K is selected, scratch (option) NOT wanted.

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Company Name: McLaren / Hart
Address: 25 Independence Blvd. Warren, NJ 07059
Proj. Manager: Norma Franklin / Jose Aguelot (EZTEC)
Proj. Location: Virgin Island (Rem Site)
Proj. Number:
Phone #: 908/647-8111 Fax #: 908/647-8162

Sampler's signature: Debra R. Schell

Site Target Compounds: acetone, methylene chloride, chloroform, toluene, ethylbenzene, total xylenes

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses		(Other)	Remarks
Date	Time								
4-27-00	1513	2		Soil Gas	Intake - Ext. #1				Site Target (neds)
	1500				Exhaust - Ext. #1				
	1505				Downwind - Ext. #1				
	1615				AST SVS-4 - Ext. #1				
	1610				FRS SVS-1 - Ext. #1				
	1610				AST VMP-II - Ext. #1				
↓	1900				Exhaust - Ext. #2				
4-28-00	1035				Exhaust - #2				
	1600				Exhaust - #4				
	1600				Totals - #2				
	1605				Downwind - #2				
↓	1610	↓		↓	FRS SVS-1 - #2			↓	

Results to:

NORMA FRANKLIN McLaren / Hart

Invoice to:

JOSE AGUELOT EZTEC

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Debra R. Schell</u>	<u>McLaren / Hart</u>	<u>4-28-00</u>	<u>1730</u>				
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305111

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request. toluene, ethylbenzene, total Xylenes

Site Target Compounds: acetone, methylene chloride, chloroform

Company Name: McLaren/Hart
 Address: 25 Independence Blvd Warren, NJ 07059
 Proj. Manager: Norma Eichlin / Jose Agrelot (ERTEC)
 Proj. Location: Virgin Island Chem Site
 Proj. Number: _____
 Phone #: (908) 647-8111 Fax #: (908) 647-8162

Sampler's signature: Kodie Roel

Collection Date	Time	Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses	(Other)	Remarks
11-29-00	1412	2		Soil Gas	Sample #5			Site Target Compounds
	1655				Exhaust - #3			
	2040				Intake - #3			
	2045				Exhaust - #6			
	2047				Downgrad - #2			
	2047				AST-SVE-2			
4-30-00	0758				Intake - #4			
	0805				Downgrad - #4			
	0800				Exhaust - #7			
	1030				AST-VMP-40-21			
	1040				AST-VMP-41-Post			
	1050				AST-SVE-3-Post			

Results to:

Norma Eichlin / McLaren/Hart

Invoice to:

Jose Agrelot / ERTEC

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Norma Eichlin</u>	<u>McLaren/Hart</u>	<u>5-4-00</u>	<u>1700</u>				
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305113

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Analysis Options

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Company Name: McLaren/Hart
Address: 25 Independence Blvd Warren NJ 07059
Proj. Manager: Norma Eichlin / Jose Agrelot (ERTEC)
Proj. Location: Virgin Island Chem Site
Proj. Number: _____
Phone #: (908) 647-8111 Fax #: (908) 647-8162

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request. toluene, ethyl benzene, total xylenes

Sampler's signature: Katie Roek

Site Target Compounds: acetone, methylene chloride, chloroform

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses					(Other)	Remarks
Date	Time											
4-30-00	1530	2		Soil Gas	FPP-SVG-1-#4						Site Target Compounds	
	1546				Exhaust - #8							
	1715				FPP-SVG-1-Post							
	1703				FPP-VMP-1T-Post							
	1850				FPP-VMP-1D-Post							
	1650				FPP-VMP-2S-Post							
	1652				FPP-VMP-2I-Post							
	1655				FPP-VMP-2D-Post							
	1657				FPP-VMP-3S-Post							
	1658				FPP-VMP-3I-Post							
	1700				FPP-VMP-3D-Post							
✓	1702	✓		✓	FPP-VMP-4S-Post						✓	

Results to:

Norma Eichlin / McLaren/Hart

Invoice to:

Jose Agrelot / ERTEC

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
<u>Michael A. Cobble</u>	<u>McLaren/Hart</u>	<u>5-1-00</u>	<u>1700</u>				
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305114

Phone: (412) 826-5245 Fax: (412) 826-3433

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E,or K is selected, scratch (option) NOT wanted.

Company Name: McLaren/Hart
Address: 25 Independence Blvd. Warren, NJ 07059
Proj. Manager: Norma Eichlin / Jose Agrelot (ERTEC)
Proj. Location: Virgin Island Chem Site
Proj. Number: _____
Phone #: (908) 647-8111 Fax #: (908) 647-8162

* A	C1 -C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 -C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

Available upon request. toluene, ethylbenzene, total xylenes

Sampler's signature : Kate Rock

Site Target Compounds: acetone, methylene chloride, chloroform

[illegible]

Results to :

Norma Eichlin / McLaren / Hart

Invoice to :

Jose Agrelot / ERTEC

Relinquished by : <i>[Signature]</i>	Company : <i>[Signature]</i>	Date : <i>5-1-02</i>	Time : <i>1700</i>	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :
Relinquished by :	Company :	Date :	Time :	Received by :	Company :	Date :	Time :

WHITE COPY : Laboratory to return

YELLOW COPY : Laboratory

1994-1995

305115

MICROSEEPS, Inc.

220 William Pitt Way, Pittsburgh, PA 15238

Phone: (412) 826-5245 Fax: (412) 826-3433

Photo Vac

CHAIN-OF-CUSTODY RECORD

Note: Enter proper letters in Requested Analyses columns below.

Note: If analysis D,E, or K is selected, scratch (option) NOT wanted.

Analysis Options

* A	C1 - C4	G	Chlorinated HC
* B	Hydrogen & Helium	H	BTEX
* C	Permanent Gases (CH ₄ , CO, CO ₂ , N ₂ , O ₂)	J	BTEX & C5 - C10
D	Mercury (Soil) or (Air **)	K	TPH (C5 - C10) or (C4 - C12)
E	TO-14 by GC/MS (Ambient) or (Source **)	L	C11 - C18
F	601 & 602 Compounds	Other	Specify below.

* An additional 22 ml vial of sample is required when requested in combination with another analysis.

** Available upon request.

Company Name: McLaren/Hart
Address: 25 Independence Blvd Warren NJ
Proj. Manager: Norma Eichlin
Proj. Location: Virgin Island Chemical Site
Proj. Number: _____
Phone #: _____ Fax #: _____

Sampler's signature: [Signature]

Collection		Number of Containers	"Summa" # if Can. used	Sample Type	Sample Identification	Requested Analyses (Other)						Remarks
Date	Time											
3:21:00	14:43	1		Soil Gas	ASTSUE1-BASE							Site Target Compounds
	14:51	1			INLET-BASE							
	14:53	1			EXHAUST-BASE							
	16:08	1			ASTSUE1-1.5							
	16:00	1			INLET-1.5							
	16:02	1			EXHAUST-1.5							
	18:20	1			ASTSUE1-3.0							
	18:10	1			INLET-3.0							
	18:13	1			EXHAUST-3.0							
	20:23	1			ASTSUE1-5.0							
	20:11	1			INLET-5.0							
V	20:12	1			EXHAUST-5.0							

Results to: Norma Eichlin - McLaren/Hart

Invoice to: N/A

Relinquished by: <u>N/A</u>	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:

WHITE COPY: Laboratory to return.

YELLOW COPY: Laboratory

PINK COPY: Submitter

305116

3/23/00 Page 1 of 3



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: _____
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			Analysis(es) Requested					Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description						TAT	#	Type	Lab ID
1	3/23/00	1207	VAPOR/AIR	X						1	O	
2		1211										
3		1245										
4		1218										
5		1220										
6		1225										
7		1230										
8		1234										
9		1236										
10		1238										

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other TEDLAR BAG

SEND DOCUMENTATION AND RESULTS TO (Check one):

- ☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305117

3/23/00 Page 2 of 3



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: _____
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			TAT	Container(s)		FOR LABORATORY USE ONLY
	Date	Time	Description		#	Type	
1 <u>AMP-4I</u>	<u>3/23/00</u>	<u>1240</u>	<u>VAPOR / Air</u>		<u>1</u>	<u>O</u>	
2 <u>↓ -4D</u>		<u>1242</u>	<u>↓</u>		<u>↓</u>	<u>↓</u>	
3 <u>↓ -5</u>		<u>1222</u>	<u>↓</u>		<u>↓</u>	<u>↓</u>	
4 <u>AST50E1</u>	<u>3/23</u>	<u>18:07</u>	<u>Vapor / Air</u>				
5 <u>ASTUMP1I</u>		<u>18:12</u>					
6 <u>ASTUMP1D</u>		<u>18:17</u>					
7 <u>ASTUMP2S</u>		<u>18:26</u>					
8 <u>ASTUMP2I</u>		<u>18:23</u>					
9 <u>ASTUMP2D</u>		<u>18:19</u>					
10 <u>ASTUMP3S</u>		<u>18:33</u>					

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other TEFLON BAG

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305118

3/23/00 Page 3 of 3



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: _____ Project #: _____ Sampler: _____
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

TEX

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			TAT	Container(s)		FOR LABORATORY USE ONLY			
	Date	Time	Description		#	Type	Lab ID			
1	ASTUMP3I	3/23	18:31	Vapor/Air						
2	ASTUMP3D		18:29							
3	ASTUMP4S		18:36							
4	ASTUMP4I		18:39							
5	ASTUMP4D		18:42							
6										
7										
8										
9										
10										

Special Instructions/Comments:

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks
Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other _____

SEND DOCUMENTATION AND RESULTS TO (Check one):

- ☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt:

305119



**McClaren
Hart**

MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

3/24/00 Photo vac COC

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: _____
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description		#	Type	Lab ID	
1	AST-SVE-1	3/24	6:42	soil gas	X	1	O	/ / / / /
2	AST-SVE-1	↓	17:47	↓	↓	↓	↓	/ / / / /
3	AST-SVE-1A	↓	17:49	↓	↓	↓	↓	/ / / / /
4								/ / / / /
5								/ / / / /
6								/ / / / /
7								/ / / / /
8								/ / / / /
9								/ / / / /
10								/ / / / /

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other TEDLAR BAG

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____

☐ Client Name: _____

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305120



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: _____
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			Analysis(es) Requested											Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description												TAT	#	Type	Lab ID
1	AST-SVE-1	3/25/00	7:40	Soil GRS	X												0	/
2	AST-SVE-1	↓	1753	↓	X												↓	/
3	AST-SVE-1A	↓	1755	↓	X												↓	/
4																		/
5																		/
6																		/
7																		/
8																		/
9																		/
10																		/

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O= Other TEFLAR BAG

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____

☐ Client Name: _____

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305121

Photo voc 3/26/00

Page 1 of 2

Nº 03205



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Virgin Island Chemical Project #: _____ Sampler: Wenzel/Lute
(Printed Name) (Signature)
Relinquished by: (Signature and Printed Name) [Signature] 3/26/00 12:00 Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

