Engineering & Environment, *Inc.*

Hand Delivered to NCDENR 10/21/05 SAS

19 October 2005

Mr. Matt Humphrey
ROICC
1005 Michael Road
Camp Lejeune, North Carolina 28547

Subject: Contract No.: N62470-03-D-4000
Contract Task Order 0015
Annual Groundwater Monitoring Report, 2004-2005, Site AS-843,
Marine Corps Air Station New River, North Carolina, Revision 0

On behalf of the Department of the Navy, Atlantic Division, Naval Facilities Engineering Command, Engineering and Environment, Inc. (EEI) has prepared this annual groundwater monitoring report for Site AS-843, Marine Corps Air Station (MCAS) New River, North Carolina. The report presents the findings of groundwater monitoring activities conducted from November 2004 through August 2005. These activities included quarterly gauging and annual groundwater sampling at five site monitoring wells. This report and the methods used to acquire the data in support of the report have been prepared in accordance with the North Carolina Department of Environmental Resources (NCDENR), Division of Waste Management, Underground Storage Tank (UST) Section guidelines (NCDENR, 2002; NCDENR, 2003)

The site has been assigned incident number 21272 by NCDENR. Previous site investigations have indicated the site meets criteria associated with NCDENR's Low Risk classification and Commercial/Industrial land use (Mactec, 2003).

Background

The site is located on MCAS New River in Onslow County, North Carolina (N34 degrees, 42 minutes, 35 seconds, W77 degrees, 26 minutes, 1 second) (Figure 1) (Mactec, 2003). The site is located in the central portion of the air station and functions as the airfield operations building (GSI, 1993). No water supply wells are located within 1,500 feet of the site, and potable water supply wells throughout the area draw water from the Castle Hayne aquifer. No surface water bodies are present within 500 feet of the site (Law, 1999; Mactec, 2003). The nearest mapped body of water is the New River, located approximately 1,100 east of the site (GSI, 1993).

In September 1992, one 550-gallon diesel UST and one 1,000-gallon diesel UST were excavated and removed from the site. (Some reports indicated UST sizes of 550-gallons and 285 gallons [GSI, 1993; Law 1998a; Law 1999b; Mactec, 2003]). Associated piping was excavated or abandoned in place. The completed excavation measured approximated 14 feet by 14 feet and extended to a depth of approximately eight feet below ground surface (bgs) (Figure 2). Free product was observed in the base of the excavation. Due to the presence of free product, soil

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samples were not collected for laboratory analysis. The excavation subsequently was backfilled with soil removed during the excavation (ERC, 1992).

A site investigation was conducted in June and July 1993. During the investigation, three shallow, surficial aquifer monitoring wells (MW-1, MW-2, and MW-3) were installed 20 to 40 feet around the former USTs. Analysis of vadose zone soil samples collected during installation of the wells indicated Total Petroleum Hydrocarbons (TPH) were not present at detectable concentrations. No measurable free product was observed at the wells. No aromatic volatile organic compounds (aromatic VOCs) or semi-volatile organic compounds (SVOCs) were detected at concentrations above current North Carolina Groundwater Quality Standards (NCGWQSs) in groundwater samples collected from the wells. (Bis(2-ethylhexyl)phthalate [DHEP] was reported at a concentration above the current NCGWQS in a duplicate sample; however, DHEP was reported at a much lower concentration in the primary sample and also was reported in the laboratory blank; therefore, the DHEP data were not considered reliable [GSI, 1993]).

In July 1995, shallow surficial aquifer monitoring well MW-4 was installed within the former excavation area. Analysis of a soil sample collected in the saturated zone indicated TPH as Diesel at a concentration of 4,000 milligrams per kilogram (mg/kg); TPH as Gasoline was not detected. Measurable free product was not reported at the well, although very small droplets of product were observed. Aromatic VOC and SVOC analyses of a groundwater sample collected from well MW-4 indicated benzene and naphthalene were present at concentrations above current NCGWQSs; lead was not detected in the sample. It was concluded that petroleum impacts were limited to the immediate vicinity of the former USTs, and it was recommended to conduct quarterly monitoring (Wright, 1995).

Groundwater monitoring was conducted at the site in January and July 1998. During the January 1998 event, gauging was conducted at wells MW-1 through MW-4, and groundwater sampling was conducted at wells MW-1 and MW-2. Free product was observed at well MW-4 only, at a thickness of 0.08 foot. Analysis of groundwater samples for aromatic VOCs and SVOCs indicated benzene was present slightly above the NCGWQS in well MW-2; no other compounds were detected above NCGWQSs in either sample (Law, 1998a). During the July 1998 event, wells MW-1 and MW-2 were gauged and sampled. No measurable free product was observed in either well; benzene was reported slightly above the NCGWQS at well MW-2; no other aromatic VOCs or SVOCs were detected (Law, 1998b).

In 1999, an evaluation was conducted to assess closure options for the site. It was recommended in part to conduct periodic gauging at well MW-4 and to collect a deep direct push/hydropunch groundwater sample (Law, 1999a).

In August 1999, well gauging and groundwater sampling were conducted at wells MW-1 through MW-4. An area of elevated groundwater was observed at well MW-4 relative to other site wells, and it was considered that mounding was occurring due to relatively high permeability gravel fill in the former excavation as compared to the finer-grained surrounding native soils. No measurable

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free product was observed at any of the four site monitoring wells. At well MW-4, the C_9-C_{22} Aromatics concentration exceeded the NCGWQS. Concentrations of the C_9-C_{18} Aliphatics, C_{19}-C_{36} Aliphatics, and C_9-C_{22} Aromatics hydrocarbon fractions exceeded the NCGWQSs at well MW-3. Additionally, elevated concentrations of some SVOCs were detected at well MW-3, with four SVOCs (benzo[a]anthracene, benzo[k]fluoranthene, benzo[a]pyrene, and chrysene) present above NCGWQSs; the latter three of these SVOCs exceeded Gross Contaminant Levels (GCLs). The report recommended in part collection and analysis of vadose zone soil samples from the former excavation; it also was recommended to install a deep well adjacent to the former excavation (Law, 1999b).

The August 1999 investigation also identified an area of distressed vegetation and petroleum-stained soil and concrete located approximately 15 feet north of well MW-3 and adjacent to an aboveground storage tank (AST). It was considered likely that the staining was associated with possible overfilling of the AST during refueling events (Figure 2) (Law, 1999b). A surface soil sample subsequently collected from the affected area (sample depth of 0-to-1 foot bgs) indicated C_9-C_{22} Aromatics were present above the Soil-to-Groundwater Maximum Soil Contaminant Concentration (MSCC) but below the Industrial/Commercial MSCC considered applicable to the site. A soil sample collected directly beneath the surface sample (collection depth of 1-to-2 feet bgs) did not exhibit detectable concentrations of any analyte. It was concluded that the stained soils in this area did not appear to be affecting groundwater quality at the site (Mactec, 2003).

Quarterly well gauging and semi-annual groundwater sampling were conducted from July 2000 through April 2001. As part of this program, deep well MW-5 was installed in August 2000. The well was installed in the lower portion of the surficial aquifer (Mactec, 2003). Groundwater flow was to the northeast, east, and southeast, radially away from the former excavation. Measurable free product was observed at a thickness of 0.02 foot at well MW-3 only during the October 2000 event; free product was not observed at any other well during any of the other quarterly gauging events. Naphthalene was reported slightly above the NCGWQS in October 2000 and April 2001 at well MW-5; naphthalene concentrations were substantially below the CGL. The C_9-C_{22} Aromatics were reported above the NCGWQS at wells MW-2, MW-3, and MW-4 during the April 2001 event only. (There is no GCL for the C_9-C_{22} Aromatics.) Benzene, benzo[a]anthracene, and chrysene were reported above NCGWQSs at well MW-3 only during the April 2001 event; the chrysene concentration also exceed the GCL. The report concluded that VOC and SVOC concentrations at the site generally were low and decreasing. Continued monitoring was recommended due the detection of free product at MW-3 during October 2000 gauging event (Law, 2000; Law 2001).

Quarterly well gauging and annual groundwater sampling at the site was continued from September 2001 through May 2002. Radial groundwater flow was observed from the former excavation to the northeast, east, and southeast, consistent with previous flow patterns. No measurable free product was observed at any site well during the four quarterly gauging events. Of five vadose zone soil samples collected adjacent to the former excavation and along former fuel distribution lines, 2-mehtylnapthalene was the only constituent detected, reported in one sample at a concentration below the Soil-to-Groundwater MSCC. Groundwater samples collected from wells MW-2 through

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MW-5 during the May 2002 annual groundwater sampling event indicated the C_9-C_{22} Aromatics were present above the NCGWQS at wells MW-3 and MW-4. At well MW-5, naphthalene was reported above the NCGWQS but substantially below the GCL. It was concluded that the site met criteria associated with a Low Risk classification and Industrial/Commercial land use; as such, applicable cleanup levels (Industrial/Commercial MSCCs for soil, GCLs for groundwater, and no measurable free product) had been achieved. However, because some constituents were present in groundwater above NCGWQSs, the site would require land use restrictions in order to qualify for closure.

The current monitoring program was initiated in November 2004 and includes quarterly gauging of the five site wells and annual groundwater sampling of these wells. Gauging was conducted by EEI in November 2004, February 2005, May 2005, and August 2005. Groundwater sampling was conducted in August 2005. Methods and findings of the program are discussed below. Figures, tables, field data sheets, the laboratory analytical report, and references cited in the text are included in Attachments A through E, respectively.

Field Methods

Field methods employed during the groundwater monitoring program are discussed briefly below. Activities were conducted in accordance with NCDENR guidance (NCDENR, 2002; NCDENR, 2003).

Well gauging was conducted quarterly, on 29 November 2004, 25 February 2005, 31 May 2005, and 31 August 2005. For each gauging event, five site monitoring wells (MW-1 through MW-5) were gauged. Well gauging was conducted using an electronic interface probe to measure the depth to water and depth to product (if present). Data were recorded to the nearest 0.01 foot and referenced to the surveyed top of casing.

During the gauging events, measurable free product was observed only during the November 2004 event at well MW-4 at thickness of 0.04 foot. A sorbent sock was installed in the well following completion of the event. On 11 February 2005, two weeks prior to the following gauging event, the sock was removed from the well.

Groundwater sampling was conducted on 31 August 2005. A Grundfos Redi-Flo II stainless steel submersible pump discharging through polyethylene tubing was used to purge and sample the wells. Water quality indicator parameters (pH, temperature, conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) were measured and recorded repeatedly during the purge. Purging was continued until water quality indicator parameters had stabilized or until a maximum of five well casing volumes had been purged. If a well purged to dryness, the well was allowed to recharge, and a sample then was collected. During the sampling event, only well MW-5 was purged dry. Samples were collected immediately upon completion of the purge by filling the laboratory-prepared sample bottles directly from the discharge tubing. Samples were kept in an iced cooler from the time of collection until received by the laboratory.

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Samples were submitted for analysis for Aromatic and Halogenated VOCs by Method 602 and 601, SVOCs by Method 625; Volatile Petroleum Hydrocarbons (VPH) by MADEP VPH; and Extractable Petroleum Hydrocarbons (EPH) by MADEP EPH. The samples were submitted under chain-of-custody to Paradigm Analytical Laboratories, Inc. The field sampling data sheets, laboratory report, and chain-of-custody form are attached.

Down-hole gauging and sampling equipment were decontaminated after each use by washing with an Alconox/deionized water mixture, followed by a deionized water rinse. The water quality probe was decontaminated with a DI rinse. New polyethylene tubing was used at each well. Well purge water and equipment decontamination water were contained in a portable holding tank and subsequently processed through a groundwater treatment system located at Lot 203 on Marine Corps Base Camp Lejeune. Used tubing and other miscellaneous material were treated as normal solid waste and placed in EEI's refuse container.

Hydrogeology

The site is located in the eastern portion of the Coastal Plain Physiographic Province of North Carolina. The Coastal Plain consists of nearly flat to gently dipping sedimentary strata of varying composition that overlie a crystalline basement complex. Approximately 80 miles northwest of the site, the Coastal Plain pinches out where it contacts the Piedmont Physiographic Province along the Fall Line. East of the Fall Line, the sediments gradually thicken, reaching a maximum thickness of approximately 10,000 feet at Cape Hatteras, North Carolina. In the vicinity of the site, the sedimentary sequence is estimated to be approximately 2,000 feet thick (NCGS, 1988).

Surficial deposits of Quaternary age are present in and around the area of the site, typically at thicknesses ranging from about 25 to 80 feet. The uppermost mapped unit in the area of the site is identified as the River Bend Formation of Tertiary age, described as a calcareous limestone interlaced with indurated sandy, molluscan limestone (NCGS, 1985). The River Bend Formation overlies the Castle Hayne Formation, also of Tertiary age. The Castle Hayne Formation is described as gray to cream colored, fine grained to fossiliferous calcareous limestone with minor amounts of fine quartz, glauconite, and phosphate (NCGS, 1988). The thickness of the Castle Hayne Formation in the vicinity of the site is estimated at approximately 300 feet. The Castle Hayne aquifer is a primary source of potable water for the area.

The topography of the site is predominantly flat. No permanent surface water bodies intersect the site. The nearest mapped surface water body is the New River, located approximately 1,100 feet east of the site.

Shallow soil at the site includes a mixture of sands, silts, and clays. Vadose zone soils are described as fine-to-medium-to-coarse sands, silty fine sands, and silty clay. Saturated sediments are described as fine-to-medium sand, silty fine sand, clayey silt, clay, and peat to depths of approximately 15-to-20 feet bgs. In the former excavation area, saturated limestone gravel fill was

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encountered from approximately 2.5 feet bgs to 5 feet bgs (Mactec, 2003; Wright, 1995). Fine-to-coarse sand was encountered from approximately 16 feet bgs to 27 feet bgs in the one boring advanced below 20 feet bgs. Based on data from other nearby sites, reportedly the top of a confining unit separating the surficial aquifer from the Castle Hayne aquifer is expected at approximately 28 feet bgs (Mactec, 2003). First saturation was encountered from 2.5 feet bgs to 9 feet bgs (GSI, 1993; Mactec, 2003; Wright, 1995).

All of the monitoring wells installed at the site are screened in the surficial aquifer. Wells MW-1, MW-2, and MW-3, respectively located north, south, and east of the former excavation are screened from approximately 4.5 feet bgs to 20 feet bgs, intercepting the shallow portion of the surficial aquifer (GSI, 1993). Well MW-4, located within the former excavation and screened from approximately 2 feet bgs to 12 feet bgs, also intercepts the shallow portion surficial aquifer (Wright, 1995). Well MW-5, located adjacent to well MW-4, is a deeper, dual-cased well screened from approximately 21.5 feet bgs to 26.5 feet bgs. Reportedly, the well is considered to monitor the lower portion of the surficial aquifer, immediately above a confining unit separating the surficial aquifer from the Castle Hayne aquifer (Mactec, 2003).

Using the top-of-casing elevation data and gauging data recorded during the quarterly events, groundwater elevations for the site monitoring wells were calculated. Table 1 presents gauging data for all four quarterly gauging events conducted during the monitoring program. For wells exhibiting measurable free product, the groundwater elevation was corrected by adding 80 percent of the product thickness to the calculated groundwater elevation. (The product thickness was multiplied by 80 percent as the specific gravity of the product is assumed to be 0.8.)

The elevation data for the shallow wells were used to construct surficial aquifer groundwater elevation maps for each gauging event, from which groundwater flow directions can be estimated. Figures 3 through 6 respectively present groundwater elevation maps for shallow wells for November 2004, February 2005, May 2005, and August 2005. From a review of the shallow well maps, groundwater flow directions are consistent over time. Relatively elevated groundwater levels are observed at shallow well MW-4 (located within the former excavation), with groundwater flowing away from this area to northeast, east, and southeast in a radial pattern. This flow pattern is similar to that reported in previous investigations (Law, 2000; Law 2001; Mactec, 2003). It has been suggested that the relatively elevated groundwater elevations observed in shallow well MW-4 may reflect mounding due to the high permeability of the gravel fill relative to the lower permeability, finer grained native soil surround the fill, as the finer soils are expected to inhibit flow away from the coarser fill.

The horizontal gradient i is calculated using the standard equation $i = \Delta h / \Delta L$, where Δh is the change in head measured along the direction of groundwater flow, and ΔL is the straight-line distance between the measurement locations. As wells MW-4 and MW-3 are closely aligned with the groundwater flow direction, data from these wells were used to calculate the horizontal gradient

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for each measurement date. For these wells, ΔL = 29 feet. The data and calculations are summarized below.

Event	MW-4 GW Elev	MW-3 GW Elev	Δh	i
November 2004	93.73	92.53	1.20	0.041
February 2005	94.63	93.15	1.48	0.051
May 2005	95.37	93.20	2.17	0.075
August 2005	93.93	92.14	1.79	0.062

Notes:
GW Elev: Groundwater Elevation, expressed in feet relative to temporary survey benchmark
Δh: head differential, expressed in feet
i: horizontal gradient, dimensionless

In general, the gradient is exhibits little variation over time, ranging from 0.041 (unitless) to 0.075 and averages 0.057. The groundwater linear flow velocity, which is dependent on the gradient, horizontal hydraulic conductivity, and the effective porosity, cannot be calculated as estimates of the latter two parameters are not available for the site.

From a review of Table 1, groundwater elevations at shallow well MW-4 are consistently higher than those observed in the paired deep well MW-5. This indicates a downward vertical gradient and suggests the potential for downward flow of groundwater from the shallow portion of the surficial aquifer to the deep portion of the surficial aquifer. However, as discussed above, the relatively elevated groundwater elevations observed at well MW-4 appear to be associated with very localized conditions (coarse fill in the former excavation). Consequently, the data do not suggest a downward gradient necessarily is present throughout the surficial aquifer at the site.

Groundwater Quality

Groundwater quality data for the current program are available from the August 2005 sampling event. Groundwater samples were collected from monitoring wells MW-1 through MW-5 and analyzed by Paradigm Analytical Laboratories, Inc. for Aromatic and Halogenated VOCs by Method 602 and 601, SVOCs by Method 625; VPH by MADEP VPH; and EPH by MADEP EPH. A duplicate sample was collected from well MW-4. The laboratory report is presented in Attachment D. Table 2 summarizes the laboratory results. Only compounds detected in one or more wells during the sampling event are included in the table.