Analysis(es) Requested

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			TAT	Container(s)		FOR LABORATORY USE ONLY
	Date	Time	Description		#	Type	Lab ID
1 ASTSUE1	3/26	8:17	Soil Gas	X			
2 ASTUMP 12	3/26	8:19		X			
3 ASTUMP 10	3/26	8:21		X			
4 ASTUMP 25	3/26	8:24		X			
5 ASTUMP 21	3/26	8:27		X			
6 ASTUMP 20	3/26	8:32		X			
7 ASTUMP 35	3/26	8:36		X			
8 ASTUMP 31	3/26	8:34		X			
9 ASTUMP 30	3/26	8:39		X			
10 ASTUMP 45	3/26	8:45		X			

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other _____

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____

☐ Client Name: _____

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305122

Photovac 3/26/00

Page 2 of 2
Nº 03205



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Virgin Island Chemical Project #: Sampler: Wenzel/Lute
(Signature) (Signature) (Printed Name) (Signature)
Relinquished by: (Signature and Printed Name) [Signature] 3/26/00-12:00 Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

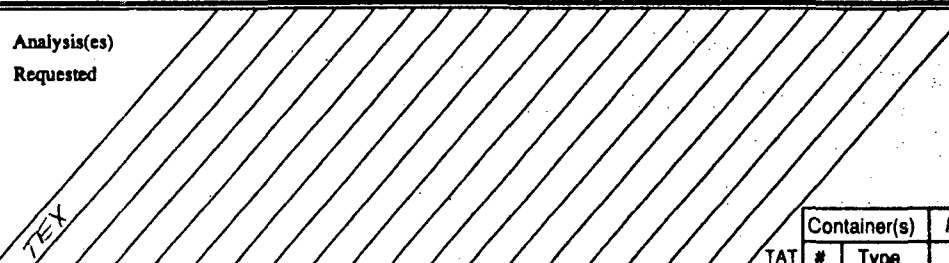
Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**



a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description			Analysis Requested											Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description												TAT	#	Type	Lab ID
1 ASTUMP4I	3/26	8:39	Soil	X														
2 ASTUMP4D	3/26	8:42	↓	X														
3 ASTUMP2IA	3/26	8:30	↓	X														
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Special Instructions/Comments: _____

Sample Archive/Disposal:

☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks
Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other _____

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305123



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

CHAIN OF CUSTODY RECORD

PAGE 1 of 2

Nº 03205

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: VIRGIN ISLAND CHEMICAL Project #: _____ Sampler: NORMA EICHLIN Norma J. Eichlin (Signature)

Relinquished by: (Signature and Printed Name) NORMA EICHLIN Received by: (Signature and Printed Name) _____ Date: 4.16.00 Time: 1800

Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

HAND DELIVER

Shipment ID: _____

Analysis(es)
Requested

TOLUENE, ETHYL BENZENE, XYLENES

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description		#	Type	Lab ID	
1 EXHAUST #3	4.16.00	1415	PHASE II	✓	1	40	0419-040-042-044	
2 AST-VMP-2D	4.16.00	1728	PHASE II	✓	1		0419-020-024	
3 AST-VMP-1E	4.15.00	1125	PHASE II	✓	1	40	0419-052	
4 AST-SVE 2	4.15.00	1140	PHASE II	✓	1	40	0419-014	
5 AST-VMP-35	4.16.00	1724	PHASE II	✓	1		0419-036	
6 AST-VMP-4D	4.16.00	1715	PHASE II	✓	1		0419-018	
7 AST-SVE 2	4.16.00	1747	PHASE II	✓	1		0419-022	
8 AST-VMP-2S	4.16.00	1735	PHASE II	✓	1		0419-018	
9 AST-VMP-4S	4.16.00	1718	PHASE II	✓	1		0419-018	
10 AST-VMP-1E	4.16.00	1736	PHASE II	✓	1		0419-018	

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other _____

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____

☐ Client Name: _____

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305124



MOBILE LABORATORIES PROGRAM

Field Services Division - Warren, NJ

CHAIN OF CUSTODY RECORD

PAGE 2 of 2

Nº 03205

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: VIRGIN ISLAND CHEMICAL Project #: _____ Sampler: Norma Eichlin Norma J. Eichlin
Relinquished by: (Signature and Printed Name) Norma Eichlin Received by: (Signature and Printed Name) _____ Date: 4-16-00 Time: 1800
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

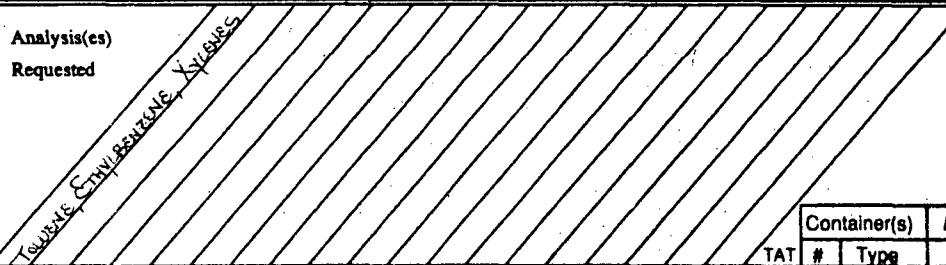
Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

Analysis(es) Requested



a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			Analysis(es) Requested											TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description													#	Type	Lab ID	
1	AST-VMP-2I	4-16-00	1733	PHASE II	✓											1	GAS	0419-038	/
2	AST-VMP-3I	4-16-00	1723	PHASE II	✓											1		0419-028	/
3	AST-VMP-4I	4-16-00	1717	PHASE II	✓											1		0419-016-018-022	/
4	AST-VMP-1D	4-16-00	1739	PHASE II	✓											1		0419-048-050	/
5	AST-SVE1	4-16-00	1742	PHASE II	✓											1		0419-054-056	/
6	AST-VMP-3D	4-16-00	1721	PHASE II	✓											1	✓	0419-030-032-034	/
7																			/
8																			/
9																			/
10																			/

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks
Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other _____

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305125



CHAIN OF CUSTODY RECORD

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Relinquished by: (Signature and Printed Name) <i>[Signature]</i> Norma Eichlin	Received by: (Signature and Printed Name)	Date: 4-15-00	Time: 7:30-1430
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time: (1430)
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

a) Identify specific metals requested under Special Instructions

[illegible]

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks
Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other

Phone: () Fax:

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305126



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah Schnell DR Schnell
(Printed Name) (Signature)
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: 4-27-00 Time: 1645
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

Analysis(es)
Requested

Toluene
Styrene
m,p-Xylene
o-Xylene

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description		Description																	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time																		#	Type	Lab ID	
1 Intake-Ext-#1	4-27-00	0810	Soil GAS - Tedlar Bag	X	X	X	X													1	O	427/001	/
2 Exhaust-Ext-#1		0810																		1		427/002	/
3 Intake-Ext-#2		1244																		1		427/003	/
4 Exhaust-Ext-#2		1244																		1		427/004	/005
5 ST-SVE-1-Ext-#1		1620																		1		427/006	/007
6 ST-SVE-2-Ext-#1		1625																		1		427/008	/009
7 ST-SVE-3-Ext-#1		1630																		1		428/001	/002/003
8 ST-SVE-4-Ext-#1		1635																		1		428/004	/005
9 ST-SVE-5-Ext-#1		1638																		1		428/006	/
10 ST-SVE-6-Ext-#1		1640																		1	O	428/007	/

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other Tedlar Bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: Norma Eicklin

☐ Client Name: McClaren/Hart

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305127



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah Schnell DS

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: <u>4/28/00</u>	Time: <u>1610</u>
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date: _____	Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

Toluene
Ethylbenzene
m,p-Xylene
o-Xylene

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description																			Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description																	TAT	#	Type	Lab ID
1	AST-VMP-1I	4/27/00	16:42	Soil GRS	X	X	X	X														430/001	/
2	AST-VMP-2I		16:50																			430/002	/
3	AST-VMP-3I		16:55																			430/003	/
4	AST-VMP-4I		16:58																			430/005	/
5	AST-VMP-4S	✓	17:00																			430/004	/
6	Inhale-#3		2000																			428/008/009/010	
7	Exhaust-#3	✓	2005																			428/011/012/013	
8	Exhaust-#4	4/28/00	2220																			428/019/020	/
9	Exhaust-#6		1605		✓	✓	✓	✓														428/021/022	/
10	Exhaust-#7	✓	2040		X	X	X	X														428/023/024	/

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,

O = Other Tedlar Bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: Norma Eichlin

☐ Client Name: McLaren/Hart

Company: _____

Address: _____

Phone: () _____

Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305128



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell
(Signature) (Printed Name)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
	<u>Deborah L. Schnell</u> <u>Deborah Schnell</u>	<u>4-28-00</u>	<u>1700</u>

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID:

Analysis(es)
Requested

Toluene
Ethylbenzene
m,p-Xylene
o-Xylene

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description		TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time		#	Type	Lab ID	
1 Intake #84	4/28/00	0930	X	1	D	428/014/015/016	
2 Exhaust #84	4/28/00	0930				428/017/018	
3 EPA-SVE-1		1040				430/006/007/024	
4 AST-SVE-1-2		1045				430/008/009	
5 AST-SVE-2-2		1048				430/010/011	
6 AST-SVE-3-2		1050				430/012/013	
7 AST-SVE-4-2		1053				430/014/015	
8 AST-SVE-5-2		1058				430/016	
9 AST-SVE-6-2		1100	V			430/017	
10 AST-SVE-1-3		1635	X				

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,

O = Other Tedlar bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: Norma Eichlin

☐ Client Name: McLaren/Hart

Company: _____

Address: _____

Phone: () _____

Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305129



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell
(Printed Name) (Signature)
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Deborah L. Schnell Date: 4/28/00 Time: 1700
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____
Relinquished by: (Signature and Printed Name) Received by: (Signature and Printed Name) Date: _____ Time: _____

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

Toluene
Ethylbenzene
m,p-Xylene
o-Xylene

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description																			Container(s)		FOR LABORATORY USE ONLY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	Date	Time	Description																	TAT	#	Type	Lab ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
1	AST-SVE-23	4/28/00	1642	X	X	X	X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other Tedlar Bags

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: Norma Eichlin
☐ Client Name: McLaren/Hart
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305130



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell (Printed Name)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

*Toluene
Ethylbenzene
m,p-Xylene
o-Xylene*

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			Toluene Ethylbenzene m-x-p o-xylene																Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description																	TAT	#	Type	Lab ID
1 Exhaust #8	4-29-00	0908		X	X	X	X											1	0	429/001/002/			
2 Intake #8	4-29-00	0908																		429/005/			
3 Exhaust #9		1212																		429/003/004/0040			
4 AST-SVE-1-4		1226																		430/026/027			
5 AST-SVE-2-4		1229																		430/028/			
6 AST-SVE-3-4		1232																		430/029/030			
7 AST-SVE-4-4		1236																		430/031/034			
8 AST-SVE-5-4		1244																		430/032/			
9 AST-SVE-6-4		1242																		430/033/			
10 AST-SVE-1-5	✓	1949		✓	✓	✓	✓											✓	✓	501/001/			