From Table 2, concentrations of aromatic VOCs and SVOCs generally were low (mostly reported at estimated concentrations below the reporting limit). (No halogenated VOCs were detected and therefore are not listed in Table 2). Benzene was the only aromatic VOCs compound reported above NCGWQSs, detected at well MW-3 only at concentration of 1.09 micrograms per liter (ug/L), slightly above the NCGWQS of 1 ug/L. Naphthalene was the only SVOC reported above NCGWQSs, detected at a concentration of 23.8 ug/l, slightly above the NCGWQS of 21 ug/L. Concentrations of both compounds are substantially below the GCLs (5,000 ug/L for benzene,

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15,500 ug/L for naphthalene). Figure 7 presents benzene concentrations for shallow wells at the site; Figure 8 presents the naphthalene concentration for deep well MW-5. The figures illustrate the limited extent of these compounds.

Aliphatic and aromatic hydrocarbon fractions, quantitated by MADEP VPH and EPH, were detected at well MW-3 and MW-4 only. Of the detected hydrocarbon fractions, only the C_9-C_{22} Aromatic Hydrocarbon fraction was present above the NCGWQS of 210 ug/L, reported at concentrations of 300 ug/L and 280 ug/L, respectively in the primary and duplicate samples collected from well MW-4. At well MW-3, the C_9-C_{22} Aromatic Hydrocarbon fraction concentration of 190 ug/L was less than the NCGWQS. A GCL has not been established for the C_9-C_{22} Aromatic Hydrocarbon fraction. (In Table 2, C_9-C_{22} Aromatics are presented as the sum of the C_9-C_{10} Aromatics, quantitated by MADEP VPH, and the C_{11}-C_{22} Aromatics, quantitated by MADEP EPH.) Figure 9 presents the C_9-C_{22} Aromatics concentrations for shallow wells at the site. The figure illustrates the limited extent of this hydrocarbon fraction.

Historical groundwater quality data is summarized in Table 3. From Table 3, few constituents have been detected at well MW-1, and no constituents at this well have exceeded NCGWQSs or GCLs. At well MW-2, the only constituents reported above NCGWQSs are benzene and the C_9-C_{22} Aromatics. Benzene was reported above slightly the NCGWQS in January and July 1998 (1.24 ug/L and 1.66 ug/L, respectively; NCGWQS of 1 ug/L). Benzene was not detected at this well during the current event or the previous (May 2002) event. The C_9-C_{22} Aromatics exceeded the NCGWQS only during the April 2001 event (concentration of 290 ug/L, NCGWQS of 210 ug/L). The C_9-C_{22} Aromatics fraction was not detected at this well during the current event or the previous (May 2002) event.

At well MW-3, benzene is the only aromatic VOC detected above NCGWQSs (of 1 ug/), reported at 3 ug/L in April 2001 and 1.09 ug/L during the current event. These concentrations are substantially below the GCL of 5,000 ug/L. Some SVOCs were detected above NCGWQSs, including benzo[a]antrhacene (August 1999 and April 2001), benzo[k]fluoranthene (August 1999), bezno[a]pyrene (August 1999), and chrysene (August 1999 and April 2001). The latter three compounds also exceeded the GCLs for the indicated events. None of these compounds were detected during the current event. DHEP was reported above the NCGWQS but below the GCL in a duplicate sample collected in July 1993. However, as previously discussed, the data were considered unreliable as DHEP also was present in the laboratory blank, and because the DHEP concentration in the primary sample was much lower than that reported for the duplicate sample. DHEP was not detected during the current event.

Concentrations of the C_9-C_{18} Aliphatics and the C_{18}-C_{36} Aliphatics at well MW-3 exceeded NCGWQSs only in August 1999, and concentrations for both fractions have decreased considerably over time. The C_9-C_{22} Aromatics hydrocarbon fraction was reported above the NCGWQS in the sampling events conducted from August 1999 to May 2002. Concentrations have continuously decreased over time, and the concentration reported for the current (August 2005) event was below the NCGWQS.

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At well MW-4, from August 1999 to the current (August 2005) event, the C_9-C_{22} Aromatics fraction was only constituent that exceeded the NCGWQS. Concentrations of this hydrocarbon fraction have decreased over time.

At well MW-5, naphthalene is the only constituent detected above NCGWQSs, and reported concentrations are substantially below GCLs. Naphthalene concentrations have decreased over time at this well.

In general, the current and historical data indicate few dissolved phase constituents have been or are present at concentrations above NCGWQSs, and none were present above GCLs during the current or last sampling event. Additionally, constituent concentrations generally are decreasing over time.

Product thickness data for the current program and historical gauging events are summarized in Table 4. From Table 4, from July 1993 through August 2005, measurable free product has been detected on only three instances. Well MW-3 exhibited 0.02 foot of free product in October 2000; this is the only time free product has been observed at this well. Well MW-4 exhibited 0.08 foot of measurable product in January 1998 and, during the current monitoring program, 0.04 foot of free product was observed in November 2004. (Figure 10 illustrates the extent of measurable free product for the November 2004 event.) Measurable free product has not been detected at this well during any other gauging event. Measurable free product has not been detected at wells MW-1, MW-2, or MW-5 during any gauging event, and no free product has been detected at any site well during the last three consecutive gauging events. The data indicate measurable free product, when present, is extremely limited in extent.

Conclusions and Recommendations

The following conclusions have been drawn based on site data:

- Surficial aquifer groundwater flow directions are consistent over time, flowing radially away from the former excavation to the northeast, east, and southeast.
- No water supply wells have been identified within 1,500 feet of the site. The nearest mapped surface water body is approximately east 1,100 feet of the site
- Previous investigations indicate the site meets criteria associated with NCDENR's Low Risk classification and Industrial/Commercial land use.
- Previous investigations indicate petroleum compounds in soil in the vicinity of the former excavation are below Soil-to-Groundwater MSCCs. One surface soil collected near an AST exhibited petroleum concentrations above the Soil-to-Groundwater MSCC but below the Industrial/Commercial MSCC; a soil sample collected immediately below this surface soil sample did not exhibit detectable petroleum concentrations. Therefore, vadose zone soils at the site do not appear to be affecting groundwater quality.

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- No measurable free product has been detected at any site well during the last three consecutive gauging events. Current and historical gauging data indicate measurable free product, when present, is extremely limited in extent.
- Historical groundwater quality data indicate few constituents have been present above NCGWQSs, and, except for a few SVOCs detected at one well in 1999 and 2001, all constituents have been substantially below GCLs.
- Current groundwater quality data indicate few constituents are present in groundwater above NCGWQSs. Constituents above NCGWQS are limited to: benzene, reported slightly above the NCGWQS at well MW-3; the C_9-C_{22} Aromatics fraction, reported above the NCGWQS at well MW-4; and naphthalene, reported slightly above the NCGWQS at well MW-5. No constituents are present above GCLs, and the few SVOCs previously detected above GCLs are no longer present at detectable concentrations.
- Current and historical groundwater quality data indicate constituent concentrations are decreasing over time.

The following recommendations are made based on site data:

- Conduct well gauging next quarter. If no measurable free product is detected, the site could be petitioned for closure. If measurable free product is detected, continue with quarterly well gauging.
- Report findings from the well gauging. Petition for site closure if warranted by the data.

EEI appreciates the opportunity to work with the Department of the Navy on this project. If you have any questions regarding this report or other matters, please contact me at (910) 989-3214 (bmorris@eeimail.com) or Mr. Matt Schulze at (757) 457-0002 (mschulze@eeimail.com).

Sincerely,

ENGINEERING AND ENVIRONMENT, INC.

Mr. William C. Morris
Project Manager
North Carolina P.G. #1218

cc: Mr. Dave Cleland (Code: OPCEV4) / NAVFAC Lant
Mr. Kurt Stevens (Code EV23KS) / NAVFAC Lant (cover letter only)
Mr. Zane Perry (Code EV23ZP) / NAVFAC Lant (cover letter only)
Mr. Andrew Smith (MCB/EMD) Camp Lejeune
Mr. Matt Schulze / EEI – VBO

attachments

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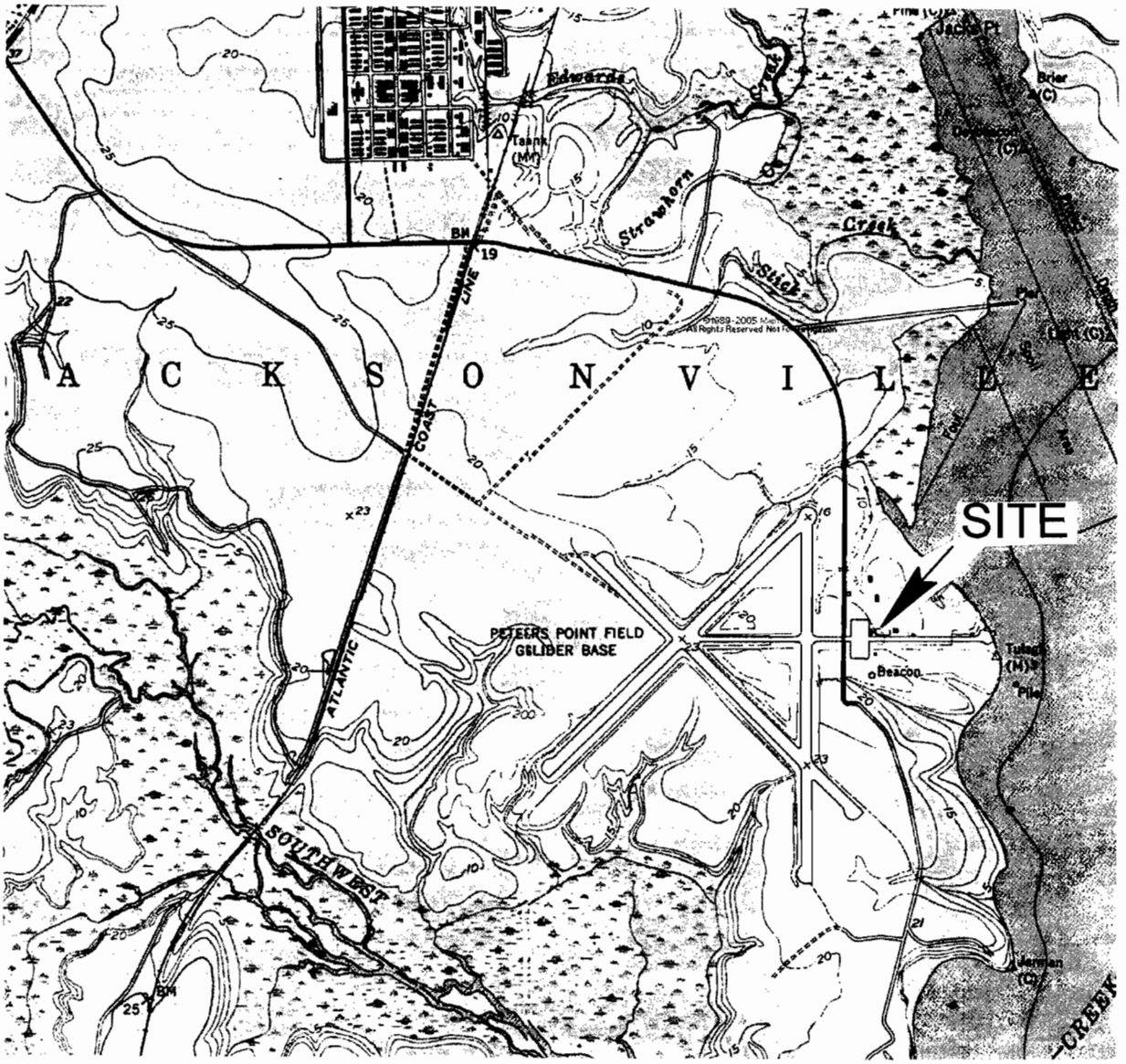
Attachment A

Figures



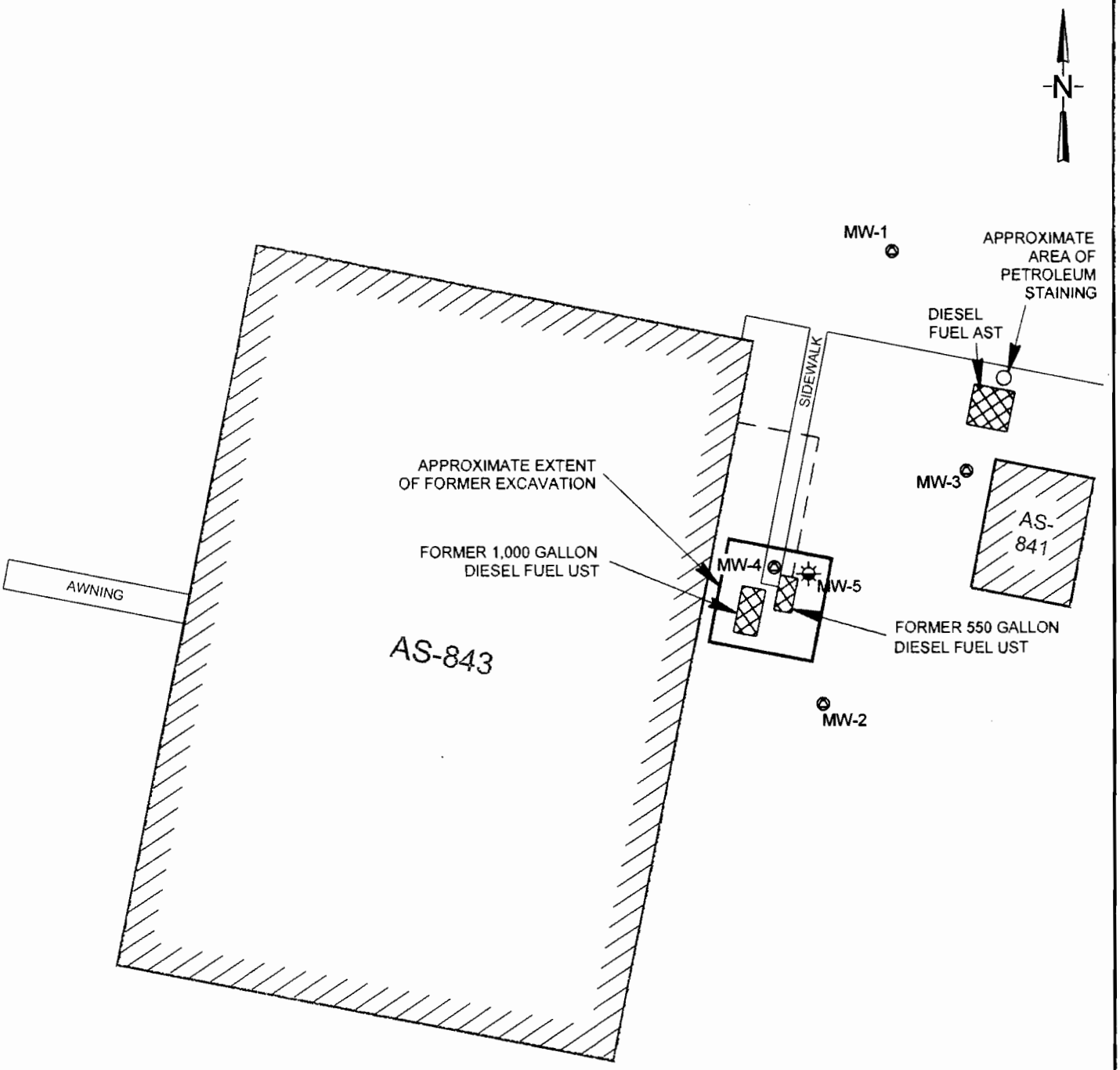
SCALE (Feet)

1000 0 1000 2000

(1:24000)

U.S.G.S TOPOGRAPHIC MAP:
JACKSONVILLE SOUTH, N.C.

Engineering & Environment, Inc.	FIGURE 1	SITE LOCATION
	DATE 9/30/05	SITE AS-843 ANNUAL MONITORING REPORT MCAS NEW RIVER, NC
	REVISION 0	
	DRAWN BY AER/WCM	
	FILE :OPO	



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)

SCALE (Feet)

10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

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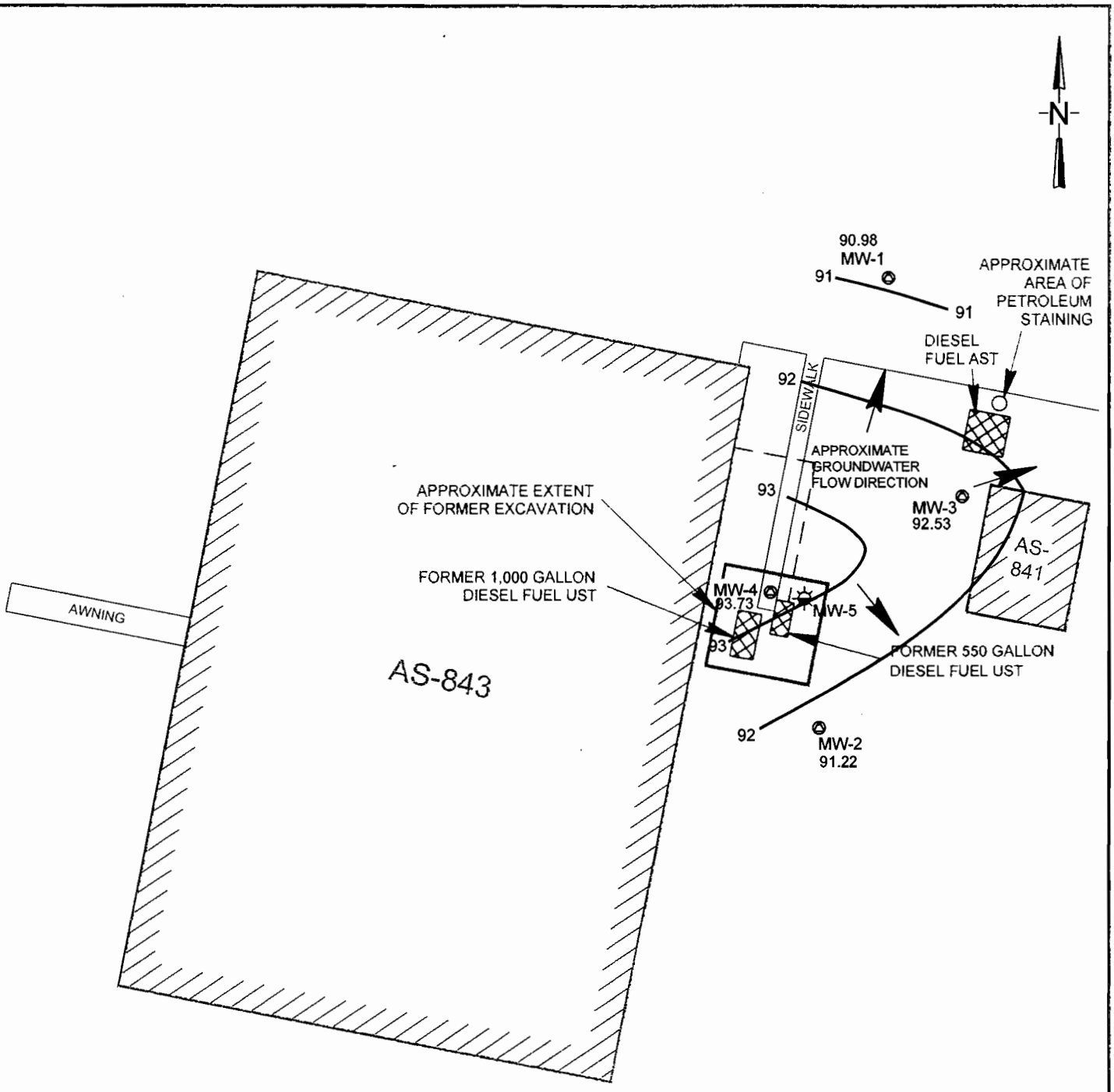
FIGURE	2
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SITE LAYOUT, WELL LOCATIONS, AND FORMER UST LOCATIONS
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 91.22 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION
- 91 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION CONTOUR