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks
Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other tedlar bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305131



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

*Toluene
Ethylbenzene
m,p-xylene
o-xylene*

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description		Description																	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time																		TAT	#	Type	Lab ID
1	AST-SVE-2-5	4-29-00	1954	X	X	X	X														1	0	501-002-003-004
2	AST-SVE-3-5		1958																				501-005-006
3	AST-SVE-4-5		2001																				501-007-008
4	AST-SVE-5-5		2005																				501-009
5	AST-SVE-6-5		2007	✓	✓	✓	✓																501-010-011
6	Exhaust #10	✓	2030	X	X	X	X													✓	✓		NO SAMPLE
7	11																						
8																							
9																							
10																							

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other redlar bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305132



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

Analysis(es)
Requested

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description			Analysis(es) Requested <i>Toluene Ethylbenzene m,p-Xylene o-Xylene</i>																Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description																	TAT	#	Type	Lab ID
1 Exhaust #11	4-30-00	0730		X	X	X	X														1	0	501-012
2 Intake #11	4-30-00	0735																					501-013
3 AST-SVE-1-6	4-30-00	0855																					HOLD per NLS
4 AST-SVE-2-6		0900																					HOLD per NLS
5 AST-SVE-3-6		0903																					HOLD per NLS
6 AST-SVE-4-6		0906																					HOLD per NLS
7 AST-SVE-5-6		0910																					HOLD per NLS
8 AST-SVE-6-6		0915																					HOLD per NLS
9 AST-SVE-1-10	4-30-00	1050																					501-015-014
10 AST-SVE-2		1055																					501-016

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks
Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,
O = Other tedlar bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____
☐ Client Name: _____
Company: _____
Address: _____
Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305133



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location: 150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment: _____
Shipment ID: _____

Analysis(es) Requested: Toluene, Ethylbenzene, m,p-Xylene, o-Xylene

a) Identify specific metals requested under Special Instructions

Sample ID Number	Sample Description			TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time	Description		#	Type	Lab ID	
1	AST-SVE-3-Post	4:30	1100	X	X	X	X	501-017-018
2	AST-SVE-4-Post		1105					501-019-020
3	AST-SVE-5-Post		1108					501-021-022
4	AST-SVE-6-Post		1110					501-023
5	AST-VMP-1I-Post		1430					501-024-025
6	AST-VMP-1D-Post		1435					501-026-027
7	AST-VMP-2S-Post		1438					501-028-030
8	AST-VMP-2I-Post		1440					502-001-002
9	AST-VMP-2D-Post		1445	✓	✓	✓	✓	502-003
10	AST-VMP-3S-Post	✓	1450	X	X	X	X	502-004

Special Instructions/Comments: _____

Sample Archive/Disposal: ☐ Laboratory Standard ☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette, O = Other tedlar bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____

☐ Client Name: _____

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305134



MOBILE LABORATORIES PROGRAM
Field Services Division - Warren, NJ

Nº 03205

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY

Laboratory Project No.: _____ Secured: _____
Storage Refrigerator ID: _____ Yes _____
Storage Freezer ID: _____ No _____

Project Name: Island Chemical Project #: _____ Sampler: Deborah L. Schnell
(Printed Name) (Signature)

Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:
Relinquished by: (Signature and Printed Name)	Received by: (Signature and Printed Name)	Date:	Time:

Fixed Based Location:

150 Mt. Bethel Rd.
Warren, NJ 07059
(908) 604-8900
(908) 604-2352

Method of Shipment:

Shipment ID: _____

**Analysis(es)
Requested**

*Toluene
Ethylbenzene
m,p-Xylene
o-Xylene*

a) Identify specific metals
requested under Special
Instructions

Sample ID Number	Sample Description		TAT	Container(s)		FOR LABORATORY USE ONLY	
	Date	Time		#	Type	Lab ID	
1	AST-VMP-3I-RET	4:30P	1453			502-008	/
2	AST-VMP-3D-RET		1455			502-006	/
3	AST-VMP-45-RET		1458			502-007	/
4	AST-VMP-4I-RET		1500			502-008	/
5	AST-VMP-4D-RET		1503			502-010	/
6	AST-VMP (KR)						/
7							/
8							/
9							/
10							/

Special Instructions/Comments: _____

Sample Archive/Disposal:

- ☐ Laboratory Standard
☐ Other _____

TAT (Analytical Turn-Around Times) 1 = 24 hours 2 = 48 hours 3 = 1 week 4 = 2 weeks

Container Types: B=Brass Tube, V=VOA Vial, A=1-Liter Amber, G=Glass Jar, C=Cassette,

O = Other red bag

SEND DOCUMENTATION AND RESULTS TO (Check one):

☐ Project Manager/Office: _____

☐ Client Name: _____

Company: _____

Address: _____

Phone: () _____ Fax: _____

FOR LABORATORY USE ONLY. Sample Condition Upon Receipt: _____

305135

APPENDIX E

Form I's and Data Validation

*Sample Data
Summary Package*

SDG: 201382

Project(s): 201382

Presented to:

*Norma Eichlin
McLaren Hart
25 Independence Boulevard
Warren, NJ 07059*

Presented By:

*Pace Analytical Services, Inc.
1000 Riverbend Blvd.
Suite F
St. Rose, Louisiana 70087*

April 17, 2000

305137

Narrative

The McLaren Hart project consisted of twenty-four (24) water samples which were received by Pace Analytical Services, Inc. on March 31 and April 3, 2000 and logged in as Project 201382. The samples were identified on the attached Sample Cross Reference report.

The samples were analyzed for volatile organics according to CLP methodology.

Sample Management/Login Narrative

Temperature for the samples included in this report ranged from 1.0-4.0°C upon receipt.
No problems were encountered with the login process.

Cindy Olavesen 4/17/00

Cindy Olavesen
Project Manager

Date

Volatiles

Manual integrations for volatile organics are occasionally necessary due to co-elution, interferences and/or inadequacies of the software; these integrations are indicated by an "m" on the quantitation list and the inclusion of an extracted ion current profile indicating the integration of the target.

Samples 2011120, 2011123, 2011124, 2011125, and 2011128 were diluted prior to analysis based upon screening information. Sample 2011128 required further dilution. Methylene chloride and acetone are common solvents; their presence in field samples may be an artifact of sample collection, transport, or analysis. A surrogate excursion was noted for the laboratory control sample, which was included as additional information for batch 02231. The matrix spike recoveries were within QC limits; therefore no further action was taken. No problems were encountered with these analyses. The pH measurement for each of these water samples was 1.

Shelley Antoine 4/17/00

Shelley Antoine
Operation Manager

Date

Quality Assurance

This data package has been reviewed for both completeness and technical specifications. The data were reviewed for overall QA/QC requirements of precision, accuracy, and consistency in data presentation. The data were evaluated for compliance against the CLP Method. These guidelines were used in the preparation of our technical narratives. The release of this data package has therefore been authorized by the Laboratory Manager through Quality Assurance review.

Karen Brown 4/13/00

QA Reviewer

Date

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FPPVMP3D

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011115

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 30-Mar-00

Received: 31-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 06-Apr-00 16:48 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	7.30 J		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.20 J		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	2.10 J		10.0	

6 compound(s) reported

LM 650707

305139

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite 5
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>TB031300</u>	Client: <u>ERTEC</u>	
Project: <u>VIRGIN ISLAND</u>	Site: <u>None</u>	
Lab ID: <u>2010020</u>	Project No.: <u>201156</u>	Sample Qu:
Description: <u>None</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Method: <u>CLP Volatile Organics</u>	Prep Level: <u>Water</u>	Batch: <u>01908</u>
	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>13-Mar-00</u>	Received: <u>16-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Analyzed: <u>16-Mar-00 13:00 KCB</u>
	Prepared:	

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	4.60	JU A11	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Handwritten:
LMA
000707
no qual. at
Trip blank

305140

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>FB031400</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201156</u>	Sample Qu:
Lab ID: <u>2010026</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>01908</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
Prep Factor: <u>1</u>	Collected: <u>14-Mar-00</u>	Received: <u>16-Mar-00</u>
Leached: <u>n/a</u>	Prepared:	Analyzed: <u>23-Mar-00 16:37 DET</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	8.50 J	All	10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	6.00 J	All	10.0	
108-88-3	Toluene	1	3.80 J		10.0	
1330-20-7	Xylene (total)	1	1.30 J		10.0	

6 compound(s) reported

305141

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>TB030700</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201156</u>	Sample Qu:
Lab ID: <u>209419</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>01745</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>07-Mar-00</u>	Received: <u>08-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Prepared:
		Analyzed: <u>10-Mar-00 19:41 KCB</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.90 J	A11	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305142



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW-15 Site: None
Project: VIRGIN ISLAND Project No.: 201156 Sample Qu:
Lab ID: 209420 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 01745
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 07-Mar-00 Received: 08-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 10-Mar-00 20:11 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	9.40	J	10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.00	J-A+1 100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305143



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-15

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209856

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/7/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	186.		mg/l	50.0		29-Mar-00 12:03 LAK	

1 parameter(s) reported

305144

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW-13

Site: None

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209421

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01745

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 07-Mar-00

Received: 08-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 10-Mar-00 20:42 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.80	1.80	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

1.80
1.80

305145



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-13 Client: ERTEC
Project: VIRGIN ISLAND Site: None
Lab ID: 209857 Project No.: 201156
Description: None Matrix: Water %Moisture: n/a
Collected: 3/7/00 Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	182.		mg/l	50.0		29-Mar-00 12:03 LAK	

1 parameter(s) reported

305146

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-11</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201156</u>	Sample Qu: <u></u>
Lab ID: <u>209590</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>01745</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
Prep Factor: <u>1</u>	Collected: <u>08-Mar-00</u>	Received: <u>10-Mar-00</u>
Leached: <u>n/a</u>	Prepared: <u></u>	Analyzed: <u>10-Mar-00 21:12 KCB</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	40.4		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.80	ALL 100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305147



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-11

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209858

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/8/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	243.		mg/l	50.0		29-Mar-00 12:03 LAK	

1 parameter(s) reported

305148



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: TB030800 Site: None
Project: VIRGIN ISLAND Project No.: 201156 Sample Qu:
Lab ID: 209591 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 01745
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 08-Mar-00 Received: 10-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 11-Mar-00 14:26 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.50	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305149



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW-3

Site: None

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209592

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01745

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 08-Mar-00

Received: 10-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 12-Mar-00 12:18 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.10 <u>1.10</u>	<u>100</u>	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305150



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-3

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209859

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/8/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	194.		mg/l	50.0		29-Mar-00 12:03	LAK

1 parameter(s) reported

305151



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW-7 Site: None
Project: VIRGIN ISLAND Project No.: 201156 Sample Qu:
Lab ID: 209593 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 01745
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 08-Mar-00 Received: 10-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 11-Mar-00 15:27 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	1.50 J		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.40 J		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