(GROUNDWATER ELEVATIONS EXPRESSED IN FEET RELATIVE TO TEMPORARY BENCHMARK)

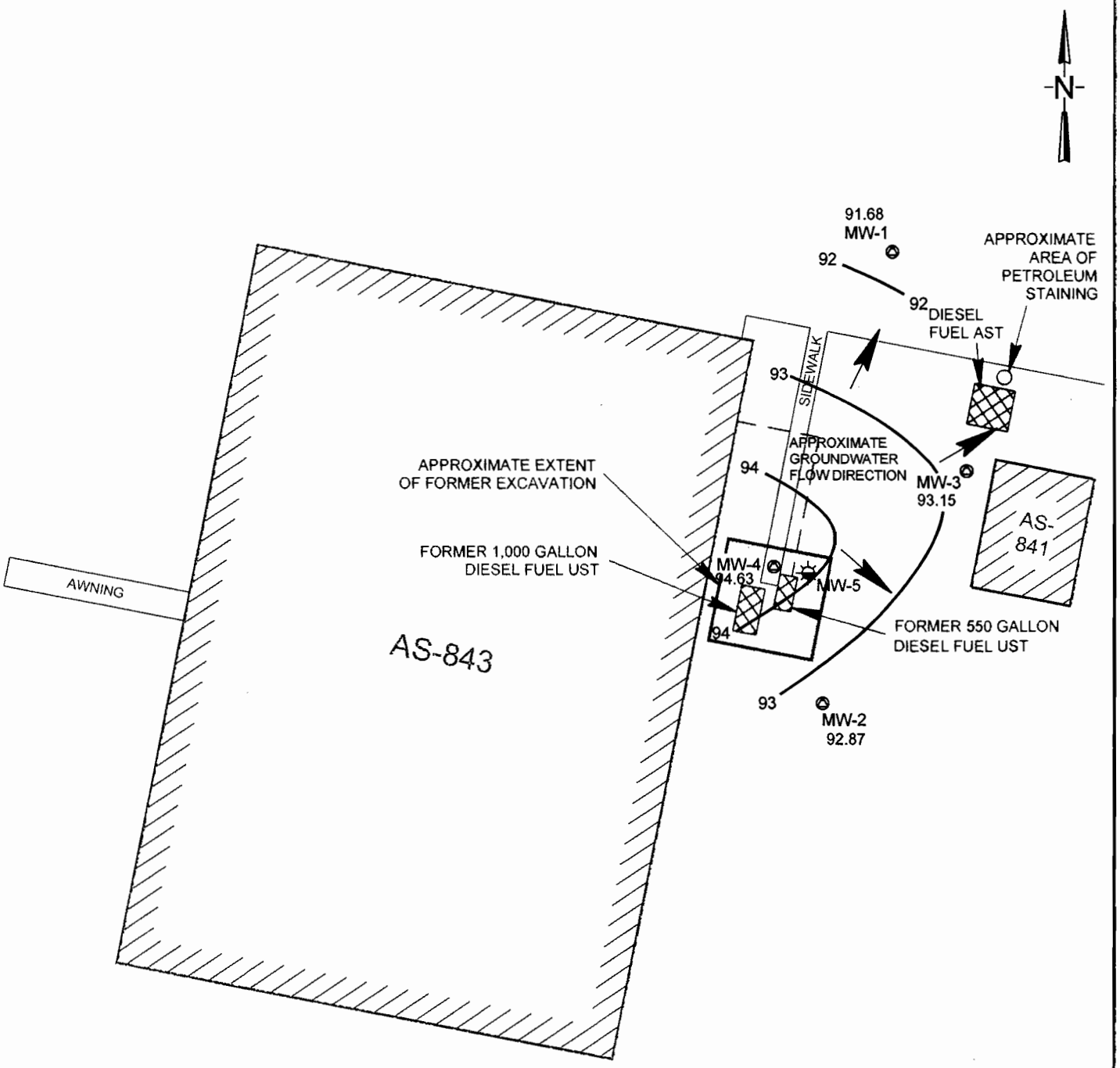
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	3
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATIONS FOR 29 NOVEMBER 2004
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 91.22 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION
- 91 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION CONTOUR

(GROUNDWATER ELEVATIONS EXPRESSED IN
FEET RELATIVE TO TEMPORARY BENCHMARK)

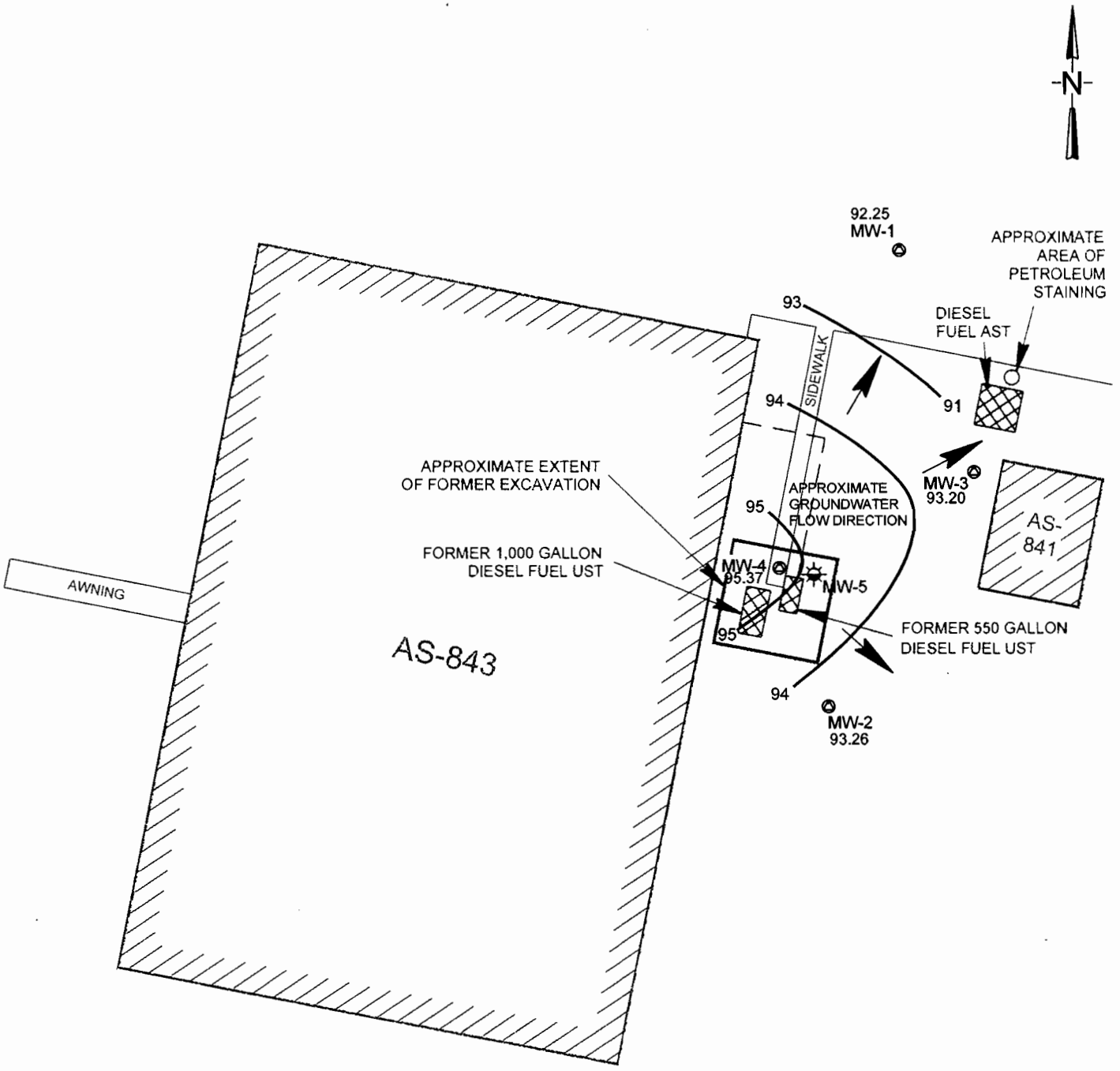
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	4
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER SHALLOW WELL
GROUNDWATER ELEVATIONS
FOR 25 FEBRUARY 2005
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 91.22 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION
- 91 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION CONTOUR