100
100

305152



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-7

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209860

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/8/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Reporting		Prep.	Analysis	Reg. Limit
						Units	Limit			
Sulfate	EPA 375.2	02155	5	195.		mg/l	50.0		29-Mar-00 12:03	LAK

1 parameter(s) reported

305153



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW-10 Site: None
Project: VIRGIN ISLAND Project No.: 201156 Sample Qu:
Lab ID: 209594 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 01745
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 07-Mar-00 Received: 10-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 11-Mar-00 15:58 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.20 J-DAH	100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

1.20 J-DAH 100

305154



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-10

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209861

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/7/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	286.		mg/l	50.0		29-Mar-00 12:03	LAK

1 parameter(s) reported

305155

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW-2

Site: None

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209595

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01745

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 08-Mar-00

Received: 10-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 12-Mar-00 12:49 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	37.0		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.20 J-5AH-10.0		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Handwritten signature/initials

305156



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-2

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209862

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/8/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	151.		mg/l	50.0		29-Mar-00 12:03	LAK

1 parameter(s) reported

305157

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70067

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-8</u>	Client: <u>ERTEC</u>	
Project: <u>VIRGIN ISLAND</u>	Site: <u>None</u>	
Lab ID: <u>209596</u>	Project No.: <u>201156</u>	Sample Qu:
Description: <u>None</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Method: <u>CLP Volatile Organics</u>	Prep Level: <u>Water</u>	Batch: <u>01745</u>
	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>08-Mar-00</u>	Received: <u>10-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Analyzed: <u>11-Mar-00 17:28 KCB</u>
	Prepared:	

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	ND		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

11/11/00
002-007

305158



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-8

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209863

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/8/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	1	74.6		mg/l	10.0		29-Mar-00 12:03	LAK

1 parameter(s) reported

305159

ND denotes Not Detected at or above the adjusted reporting limit.
DF denotes Dilution Factor of final sample. PF denotes sample Prep Factor which accounts for a non-routine sample size.
Reporting Limit is corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.

3/30/00 13:23:32



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: MW-80
Project: VIRGIN ISLAND
Lab ID: 209597
Description: None
Method: CLP Volatile Organics

Client: ERTEC

Site: None

Project No.: 201156

Matrix: Water

Prep Level: Water

Units: ug/l

Collected: 08-Mar-00

Prepared:

Sample Qu:

% Moisture: n/a

Batch: 01745

Target List: SR615MVWAT

Received: 10-Mar-00

Analyzed: 11-Mar-00 17:58 KCB

Prep Factor: 1

Leached: n/a

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	ND		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305160

ND denotes Not Detected at or above the adjusted reporting limit.
DF denotes Dilution Factor of extract. The Prep Factor accounts for a non-routine sample size.
Reporting Limit is corrected for sample size, dilution and moisture content if applicable.
Qu lists qualifiers. Specific qualifiers are defined at the end of the report.
For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.

3-29-00 16:41:02



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Site: None

Client ID: EB030800

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209598

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01745

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 08-Mar-00

Received: 10-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 11-Mar-00 18:28 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.70	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305161



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW-6

Site: None

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209599

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01745

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 09-Mar-00

Received: 10-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 12-Mar-00 13:19 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	400	ND	D6	4000	
67-66-3	Chloroform	400	ND	D6	4000	
100-41-4	Ethylbenzene	400	12400	D6	4000	
75-09-2	Methylene chloride (Dichloromethane)	400	ND	D6	4000	
108-88-3	Toluene	400	ND	D6	4000	
1330-20-7	Xylene (total)	400	60700	D6	4000	

6 compound(s) reported



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-6

Client: ERTEC

Project: VIRGEN ISLAND

Site: None

Lab ID: 209864

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/9/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	1	47.4		mg/l	10.0		29-Mar-00 12:03	LAK

1 parameter(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW-1 Site: None
Project: VIRGIN ISLAND Project No.: 201156 Sample Qu:
Lab ID: 209600 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 01745
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 09-Mar-00 Received: 10-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 12-Mar-00 14:20 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	500	ND	D6	5000	
67-66-3	Chloroform	500	ND	D6	5000	
100-41-4	Ethylbenzene	500	19600	D6	5000	
75-09-2	Methylene chloride (Dichloromethane)	500	500 10 ¹⁰ AT ⁵⁰⁰⁰		5000	
108-88-3	Toluene	500	ND	D6	5000	
1330-20-7	Xylene (total)	500	89000	D6	5000	

6 compound(s) reported

LAB 000000



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-1

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209865

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/9/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	1	ND		mg/l	10.0		29-Mar-00 12:03 LAK	

1 parameter(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FB030900

Site: None

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209846

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01908

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 09-Mar-00

Received: 14-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 14-Mar-00 16:42 DET

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.10 J	All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: TB031000 Site: None
Project: VIRGIN ISLAND Project No.: 201156 Sample Qu:
Lab ID: 209848 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 01908
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 10-Mar-00 Received: 14-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 14-Mar-00 17:14 DET

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.10 J	All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FB031000

Site: None

Project: VIRGIN ISLAND

Project No.: 201156

Sample Qu:

Lab ID: 209849

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 01908

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 10-Mar-00

Received: 14-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 14-Mar-00 17:45 DET

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.40	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-12</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201156</u>	Sample Qu:
Lab ID: <u>209850</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>01908</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>10-Mar-00</u>	Received: <u>14-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Prepared:
		Analyzed: <u>14-Mar-00 16:11 DET</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.00 - <u>LOW</u> <u>ALL</u> <u>LOW</u>		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Handwritten: CASH 0000007



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-12

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209866

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/10/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	194.		mg/l	50.0		29-Mar-00 12:03 LAK	

1 parameter(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-14</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201156</u>	Sample Qu:
Lab ID: <u>209851</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>01908</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>10-Mar-00</u>	Received: <u>14-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Prepared:
		Analyzed: <u>14-Mar-00 18:16 DET</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.90-1.41+ 100		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Handwritten: 1.90-1.41+ 100

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-14

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 209867

Project No.: 201156

Description: None

Matrix: Water

%Moisture: n/a

Collected: 3/10/00

Received: 3/14/00

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02155	5	207.		mg/l	50.0		29-Mar-00 12:03 LAK	

1 parameter(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
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Saint Rose, LA 70087

Phone: 504.469.0333
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Single Sample - Protocol

Client: ERTEC
Client ID: ASTVMP4D Site: None
Project: VIRGIN ISLAND Project No.: 201382 Sample Qu:
Lab ID: 2011117 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02231
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 30-Mar-00 Received: 31-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 06-Apr-00 18:16 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	2.40 J		10.0	
100-41-4	Ethylbenzene	1	1.30 J		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.40 J		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	5.80 J		10.0	

6 compound(s) reported

LAH
000000

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>ASTVMPID</u>	Client: <u>ERTEC</u>	
Project: <u>VIRGEN ISLAND</u>	Site: <u>None</u>	
Lab ID: <u>2011123</u>	Project No.: <u>201382</u>	Sample Qu:
Description: <u>None</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Method: <u>CLP Volatile Organics</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>30-Mar-00</u>	Received: <u>31-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Analyzed: <u>08-Apr-00 15:27 ACA</u>
	Prepared:	

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	11100	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	ND	D6	1000	
108-88-3	Toluene	100	ND	D6	1000	
1330-20-7	Xylene (total)	100	34100	D6	1000	

6 compound(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: ASTVMP2D Site: None
Project: VIRGIN ISLAND Project No.: 201382 Sample Qu:
Lab ID: 2011124 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02231
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 30-Mar-00 Received: 31-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 08-Apr-00 15:56 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	50	ND	D6	500.	
67-66-3	Chloroform	50	ND	D6	500.	
100-41-4	Ethylbenzene	50	3170	D6	500.	
75-09-2	Methylene chloride (Dichloromethane)	50	91.0 <u>10-ATT</u>	<u>5000</u>	500.	
108-88-3	Toluene	50	ND	D6	500.	
1330-20-7	Xylene (total)	50	12600	D6	500.	

6 compound(s) reported

Handwritten:
WAT
000707

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>ASTVMP3D</u>	Client: <u>ERTEC</u>	
Project: <u>VIRGIN ISLAND</u>	Site: <u>None</u>	
Lab ID: <u>2011125</u>	Project No.: <u>201382</u>	Sample Qu:
Description: <u>None</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Method: <u>CLP Volatile Organics</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>30-Mar-00</u>	Received: <u>31-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Analyzed: <u>08-Apr-00 16:55 ACA</u>
	Prepared:	

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	6850	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	140	D6	1000	
108-88-3	Toluene	100	ND	D6	1000	
1330-20-7	Xylene (total)	100	35900	D6	1000	

6 compound(s) reported

Handwritten: 10000

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087
Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>FPPVMP1D</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201382</u>	Sample Qu:
Lab ID: <u>2011237</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
Prep Factor: <u>1</u>	Collected: <u>30-Mar-00</u>	Received: <u>03-Apr-00</u>
Leached: <u>n/a</u>	Prepared:	Analyzed: <u>10-Apr-00 13:03 ACA</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	25.6		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.20 10 A11 10.0		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	2.10 J		10.0	

6 compound(s) reported

Handwritten signature and date: 000000

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Site: None
Project No.: 201382 Sample Qu:
Matrix: Water % Moisture: n/a
Prep Level: Water Batch: 02231
Units: ug/l Target List: SR615MVWAT
Collected: 30-Mar-00 Received: 03-Apr-00
Prepared: Analyzed: 10-Apr-00 13:33 ACA

Client ID: FPPVMP5D
Project: VIRGIN ISLAND
Lab ID: 2011238
Description: None
Method: CLP Volatile Organics

Prep Factor: 1 Leached: n/a

*FPPVMP2D
DUP*

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	25.5		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.70	J-J-AH-100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	3.10	J	10.0	

6 compound(s) reported

*WAT
020707*

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FPPVMP4D

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011241

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 31-Mar-00

Received: 03-Apr-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 10-Apr-00 14:02 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	19.8		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2:90 J U ATT 100		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

*WAT
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Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: FB032900 Site: None
Project: VIRGIN ISLAND Project No.: 201382 Sample Qu:
Lab ID: 2011119 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02231
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 29-Mar-00 Received: 31-Mar-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 06-Apr-00 18:45 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.40	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70037

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW-1/3-29

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011120

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 29-Mar-00

Received: 31-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 08-Apr-00 12:59 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	250	ND	D6	2500	
67-66-3	Chloroform	250	ND	D6	2500	
100-41-4	Ethylbenzene	250	21600	D6	2500	
75-09-2	Methylene chloride (Dichloromethane)	250	355 J D6	D6	2500	
108-88-3	Toluene	250	463 J	D6	2500	
1330-20-7	Xylene (total)	250	108000	D6	2500	