(GROUNDWATER ELEVATIONS EXPRESSED IN
FEET RELATIVE TO TEMPORARY BENCHMARK)

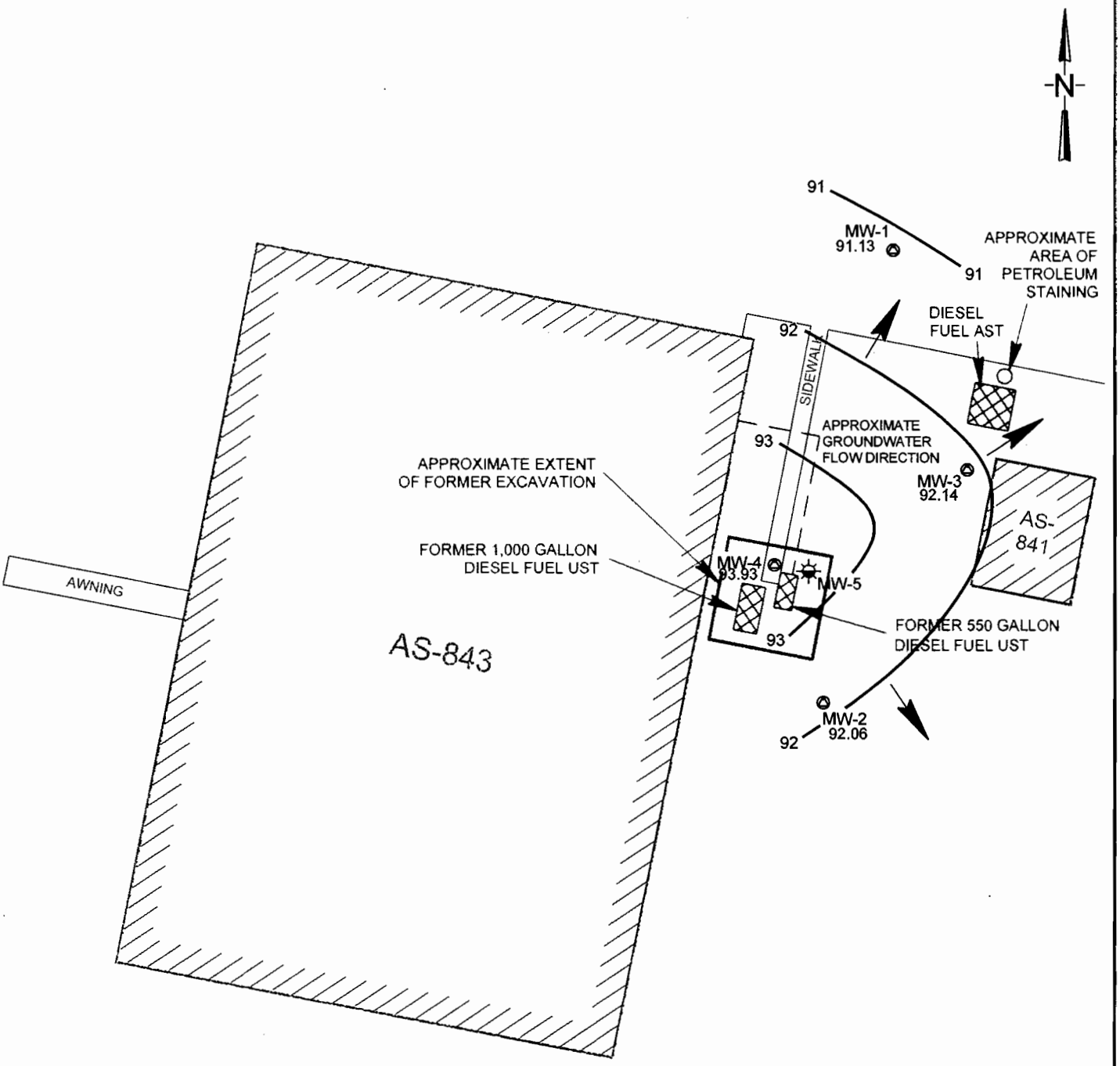
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	5
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER SHALLOW WELL
GROUNDWATER ELEVATIONS
FOR 31 MAY 2005
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 91.22 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION
- 91 SURFICIAL AQUIFER SHALLOW WELL GROUNDWATER ELEVATION CONTOUR

(GROUNDWATER ELEVATIONS EXPRESSED IN
FEET RELATIVE TO TEMPORARY BENCHMARK)

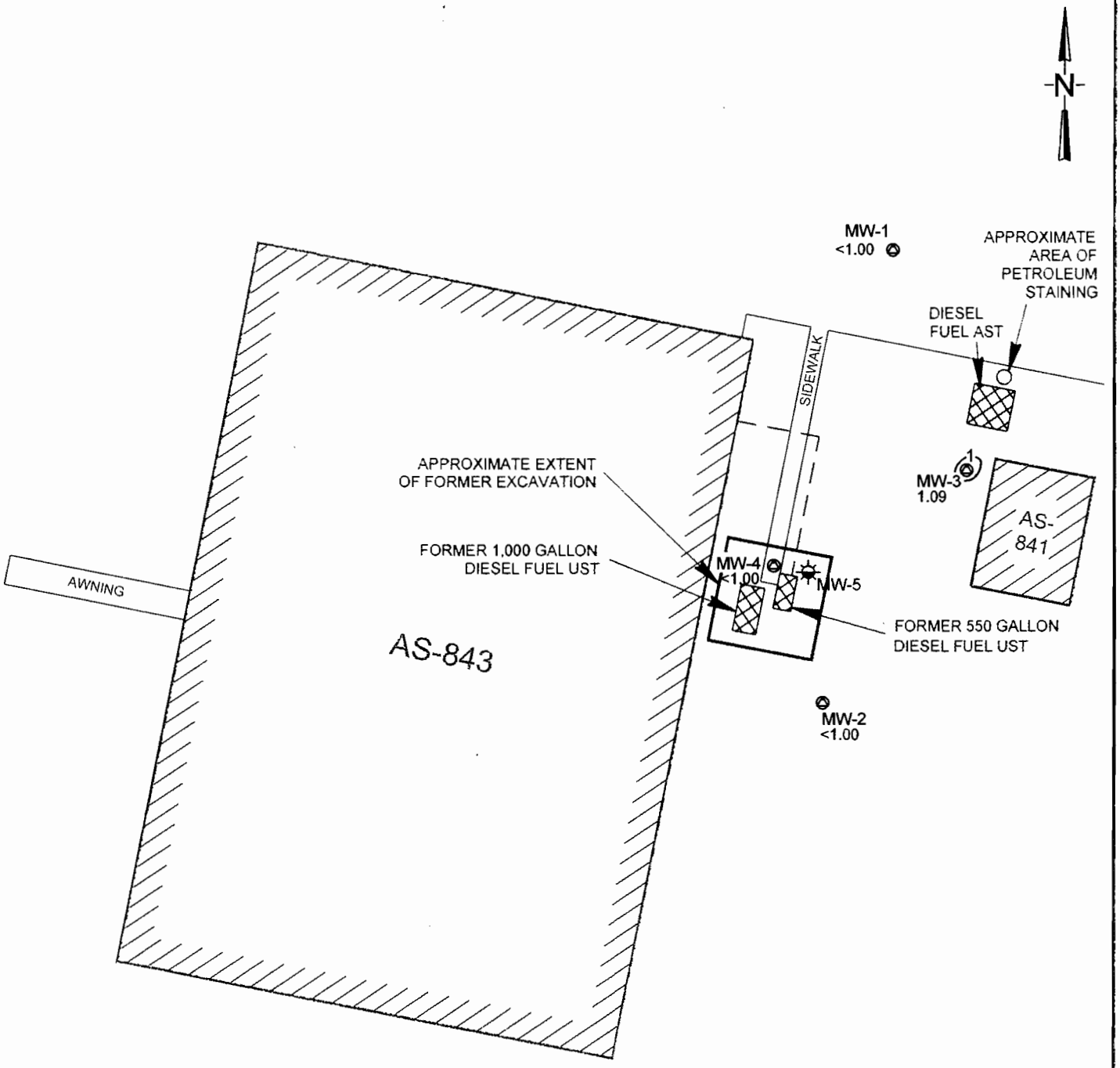
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	6
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER SHALLOW WELL
GROUNDWATER ELEVATIONS
FOR 31 AUGUST 2005
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 2.3 SURFICIAL AQUIFER BENZENE CONCENTRATION
- —1— SURFICIAL AQUIFER BENZENE ISOCONCENTRATION CONTOUR

(CONCENTRATIONS EXPRESSED IN MICROGRAMS PER LITER)
(<# DENOTES NOT DETECTED AT THE INDICATED REPORTING LIMIT)
(THE NORTH CAROLINA GROUNDWATER QUALITY STANDARD FOR BENZENE IS 1.0 MICROGRAM PER LITER)

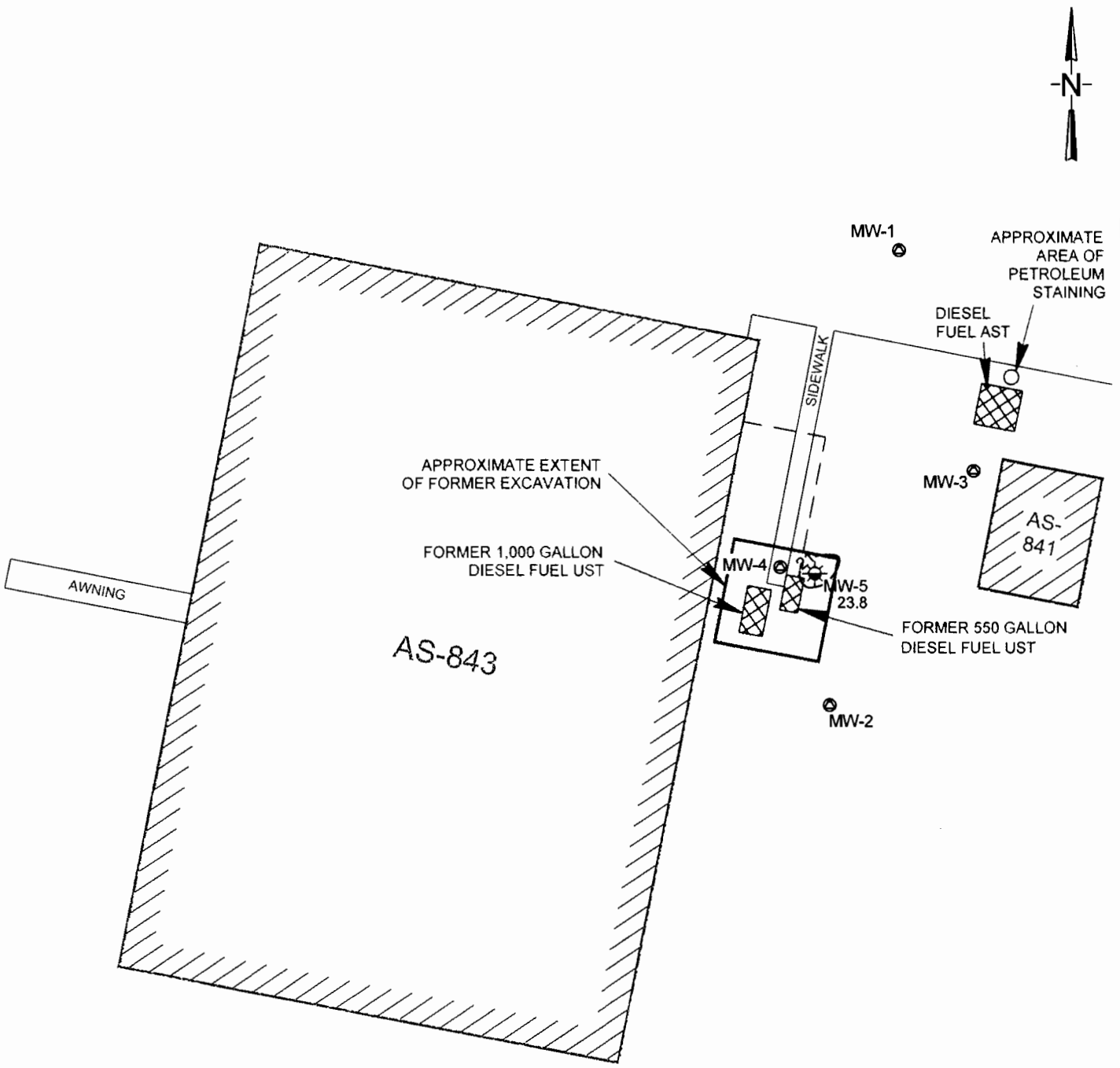
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	7
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER SHALLOW WELL
BENZENE CONCENTRATIONS
FOR AUGUST 2005
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 23.8 SURFICIAL AQUIFER NAPHTHALENE CONCENTRATION
- —21— SURFICIAL AQUIFER NAPHTHALENE ISOCONCENTRATION CONTOUR

(CONCENTRATIONS EXPRESSED IN MICROGRAMS PER LITER)
(<# DENOTES NOT DETECTED AT THE INDICATED REPORTING LIMIT)
(THE NORTH CAROLINA GROUNDWATER QUALITY STANDARD FOR NAPHTHALENE IS 21 MICROGRAMS PER LITER)

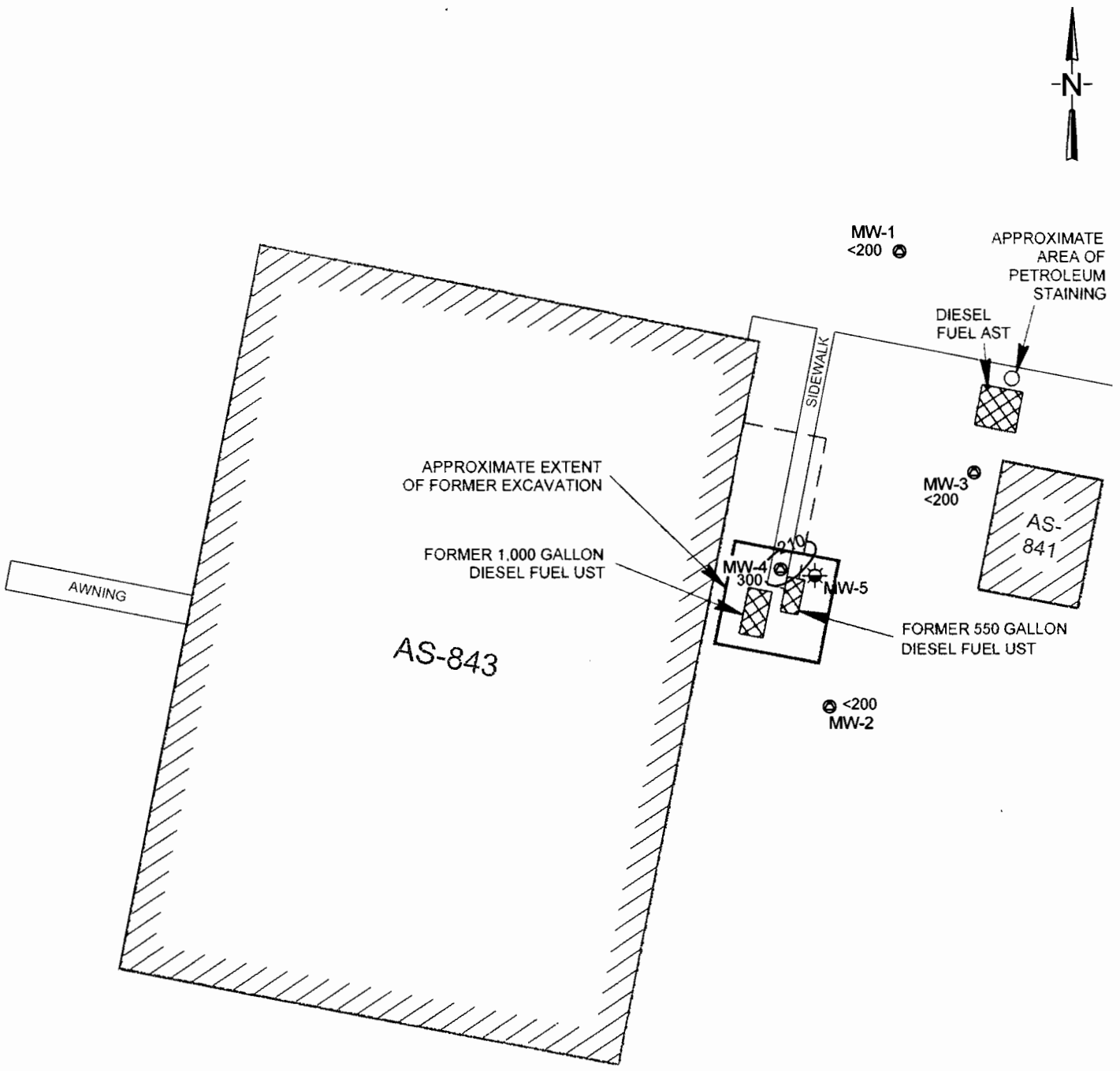
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	8
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER DEEP WELL NAPHTHALENE CONCENTRATION FOR AUGUST 2005
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 280 SURFICIAL AQUIFER SHALLOW WELL C9-C22 AROMATICS CONCENTRATION
- —210— SURFICIAL AQUIFER SHALLOW WELL C9-C22 AROMATICS ISOCONCENTRATION CONTOUR