6 compound(s) reported

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Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-10/3-30</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201382</u>	Sample Qu:
Lab ID: <u>2011121</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
Prep Factor: <u>1</u>	Collected: <u>30-Mar-00</u>	Received: <u>31-Mar-00</u>
Leached: <u>n/a</u>	Prepared:	Analyzed: <u>08-Apr-00 19:23 ACA</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.60 100 <u>100</u>		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	2.30 100 <u>100</u>		10.0	

6 compound(s) reported

LA-A
000707

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW-8/3-29
Site: None
Project: VIRGIN ISLAND
Project No.: 201382
Lab ID: 2011122
Matrix: Water
Description: None
Prep Level: Water
Method: CLP Volatile Organics
Units: ug/l
Collected: 29-Mar-00
Prepared:
Batch: 02231
% Moisture: n/a
Target List: SR615MVWAT
Received: 31-Mar-00
Analyzed: 08-Apr-00 20:22 ACA
Prep Factor: 1
Leached: n/a

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	2.70 J		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.60 J	100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	11.6		10.0	

6 compound(s) reported

UAA
000707

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>FB033000B</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201382</u>	Sample Qu:
Lab ID: <u>2011126</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>30-Mar-00</u>	Received: <u>31-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Prepared:
		Analyzed: <u>08-Apr-00 17:54 ACA</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	18.7	J All	10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.00	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	1.30	J	10.0	

6 compound(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: TRIP BLANK

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011127

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 30-Mar-00

Received: 31-Mar-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 06-Apr-00 15:49 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.40	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-6/3-29</u>	Client: <u>ERTEC</u>	
Project: <u>VIRGIN ISLAND</u>	Site: <u>None</u>	
Lab ID: <u>2011128</u>	Project No.: <u>201382</u>	Sample Qu:
Description: <u>None</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Method: <u>CLP Volatile Organics</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>29-Mar-00</u>	Received: <u>31-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Analyzed: <u>08-Apr-00 18:24 ACA</u>
	Prepared:	

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	13800	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	ND	D6	1000	
108-88-3	Toluene	100	146. J	D6	1000	
1330-20-7	Xylene (total)	100	76600	D6	1000	

6 compound(s) reported

*Report from D
dilution for
Ethylbenzene*

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>MW-6/3-29</u>	Client: <u>ERTEC</u>	
Project: <u>VIRGIN ISLAND</u>	Site: <u>None</u>	
Lab ID: <u>2011128DL</u>	Project No.: <u>201382</u>	Sample Qu:
Description: <u>None</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Method: <u>CLP Volatile Organics</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>29-Mar-00</u>	Received: <u>31-Mar-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Analyzed: <u>10-Apr-00 11:35 ACA</u>
	Prepared:	

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	250	ND	DI	2500	
67-66-3	Chloroform	250	ND	DI	2500	
100-41-4	Ethylbenzene	250	12400	DI	2500	
75-09-2	Methylene chloride (Dichloromethane)	250	938	DI	2500	
108-88-3	Toluene	250	ND	DI	2500	
1330-20-7	Xylene (total)	250	50600	DI	2500	

6 compound(s) reported

*Use for
event analysis
Wet Coenen*

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087
Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client ID: <u>TB033100</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201382</u>	Sample Qu:
Lab ID: <u>2011235</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
Prep Factor: <u>1</u>	Collected: <u>31-Mar-00</u>	Received: <u>03-Apr-00</u>
Leached: <u>n/a</u>	Prepared:	Analyzed: <u>10-Apr-00 12:04 ACA</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	4.30	J A11	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Report of Laboratory Analysis

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Single Sample - Protocol

Client ID: <u>FB033000A</u>	Client: <u>ERTEC</u>	Site: <u>None</u>
Project: <u>VIRGIN ISLAND</u>	Project No.: <u>201382</u>	Sample Qu:
Lab ID: <u>2011236</u>	Matrix: <u>Water</u>	% Moisture: <u>n/a</u>
Description: <u>None</u>	Prep Level: <u>Water</u>	Batch: <u>02231</u>
Method: <u>CLP Volatile Organics</u>	Units: <u>ug/l</u>	Target List: <u>SR615MVWAT</u>
	Collected: <u>30-Mar-00</u>	Received: <u>03-Apr-00</u>
Prep Factor: <u>1</u>	Leached: <u>n/a</u>	Prepared:
		Analyzed: <u>10-Apr-00 12:34 ACA</u>

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	16.3 J	A11	10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.60 J	A11	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Report of Laboratory Analysis

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Phone: 504.469.0333
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Single Sample - Protocol

Client: ERTEC

Client ID: MW2/331A

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011239

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 31-Mar-00

Received: 03-Apr-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 10-Apr-00 15:31 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	40.7		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.20 10.0 <i>100</i>		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	1.40 <i>J</i>		10.0	

6 compound(s) reported

Report of Laboratory Analysis

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1000 Riverbend Blvd, Suite F
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Phone: 504.469.0333
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Single Sample - Protocol

Client: ERTEC

Client ID: MW2/331

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011240

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 31-Mar-00

Received: 03-Apr-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 10-Apr-00 16:00 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	38.6		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.40 100 ATT 100		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Handwritten: LAA 000000

Report of Laboratory Analysis

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Phone: 504.469.0333
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Single Sample - Protocol

Client: ERTEC
Client ID: MW7/331 Site: None
Project: VIRGIN ISLAND Project No.: 201382 Sample Qu:
Lab ID: 2011242 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02231
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 31-Mar-00 Received: 03-Apr-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 10-Apr-00 16:30 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	1.90 J		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.80 J	100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Handwritten: 020709

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
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Single Sample - Protocol

Client: ERTEC

Client ID: FB033100B

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011243

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 31-Mar-00

Received: 03-Apr-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 10-Apr-00 14:32 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	19.8	A11	10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.80	A11	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported



Report of Laboratory Analysis

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Phone: 504.469.0333
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Single Sample - Protocol

Client: ERTEC
Site: None
Client ID: MW3
Project: VIRGIN ISLAND
Lab ID: 2011244
Description: None
Method: CLP Volatile Organics
Project No.: 201382
Matrix: Water
Prep Level: Water
Units: ug/l
Collected: 31-Mar-00
Prepared:
Sample Qu:
% Moisture: n/a
Batch: 02231
Target List: SR615MVWAT
Received: 03-Apr-00
Analyzed: 10-Apr-00 16:59 ACA
Prep Factor: 1
Leached: n/a

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.60	100	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

LAH
020707

305193A

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FB033100A

Site: None

Project: VIRGIN ISLAND

Project No.: 201382

Sample Qu:

Lab ID: 2011245

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02231

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 31-Mar-00

Received: 03-Apr-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 10-Apr-00 15:01 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	20.0	J All	10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.00	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

Report of Batch Surrogate Recovery

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Report: 201382

Method: Water GC/MS Volatile Organics

Batch: 02231

Lab ID		Sur 1 %Rec	Sur 2 %Rec	Sur 3 %Rec	Sur 4 %Rec	Sur 5 %Rec	Sur 6 %Rec	Sur 7 %Rec	Sur 8 %Rec
02231B1K05	BLANK	105	104	96					
02231B1K08	BLANK	104	97	90					
02231B1K10	BLANK	109	93	98					
02231MS	MS	99	89	106					
02231MSD	MSD	103	91	101					
02231SA10	LCS	97	85	97					
2011115		106	102	96					
2011117		110	108	99					
2011119		107	104	92					
2011120		100	106	93					
2011121		96	95	90					
2011122		104	104	90					
2011123		97	105	94					
2011124		103	101	92					
2011125		104	111	95					
2011126		101	100	94					
2011127		106	97	99					
2011128DL	DUP	104	106	103					
2011235		106	98	104					
2011236		109	100	102					
2011237		108	97	102					
2011238		110	97	100					
2011239		110	94	100					
2011240		104	91	98					
2011241		109	101	95					
2011242		107	94	101					
2011243		105	95	95					
2011244		104	93	99					
2011245		107	94	95					
QC limits:		88-110	86-115	76-114					

Sur 1: Toluene-d8 (S)

Sur 2: 4-Bromofluorobenzene (S)

Sur 3: 1,2-Dichloroethane-d4 (S)

Report of Quality Control

Organic Protocol - Single Batch

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Project No.: 201382

Method: Water GC/MS Volatile Organics

Batch: 02231

Units: ug/l

Parameter Name	LCS	LCS	LCSD	LCS	MS	MS	MSD (1)	MS	DUP	QC Limits		Max	Qu
	Spike	%Rec	%Rec	RPD	Spike	%Rec	%Rec	RPD	RPD	LCS	MS/MSD	RPD	
1,1-Dichloroethene (Dichloroethylene)	50.00	131			50.00	127	127	0	0	61 - 145	61 - 145	14	
Trichloroethene (Trichloroethylene)	50.00	116			50.00	117	122	4	4	71 - 120	71 - 120	14	Q1
Benzene	50.00	110			50.00	116	119	3	3	76 - 127	76 - 127	11	
Toluene	50.00	121			50.00	121	129	6	6	76 - 125	76 - 125	13	Q1
Chlorobenzene	50.00	112			50.00	117	121	3	3	75 - 130	75 - 130	13	

5 compound(s) reported

* denotes recovery outside of QC limits.

MS spike concentrations are not corrected for moisture content of the spiked sample.

(1) MS RPD is calculated via SW-846 rules: on the basis of spiked sample concentrations rather than spike recoveries.

305196

4/14/00 14:10:36

INSTRUMENT RUNLOG

1.428

MS

VOA

040600

Instrument: K

MS scan range: 35-300amu

Column: RTX 502.2 60m

EM Voltage:

Injector: 250C

Trap: Tenax/Silica gel

Initial oven Temp: 40C/6min

Purge: 30ml/min 11min

Temp ramp: 8.25C/min

Desorb: 180C 4min

Final oven temp: 155,250C

Bake: 180C 7min

Carrier: He 30ml/min

Tune Standard: BFB-347-11-BFB10

Calibration Standard: 387-25-CLP50

239183

File	Lab ID	Batch	QF	DF	Date	Time	Comments
1 0406K02	BFB		1	1	06-Apr-00	9:57	OK
2 0406K03	VST-D010		1	1	06-Apr-00	10:27	
3 0406K04	VST-D020		1	1	06-Apr-00	10:56	
4 0406K05	VST-D050		1	1	06-Apr-00	11:25	
5 0406K07	VST-D100		1	1	06-Apr-00	12:24	
6 0406K09	VST-D200		1	1	06-Apr-00	13:23	
7 0406K11	02231BK05	02231	1	1	06-Apr-00	14:43	
8 0406K12	02231BK05 ✓	02231	1	1	06-Apr-00	15:13	
9 0406K13	2011127 ✓	02331	1	1	06-Apr-00	15:49	
10 0406K14	02331SK06	02231	1	1	06-Apr-00	16:18	RR - Spiked unknown
11 0406K15	2011115 ✓	02231	1	1	06-Apr-00	16:48	
12 0406K16	02231MS	02231	1	1	06-Apr-00	17:17	RR - Spiked unknown
13 0406K17	02231MSD	02231	1	1	06-Apr-00	17:46	
14 0406K18	2011117 ✓	02231	1	1	06-Apr-00	18:16	
15 0406K19	2011119	02231	1	1	06-Apr-00	18:45	
16 0406K20	FLU-SH		1	1	06-Apr-00	19:15	
17 0406K21	2011120	02231	1	1	06-Apr-00	19:44	RR 1:5000
18 0406K22	2011121	02231	1	1	06-Apr-00	20:13	CO
19 0406K23	2011122	02231	1	1	06-Apr-00	20:43	CO
20 0406K24	2011123	02231	1	1	06-Apr-00	21:12	RR 1:5000
21 0406K25	FLU-SH		1	1	06-Apr-00	21:42	CO
22 0406K26	2011124	02231	1	1	06-Apr-00	22:11	RR 1:5000 check
23 0406K27	2011125	02231	1	1	06-Apr-00	22:40	RR 1:5000
24 0406K28	2011126	02231	1	1	06-Apr-00	23:10	CO
25 0406K29	2011128	02231	1	1	06-Apr-00	23:39	CO

2231

INSTRUMENT RUNLOG

1.428
1.553

MS VOA 040800

Instrument: K	MS scan range: 35-300amu
Column: RTX 502.2 60m	EM Voltage:
Injector: 250C	Trap: Tenax/Silica gel
Initial oven Temp: 40C/6min	Purge: 30ml/min 11min
Temp ramp: 8.25C/min	Desorb: 180C 4min
Final oven temp: 155.250C	Bake: 180C 7min
Carrier: He 30ml/min	

Tune Standard: BFB/387-16-BFB¹⁰

Calibration Standard: 387-25-CLP50

171244

1.5586	File	Lab ID	Batch	QF	DF	Date	Time	Comments
1	0408K01	BFB		1	1	08-Apr-00	10:52	OK
2	0408K02	VST-D050	02231	1	1	08-Apr-00	11:24	
3	0408K03	02231BK08	02231	1	1	08-Apr-00	12:00	
4	0408K04	✓02231BK08	02231	1 <i>dc</i>	1	08-Apr-00	12:29	
5	0408K05	✓2011120 <i>X=94</i>	02231	250 ✓	250	08-Apr-00	12:59	<i>X=430.6</i>
6	0408K06	✓FLU-SH		1	1	08-Apr-00	13:28	
7	0408K07	✓2011121 <i>-F10</i>	02231	100 <i>✓</i>	100	08-Apr-00	13:58	<i>RR 1:1, below</i>
8	0408K08	✓2011122 <i>-F10</i>	02231	250 <i>✓</i>	250	08-Apr-00	14:27	<i>RR 1:1, below</i>
9	0408K09	FLU-SH		1	1	08-Apr-00	14:57	
10	0408K10	✓2011123 ✓	02231	100 <i>✓</i>	100	08-Apr-00	15:27	<i>OK X=341.3</i>
11	0408K11	2011124 ✓	02231	50 <i>✓</i>	50	08-Apr-00	15:56	<i>OK X=251.8</i>
12	0408K12	FLU-SH		1	1	08-Apr-00	16:26	
13	0408K13	2011125 ✓	02231	100 <i>✓</i>	100	08-Apr-00	16:55	<i>OK X=359.3</i>
14	0408K14	FLU-SH ✓		1	1	08-Apr-00	17:25	
15	0408K15	2011126 ✓	02231	1 <i>✓</i>	1	08-Apr-00	17:54	<i>OK X=1.35</i>
16	0408K16	2011128 <i>X=E</i>	02231	100 <i>✓</i>	100	08-Apr-00	18:24	<i>RR 1:250 X=765.5</i>
17	0408K17	FLU-SH <i>add up</i>		1	1	08-Apr-00	18:53	<i>NCO</i>
18	0408K18	2011121 ✓	02231	1 <i>✓</i>	1	08-Apr-00	19:23	<i>OK X=2.3</i>
19	0408K19	FLU-SH		1	1	08-Apr-00	19:52	
20	0408K20	2011122 ✓	02231	1 <i>✓</i>	1	08-Apr-00	20:22	<i>OK X=11.6</i>

✓

223 *1*

305198

INSTRUMENT RUNLOG

428

MS VOA 041000

Instrument: K	MS scan range: 35-300amu
Column: RTX 502.2 60m	EM Voltage:
Injector: 250C	Trap: Tenax/Silica gel
Initial oven Temp: 40C/6mn	Purge: 30ml/min 11min
Temp ramp: 2.25C/min	Desorb: 180C 4min
Final oven temp: 155,250C	Bake: 180C 7min
Carrier: He 30ml/min	
Tune Standard: BFB/387-16-BFB10	Calibration Standard: 387-12-CLPSO

41011
41001

3907	File	Lab ID	Batch	QF	DF	Date	Time	Comments
1	0410K01	✓ BFB		1	1	10-Apr-00	9:33	CK
2	0410K02	VST-D050	02231	1	1	10-Apr-00	10:02	
3	0410K03	02231BK10	02231	1	1	10-Apr-00	10:36	
4	0410K04	✓ 02231BK10	02231	1	1	10-Apr-00	11:05	
5	0410K05	✓ 2011128 DL	02231	250	250	10-Apr-00	11:35	X=242.3
6	0410K06	✓ 2011235	02231	1	1	10-Apr-00	12:04	
7	0410K07	✓ 2011236	02231	1	1	10-Apr-00	12:34	
8	0410K08	✓ 2011237	02231	1	1	10-Apr-00	13:03	X=2.06
9	0410K09	✓ 2011238	02231	1	1	10-Apr-00	13:33	X=3.11
10	0410K10	✓ 2011241	02231	1	1	10-Apr-00	14:02	
11	0410K11	✓ 2011243	02231	1	1	10-Apr-00	14:32	
12	0410K12	✓ 2011245	02231	1	1	10-Apr-00	15:01	
13	0410K13	✓ 2011239	02231	1	1	10-Apr-00	15:31	X=1.4
14	0410K14	✓ 2011240	02231	1	1	10-Apr-00	16:00	
15	0410K15	✓ 2011242	02231	1	1	10-Apr-00	16:30	
16	0410K16	✓ 2011244	02231	1	1	10-Apr-00	16:59	
17	0410K17	02231SA10	02231	1	1	10-Apr-00	17:29	
18	0410K18	02231MS	02231	1	1	10-Apr-00	17:58	X=1.96
19	0410K19	02231MS)	02231	1	1	10-Apr-00	18:28	X=1.82

2231

305199

Report of Method Blank

Organic Protocol - Single Batch

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Lab ID: 02231B1K05

Description: Water Method Blank

Project No.: 201382

Method: Water GC/MS Volatile Organics

Batch: 02231

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 06-Apr-00 15:13 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
74-87-3	Chloromethane (Methyl chloride)	1	ND		10.0
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
74-83-9	Bromomethane (Methyl bromide)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-01-4	Vinyl chloride (Chloroethene)	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
75-00-3	Chloroethane	1	ND		10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0
75-15-0	Carbon disulfide	1	ND		10.0
75-35-4	1,1-Dichloroethene (Dichloroethylen)	1	ND		10.0
75-34-3	1,1-Dichloroethane	1	ND		10.0
540-59-0	1,2-Dichloroethene (total)	1	ND		10.0
107-06-2	1,2-Dichloroethane (Ethylene dichlo	1	ND		10.0
78-93-3	2-Butanone (Methyl ethyl ketone)	1	ND		10.0
71-55-6	1,1,1-Trichloroethane (Methyl chlor	1	ND		10.0
56-23-5	Carbon tetrachloride	1	ND		10.0
75-27-4	Bromodichloromethane	1	ND		10.0
78-87-5	1,2-Dichloropropane	1	ND		10.0
10061-01-5	cis-1,3-Dichloropropene	1	ND		10.0
79-01-6	Trichloroethene (Trichloroethylene)	1	ND		10.0
124-48-1	Dibromochloromethane	1	ND		10.0
79-00-5	1,1,2-Trichloroethane	1	ND		10.0
71-43-2	Benzene	1	ND		10.0
10061-02-6	trans-1,3-Dichloropropene	1	ND		10.0
75-25-2	Bromoform	1	ND		10.0
108-10-1	4-Methyl-2-pentanone (MIBK)	1	ND		10.0
591-78-6	2-Hexanone	1	ND		10.0
127-18-4	Tetrachloroethene (Perchloroethylen	1	ND		10.0
79-34-5	1,1,2,2-Tetrachloroethane	1	ND		10.0
108-90-7	Chlorobenzene	1	ND		10.0
100-42-4	Styrene	1	ND		10.0

33 compound(s) reported

305200

ND denotes Not Detected at or above the reporting limit.

DF denotes Dilution Factor.

RL denotes sample Reporting Limit.

Qu lists qualifiers. Specific qualifiers are defined at the end of the report.

4/14/00 14:10:37

Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02231B1K08

Description: Water Method Blank

Project No.: 201382

Method: Water GC/MS Volatile Organics

Batch: 02231

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 08-Apr-00 12:29 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0

6 compound(s) reported

305201

Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02231B1K10

Description: Water Method Blank

Project No.: 201382

Method: Water GC/MS Volatile Organics

Batch: 02231

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 10-Apr-00 11:05 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
74-87-3	Chloromethane (Methyl chloride)	1	ND		10.0
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
74-83-9	Bromomethane (Methyl bromide)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
75-01-4	Vinyl chloride (Chloroethene)	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
75-00-3	Chloroethane	1	ND		10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0
75-15-0	Carbon disulfide	1	ND		10.0
75-35-4	1,1-Dichloroethene (Dichloroethylen)	1	ND		10.0
75-34-3	1,1-Dichloroethane	1	ND		10.0
540-59-0	1,2-Dichloroethene (total)	1	ND		10.0
107-06-2	1,2-Dichloroethane (Ethylene dichlo	1	ND		10.0
78-93-3	2-Butanone (Methyl ethyl ketone)	1	ND		10.0
71-55-6	1,1,1-Trichloroethane (Methyl chlor	1	ND		10.0
56-23-5	Carbon tetrachloride	1	ND		10.0
75-27-4	Bromodichloromethane	1	ND		10.0
78-87-5	1,2-Dichloropropane	1	ND		10.0
10061-01-5	cis-1,3-Dichloropropene	1	ND		10.0
79-01-6	Trichloroethene (Trichloroethylene)	1	ND		10.0
124-48-1	Dibromochloromethane	1	ND		10.0
79-00-5	1,1,2-Trichloroethane	1	ND		10.0
71-43-2	Benzene	1	ND		10.0
10061-02-6	trans-1,3-Dichloropropene	1	ND		10.0
75-25-2	Bromoform	1	ND		10.0
108-10-1	4-Methyl-2-pentanone (MIBK)	1	ND		10.0
591-78-6	2-Hexanone	1	ND		10.0
127-18-4	Tetrachloroethene (Perchloroethylen	1	ND		10.0
79-34-5	1,1,2,2-Tetrachloroethane	1	ND		10.0
108-90-7	Chlorobenzene	1	ND		10.0
100-42-4	Styrene	1	ND		10.0

33 compound(s) reported

305202



Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
St. Rose, LA 70087
Phone: 504.469.0333
Fax: 504.469.0555

*Sample Data
Summary Package*

SDG: 201708

Project(s): 201708, 201721, 201765

Presented to:

*Norma Eichlin
McLaren Hart
25 Independence Boulevard
Warren, NJ 07059*

Presented By:

*Pace Analytical Services, Inc.
1000 Riverbend Blvd.
Suite F
St. Rose, Louisiana 70087*

May 30, 2000

305203

Narrative

The McLaren Hart project consisted of thirty-four (34) water samples which were received by Pace Analytical Services, Inc. on May 2, 3 and 8, 2000 and logged in as Projects 201708, 201721, and 201765.

The samples were identified on the attached Sample Cross Reference report.

The samples were analyzed for volatile organics according to CLP methodology and sulfate according to Methods for Chemical Analysis of Water and Wastes

Sample Management/Login Narrative

Temperatures for the samples included in this report were 1.0, 16, and 24°C upon receipt. Client was notified about the elevated temperature and the laboratory was instructed to go ahead and analyze the samples.

No other problems were encountered with the login process.

Cindy Olavesen 5/30/00
Cindy Olavesen Date
Project Manager

Volatiles

Manual integrations for volatile organics are occasionally necessary due to co-elution, interferences and/or inadequacies of the software; these integrations are indicated by an "m" on the quantitation list and the inclusion of an extracted ion current profile indicating the integration of the target.

Samples 2014006, 2014007, 2014130, 2014131, 2014457, 2014458, 2014459, 2014461, 2014462, and 2014465 were diluted prior to analysis based upon screening information. Sample 2014462 required further dilution. Methylene chloride and acetone are common solvents; their presence in field samples may be an artifact of sample collection, transport, or analysis. No problems were encountered with these analyses. The pH measurement for each of these water samples was 1.

Shelley Antoine 5/30/00
Shelley Antoine Date
Operation Manager

Conventional Parameters

No problems were encountered with the analyses.

Shelley Antoine 5/30/00
Lori Kelly for Date
Water Quality Supervisor

Quality Assurance

This data package has been reviewed for both completeness and technical specifications. The data were reviewed for overall QA/QC requirements of precision, accuracy, and consistency in data presentation. The data were evaluated for compliance against the CLP Method and Methods for Chemical Analysis of Water and Wastes. These guidelines were used in the preparation of our technical narratives. The release of this data package has therefore been authorized by the Laboratory Manager through Quality Assurance review.

Gary Newton

5/30/00

Gary Newton
QA Reviewer

Date



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW-1

Site: None

Project: VIRGIN ISLAND

Project No.: 201708

Sample Qu:

Lab ID: 2014006

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 29-Apr-00

Received: 02-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 04-May-00 18:06 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	50	ND	D6	500.	
67-66-3	Chloroform	50	ND	D6	500.	
100-41-4	Ethylbenzene	50	1040	D6	500.	
75-09-2	Methylene chloride (Dichloromethane)	50	ND	D6	500.	
108-88-3	Toluene	50	ND	D6	500.	
1330-20-7	Xylene (total)	50	8700	D6	500.	

compound(s) reported

305206



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: AST-VMP-1D

Site: None

Project: VIRGIN ISLAND

Project No.: 201708

Sample Qu: None

Lab ID: 2014007

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 29-Apr-00

Received: 02-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 09-May-00 18:17 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	6150	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	234	J A11	1000	
108-88-3	Toluene	100	ND	D6	1000	
1330-20-7	Xylene (total)	100	26300	D6	1000	

6 compound(s) reported

305207



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: TB042900 Site: None
Project: VIRGIN ISLAND Project No.: 201708 Sample Qu:
Lab ID: 2014008 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02732
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 29-Apr-00 Received: 02-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 04-May-00 12:31 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	ND		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305208

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FPP-VMP-4D

Site: None

Project: VIRGIN ISLAND

Project No.: 201708

Sample Qu:

Lab ID: 2014009

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 30-Apr-00

Received: 02-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 04-May-00 20:37 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	12.1		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	ND		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305209



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: FPP-VMP-1D Site: None
Project: VIRGIN ISLAND Project No.: 201708 Sample Qu:
Lab ID: 2014010 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02732
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 30-Apr-00 Received: 02-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 08-May-00 16:32 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	81.6		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	ND		10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305210



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FPP-VMP-2D

Site: None

Project: VIRGIN ISLAND

Project No.: 201708

Sample Qu:

Lab ID: 2014011

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 01-May-00

Received: 02-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 09-May-00 20:21 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	3.70	J	10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.50	J A11	10.0	
108-38-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	1.20	J	10.0	

Compound(s) reported

305211



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Site: None
Client ID: FPP-VMP-4D
Project: VIRGIN ISLAND
Lab ID: 2014013
Description: None
Method: CLP Volatile Organics
Project No.: 201708
Matrix: Water
Prep Level: Water
Units: ug/l
Collected: 01-May-00
Prepared: 01-May-00
Sample Qu: None
% Moisture: n/a
Batch: 02732
Target List: SR615MVWAT
Received: 02-May-00
Analyzed: 08-May-00 17:02 ACA
Prep Factor: 1
Leached: n/a

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	20.2		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.90	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305212



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FPP-VMP-1D

Site: None

Project: VIRGIN ISLAND

Project No.: 201708

Sample Qu:

Lab ID: 2014014

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 01-May-00

Received: 02-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 09-May-00 17:45 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	137.		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	3.20	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305213



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FPP-VMP-3D

Site: None

Project: VIRGIN ISLAND

Project No.: 201708

Sample Qu:

Lab ID: 2014015

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 01-May-00

Received: 02-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 08-May-00 18:32 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	9.80 J		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.90 J	All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305214



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: FB050100 Site: None
Project: VIRGIN ISLAND Project No.: 201721 Sample Qu:
Lab ID: 2014129 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02732
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 01-May-00 Received: 03-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 08-May-00 20:03 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	1.90 J		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.00 J	All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	7.70 J		10.0	

6 compound(s) reported

305215



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: AST-VMP-1D

Site: None

Project: VIRGIN ISLAND

Project No.: 201721

Sample Qu:

Lab ID: 2014130

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 01-May-00

Received: 03-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 09-May-00 19:50 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	4290	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	309	J A11	1000	
108-88-3	Toluene	100	ND	D6	1000	
1330-20-7	Xylene (total)	100	15300	D6	1000	

6 compound(s) reported

305216



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: AST-VMP-3D Site: None
Project: VIRGIN ISLAND Project No.: 201721 Sample Qu:
Lab ID: 2014131 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02732
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 01-May-00 Received: 03-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 08-May-00 21:03 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	6750	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	218. J	A11	1000	
108-88-3	Toluene	100	ND	D6	1000	
1330-20-7	Xylene (total)	100	24200	D6	1000	

6 compound(s) reported

305217



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: AST-VMP-4D Site: None
Project: VIRGIN ISLAND Project No.: 201721 Sample Qu: -
Lab ID: 2014132 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02732
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 01-May-00 Received: 03-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 09-May-00 19:18 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	2.10	J	10.0	
100-41-4	Ethylbenzene	1	35.5		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.70	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	307.		10.0	

6 compound(s) reported

305218



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: TB050200

Site: None

Project: VIRGIN ISLAND

Project No.: 201721

Sample Qu:

Lab ID: 2014133

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02732

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 02-May-00

Received: 03-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 08-May-00 20:33 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.80	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305219



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW1 Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014461 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 03-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 17-May-00 14:37 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	7680	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	141	J A11	1000	
108-88-3	Toluene	100	155	J D6	1000	
1330-20-7	Xylene (total)	100	40100	D6	1000	

6 compound(s) reported

305220



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW1

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 2014461

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/3/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	1	25.0		mg/l	10.0		19-May-00 11:35 ELO	

1 parameter(s) reported

305221

ND denotes Not Detected at or above the adjusted reporting limit.

DF denotes Dilution Factor of final sample. PF denotes sample Prep Factor which accounts for a non-routine sample size.

Reporting Limit is corrected for sample size, dilution and moisture content if applicable.

Qu lists qualifiers. Specific qualifiers are defined at the end of the report.

For moisture results, wet denotes result is not corrected for moisture and n/a denotes not applicable.

5/22/2000 14:26:54



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW6

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014462

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 03-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 17-May-00 15:38 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	100	ND	D6	1000	
67-66-3	Chloroform	100	ND	D6	1000	
100-41-4	Ethylbenzene	100	14500	D6	1000	
75-09-2	Methylene chloride (Dichloromethane)	100	150	J A11	1000	
108-88-3	Toluene	100	131	J D6	1000	
1330-20-7	Xylene (total)	200	63000	D1	2000	

compound(s) reported

305222



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW6

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 2014462

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/3/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	1	66.3		mg/l	10.0		19-May-00 11:35 ELO	

1 parameter(s) reported

305223



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW8 Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014463 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 03-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 17-May-00 16:36 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.60	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	1.30	J	10.0	

6 compound(s) reported

305224



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW8

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 2014463

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/3/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	1	84.9		mg/l	10.0		19-May-00 11:35 ELO	

1 parameter(s) reported

305225



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: MW7

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014464

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 03-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 17-May-00 17:05 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	1.40	J	10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.50	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	2.50	J	10.0	

6 compound(s) reported

305226



Report of Laboratory Analysis

Single Sample - Inorganic Parameters

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Client ID: MW7

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 2014464

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/3/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	5	206.		mg/l	50.0		19-May-00 11:35	ELO

1 parameter(s) reported

305227



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: ASTVMP2D

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014465

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 03-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 17-May-00 18:32 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	4	ND	D6	40.0	
67-66-3	Chloroform	4	ND	D6	40.0	
100-41-4	Ethylbenzene	4	401.	D6	40.0	
75-09-2	Methylene chloride (Dichloromethane)	4	6.00 J	A11	40.0	
108-88-3	Toluene	4	ND	D6	40.0	
1330-20-7	Xylene (total)	4	907.	D6	40.0	

5 compound(s) reported

305228



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: ASTVMP2D

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 2014465

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/3/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	2	119.		mg/l	20.0		19-May-00 11:35 ELO	

1 parameter(s) reported

305229



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: FB050300

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014466

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 03-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 17-May-00 17:34 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.60	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	4.20	J	10.0	

6 compound(s) reported

305230



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: TB050400 Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014467 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 20:33 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.60	J All	10.0	
108-38-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305231



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd. Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: FB050400 Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014468 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 21:03 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.20	J All	10.0	
108-38-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	4.70	J	10.0	

6 compound(s) reported

305232



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: MW-2 Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014469 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 21:32 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	16.7		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.70	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305233



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: MW-2

Client: ERTEC

Project: VIRGIN ISLAND

Site: None

Lab ID: 2014469

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/4/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	5	149.		mg/l	50.0		19-May-00 11:35	ELO

1 parameter(s) reported

305234



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: DUPLICATE

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014470

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 04-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 15-May-00 17:06 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	21.1		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.00	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	1.19	J	10.0	

compound(s) reported

305235



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Inorganic Parameters

Client ID: DUPLICATE

Client: ERTEC

Project: VIRGEN ISLAND

Site: None

Lab ID: 2014470

Project No.: 201765

Description: None

Matrix: Water

%Moisture: n/a

Collected: 5/4/2000

Received: 5/8/2000

ParameterName	Method	Batch	DF	Result	Qu	Units	Reporting Limit	Prep.	Analysis	Reg. Limit
Sulfate	EPA 375.2	02967	5	179.		mg/l	50.0		19-May-00 11:35 ELO	

1 parameter(s) reported

305236



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: TB050400 Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014471 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 16:36 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.90	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305237

Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02732B1K04

Description: Water Method Blank

Project No.: 201708

Method: Water GC/MS Volatile Organics

Batch: 02732

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 04-May-00 11:58

ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
74-87-3	Chloromethane (Methyl chloride)	1	ND		10.0
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
74-83-9	Bromomethane (Methyl bromide)	1	ND		10.0
75-01-4	Vinyl chloride (Chloroethene)	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-00-3	Chloroethane	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND		10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0
75-15-0	Carbon disulfide	1	ND		10.0
75-35-4	1,1-Dichloroethene (Dichloroethylen)	1	ND		10.0
75-34-3	1,1-Dichloroethane	1	ND		10.0
540-59-0	1,2-Dichloroethene (total)	1	ND		10.0
107-06-2	1,2-Dichloroethane (Ethylene dichlo	1	ND		10.0
78-93-3	2-Butanone (Methyl ethyl ketone)	1	ND		10.0
71-55-6	1,1,1-Trichloroethane (Methyl chlor	1	ND		10.0
56-23-5	Carbon tetrachloride	1	ND		10.0
75-27-4	Bromodichloromethane	1	ND		10.0
78-87-5	1,2-Dichloropropane	1	ND		10.0
10061-01-5	cis-1,3-Dichloropropene	1	ND		10.0
79-01-6	Trichloroethene (Trichloroethylene)	1	ND		10.0
124-48-1	Dibromochloromethane	1	ND		10.0
79-00-5	1,1,2-Trichloroethane	1	ND		10.0
71-43-2	Benzene	1	ND		10.0
10061-02-6	trans-1,3-Dichloropropene	1	ND		10.0
75-25-2	Bromoform	1	ND		10.0
108-10-1	4-Methyl-2-pentanone (MIBK)	1	ND		10.0
591-78-6	2-Hexanone	1	ND		10.0
127-18-4	Tetrachloroethene (Perchloroethylen	1	ND		10.0
79-34-5	1,1,2,2-Tetrachloroethane	1	ND		10.0
108-90-7	Chlorobenzene	1	ND		10.0
100-42-4	Styrene	1	ND		10.0

33 compound(s) reported

305238



Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02732B1K08

Description: Water Method Blank

Project No.: 201708

Method: Water GC/MS Volatile Organics

Batch: 02732

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 08-May-00 14:58

ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
74-87-3	Chloromethane (Methyl chloride)	1	ND		10.0
74-83-9	Bromomethane (Methyl bromide)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-01-4	Vinyl chloride (Chloroethene)	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
75-00-3	Chloroethane	1	ND		10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0
75-15-0	Carbon disulfide	1	ND		10.0
75-35-4	1,1-Dichloroethene (Dichloroethylen)	1	ND		10.0
75-34-3	1,1-Dichloroethane	1	ND		10.0
540-59-0	1,2-Dichloroethene (total)	1	ND		10.0
107-06-2	1,2-Dichloroethane (Ethylene dichlo	1	ND		10.0
78-93-3	2-Butanone (Methyl ethyl ketone)	1	ND		10.0
71-55-6	1,1,1-Trichloroethane (Methyl chlor	1	ND		10.0
56-23-5	Carbon tetrachloride	1	ND		10.0
75-27-4	Bromodichloromethane	1	ND		10.0
78-87-5	1,2-Dichloropropane	1	ND		10.0
10061-01-5	cis-1,3-Dichloropropene	1	ND		10.0
79-01-6	Trichloroethene (Trichloroethylene)	1	ND		10.0
124-48-1	Dibromochloromethane	1	ND		10.0
79-00-5	1,1,2-Trichloroethane	1	ND		10.0
71-43-2	Benzene	1	ND		10.0
10061-02-6	trans-1,3-Dichloropropene	1	ND		10.0
75-25-2	Bromoform	1	ND		10.0
108-10-1	4-Methyl-2-pentanone (MIBK)	1	ND		10.0
591-78-6	2-Hexanone	1	ND		10.0
127-18-4	Tetrachloroethene (Perchloroethylen	1	ND		10.0
79-34-5	1,1,2,2-Tetrachloroethane	1	ND		10.0
108-90-7	Chlorobenzene	1	ND		10.0
100-42-4	Styrene	1	ND		10.0

33 compound(s) reported

305239



Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02732B1K10

Description: Water Method Blank

Project No.: 201708

Method: Water GC/MS Volatile Organics

Batch: 02732

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 09-May-00 16:12 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0

6 compound(s) reported

305240



Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02851BK15

Description: Water Method Blank

Project No.: 201765

Method: Water GC/MS Volatile Organics

Batch: 02851

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 15-May-00 16:06

ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0

6 compound(s) reported

305241

Report of Method Blank

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Organic Protocol - Single Batch

Lab ID: 02851B1L17

Description: Water Method Blank

Project No.: 201765

Method: Water GC/MS Volatile Organics

Batch: 02851

Units: ug/l

Prep Factor: 1

Leached:

Prepared:

Analyzed: 17-May-00 09:31 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0
74-87-3	Chloromethane (Methyl chloride)	1	ND		10.0
67-66-3	Chloroform	1	ND		10.0
74-83-9	Bromomethane (Methyl bromide)	1	ND		10.0
100-41-4	Ethylbenzene	1	ND		10.0
75-01-4	Vinyl chloride (Chloroethene)	1	ND		10.0
75-00-3	Chloroethane	1	ND		10.0
75-09-2	Methylene chloride (Dichloromethane)	1	ND	J	10.0
108-88-3	Toluene	1	ND		10.0
1330-20-7	Xylene (total)	1	ND		10.0
75-15-0	Carbon disulfide	1	ND		10.0
75-35-4	1,1-Dichloroethene (Dichloroethylen)	1	ND		10.0
75-34-3	1,1-Dichloroethane	1	ND		10.0
540-59-0	1,2-Dichloroethene (total)	1	ND		10.0
107-06-2	1,2-Dichloroethane (Ethylene dichlo	1	ND		10.0
78-93-3	2-Butanone (Methyl ethyl ketone)	1	ND		10.0
71-55-6	1,1,1-Trichloroethane (Methyl chlor	1	ND		10.0
56-23-5	Carbon tetrachloride	1	ND		10.0
75-27-4	Bromodichloromethane	1	ND		10.0
78-87-5	1,2-Dichloropropane	1	ND		10.0
10061-01-5	cis-1,3-Dichloropropene	1	ND		10.0
79-01-6	Trichloroethene (Trichloroethylene)	1	ND		10.0
124-48-1	Dibromochloromethane	1	ND		10.0
79-00-5	1,1,2-Trichloroethane	1	ND		10.0
71-43-2	Benzene	1	ND		10.0
10061-02-6	trans-1,3-Dichloropropene	1	ND		10.0
75-25-2	Bromoform	1	ND		10.0
108-10-1	4-Methyl-2-pentanone (MIBK)	1	ND		10.0
591-78-6	2-Hexanone	1	ND		10.0
127-18-4	Tetrachloroethene (Perchloroethylen	1	ND		10.0
79-34-5	1,1,2,2-Tetrachloroethane	1	ND		10.0
108-90-7	Chlorobenzene	1	ND		10.0
100-42-4	Styrene	1	ND		10.0

33 compound(s) reported

305242



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: WCASTWB Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014458 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 03-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 17-May-00 11:59 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	20	ND	D6	200.	
67-66-3	Chloroform	20	ND	D6	200.	
100-41-4	Ethylbenzene	20	68.4 J	D6	200.	
75-09-2	Methylene chloride (Dichloromethane)	20	27.4 J	All	200.	
108-88-3	Toluene	20	ND	D6	200.	
1330-20-7	Xylene (total)	20	3140	D6	200.	

6 compound(s) reported

305243



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: WCASTWC

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014459

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 03-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 17-May-00 12:31 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	200	ND	D6	2000	
67-66-3	Chloroform	200	ND	D6	2000	
100-41-4	Ethylbenzene	200	19300	D6	2000	
75-09-2	Methylene chloride (Dichloromethane)	200	234	J A11	2000	
104-88-3	Toluene	200	410	J D6	2000	
1330-20-7	Xylene (total)	200	96600	D6	2000	

compound(s) reported

305244



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC

Client ID: WCASTWD

Site: None

Project: VIRGIN ISLAND

Project No.: 201765

Sample Qu:

Lab ID: 2014460

Matrix: Water

% Moisture: n/a

Description: None

Prep Level: Water

Batch: 02851

Method: CLP Volatile Organics

Units: ug/l

Target List: SR615MVWAT

Collected: 03-May-00

Received: 08-May-00

Prep Factor: 1

Leached: n/a

Prepared:

Analyzed: 17-May-00 18:03 KCB

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.40	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	3.80	J	10.0	

6 compound(s) reported

305245



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: WCFPPWA Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014473 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 17:35 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	3.80	J	10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.30	J All	10.0	
108-33-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

compound(s) reported

305246



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: WCFPPWB Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014474 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 18:05 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	ND		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	2.10	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

6 compound(s) reported

305247



Report of Laboratory Analysis

Pace Analytical Services, Inc.
1000 Riverbend Blvd, Suite F
Saint Rose, LA 70087

Phone: 504.469.0333
Fax: 504.469.0555

Single Sample - Protocol

Client: ERTEC
Client ID: WCFFPWC Site: None
Project: VIRGIN ISLAND Project No.: 201765 Sample Qu:
Lab ID: 2014475 Matrix: Water % Moisture: n/a
Description: None Prep Level: Water Batch: 02851
Method: CLP Volatile Organics Units: ug/l Target List: SR615MVWAT
Collected: 04-May-00 Received: 08-May-00
Prep Factor: 1 Leached: n/a Prepared: Analyzed: 15-May-00 18:35 ACA

CAS Number	Parameter	Dilution	Result	Qu	Reporting Limit	Reg. Limit
67-64-1	Acetone (2-Propanone, Dimethyl keto)	1	ND		10.0	
67-66-3	Chloroform	1	17.6		10.0	
100-41-4	Ethylbenzene	1	ND		10.0	
75-09-2	Methylene chloride (Dichloromethane)	1	1.80	J All	10.0	
108-88-3	Toluene	1	ND		10.0	
1330-20-7	Xylene (total)	1	ND		10.0	

1 compound(s) reported

305248

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