(CONCENTRATIONS EXPRESSED IN MICROGRAMS PER LITER)
(<# DENOTES NOT DETECTED AT THE INDICATED REPORTING LIMIT)
(THE NORTH CAROLINA GROUNDWATER QUALITY STANDARD FOR
C9-C22 AROMATICS IS 210 MICROGRAMS PER LITER)

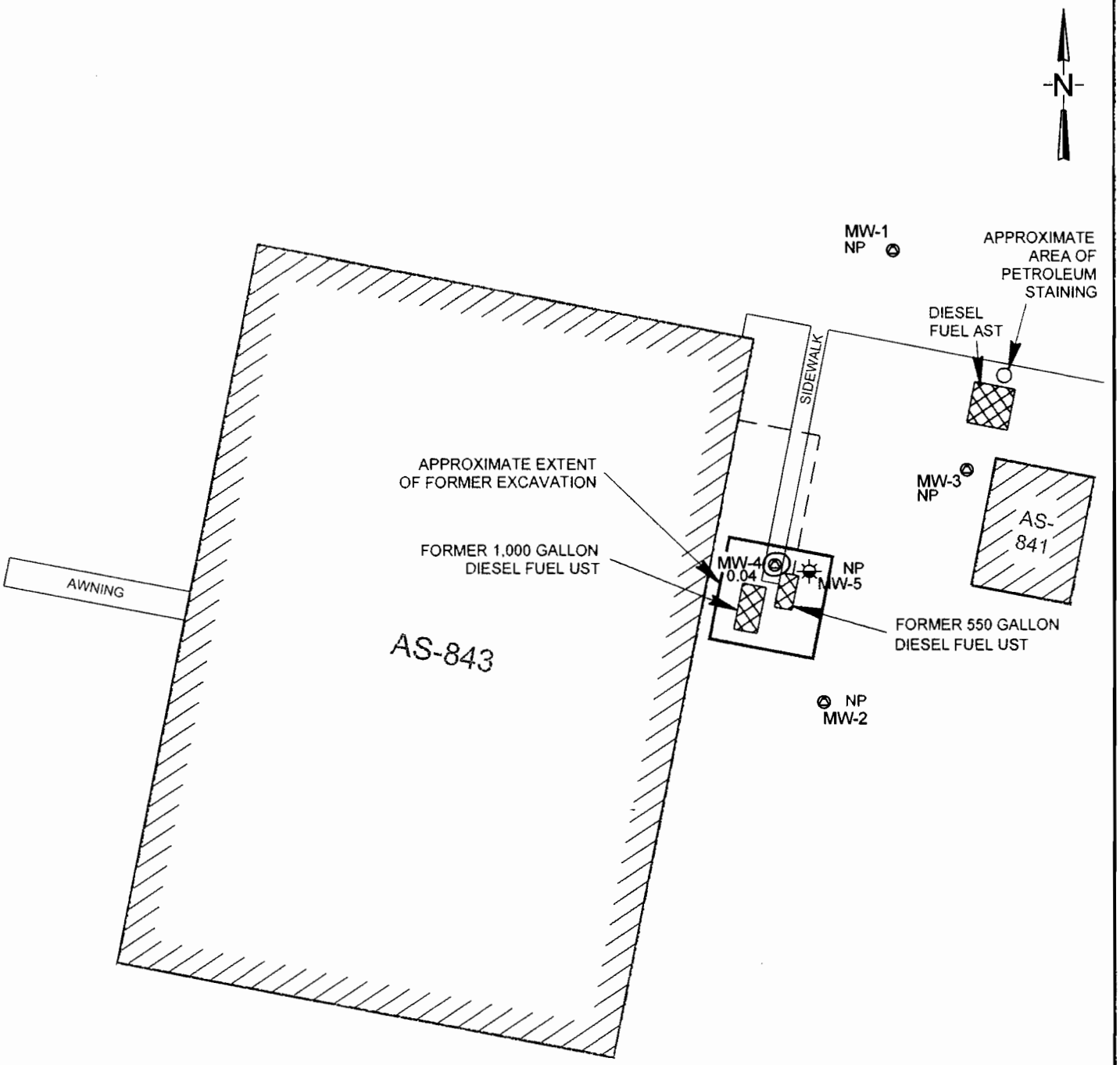
SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	9
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

SURFICIAL AQUIFER SHALLOW WELL
C9-C22 AROMATICS CONCENTRATIONS
FOR AUGUST 2005
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC



LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- UNDERGROUND STORAGE TANK (FORMER) or ABOVEGROUND STORAGE TANK (EXISTING)
- 0.04 SURFICIAL AQUIFER FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

SCALE (Feet)
10 0 10 20

(Base map adapted from GSI, 1993 and Law, 2000)

Engineering & Environment, Inc.

FIGURE	10
DATE	09/29/05
REVISION	0
DRAWN BY	AER
FILE	AS843_MAP

ESTIMATED EXTENT OF
FREE PRODUCT
FOR NOVEMBER 2004
SITE AS-843
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

Attachment B

Tables

Table 1
Quarterly Gauging Data from November 2004 to August 2005
Site AS-843

Location	Top of Casing Elevation (feet tbm)	Depth to Water (feet btoc)			
		11/29/04	02/25/05	05/31/05	08/31/05
MW-1	97.58	6.60	5.90	5.33	6.45
MW-2	98.01	6.79	5.14	4.75	5.95
MW-3	98.05	5.52	4.90	4.85	5.91
MW-4	97.87	4.17	3.24	2.50	3.94
MW-5	97.72	6.72	5.69	5.60	6.62
		Depth To Product (feet btoc)			
		11/29/04	02/25/05	05/31/05	08/31/05
MW-1	97.58	NP	NP	NP	NP
MW-2	98.01	NP	NP	NP	NP
MW-3	98.05	NP	NP	NP	NP
MW-4	97.87	4.13	3.24	NP	NP
MW-5	97.72	NP	NP	NP	NP
		Product Thickness (feet)			
		11/29/04	02/25/05	05/31/05	08/31/05
MW-1	97.58	NP	NP	NP	NP
MW-2	98.01	NP	NP	NP	NP
MW-3	98.05	NP	NP	NP	NP
MW-4	97.87	0.04	Sheen	NP	NP
MW-5	97.72	NP	NP	NP	NP
		Corrected Groundwater Elevation [1] (feet tbm)			
		11/29/04	02/25/05	05/31/05	08/31/05
MW-1	97.58	90.98	91.68	92.25	91.13
MW-2	98.01	91.22	92.87	93.26	92.06
MW-3	98.05	92.53	93.15	93.20	92.14
MW-4	97.87	93.73	94.63	95.37	93.93
MW-5	97.72	91.00	92.03	92.12	91.10

[1] Corrected Groundwater Elevation = Top of Casing Elevation - Depth to Water + 0.8 x Product Thickness
feet tbm - elevation in feet relative to temporary benchmark arbitrarily assigned an elevation of 100 feet
feet btoc - feet below top of casing
NP - Not Present - no measurable product detected
Sheen indicates non-measurable thickness of product (<0.01 foot)

Table 2

Summary of Groundwater Quality Analytical Data for August 2005

Site AS-843

EPA Method 601/602 (ug/L)	NCGWQS	GCL	MW-1 08/31/05	MW-2 08/31/05	MW-3 08/31/05	MW-4 08/31/05	DUP [1] 08/31/05	MW-5 08/31/05
Benzene	1	5000	<1.00	<1.00	**1.09**	<1.00	<1.00	<1.00
Ethylbenzene	29	29,000	<1.00	<1.00	**3.69**	<1.00	<1.00	**0.322 J**
Toluene	1000	257,500	<1.00	**0.632 J**	**0.729 J**	**0.491 J**	**0.485 J**	**0.679 J**
m,p-Xylene [2]			<2.00	<2.00	**0.647 J**	<2.00	<2.00	**0.927 J**
o-Xylene [2]			<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
Total Xylenes [2]	530	87,500	<4.00	<4.00	**0.647 J**	<4.00	<4.00	**0.927 J**
EPA Method 625 (ug/L)								
Acenaphthene	80	2120	<10.0	**2.20 J**	**5.60 J**	**4.80 J**	**5.80 J**	**1.90 J**
Acenaphthlyene	210	1965	<10.0	<10.0	<10.0	<10.0	**1.20 J**	<10.0
Fluorene	280	950	<10.0	<10.0	**5.30 J**	**5.10 J**	**6.00 J**	<10.0
Naphthalene	21	15,500	<10.0	<10.0	**12.7**	**1.30 J**	**1.30 J**	**23.8**
Phenanthrene	210	410	<10.0	<10.0	<10.0	**4.30 J**	**7.40 J**	<10.0
MADEP VPH (ug/L)								
C_5-C_8 Aliphatics	420	NE	<100	<100	<100	<100	<100	<100
C_9-C_{12} Aliphatics [3]			<100	<100	**160**	**150**	**160**	<100
C_9-C_{10} Aromatics [3]			<100	<100	<100	<100	<100	<100
MADEP EPH (ug/L)								
C_9-C_{18} Aliphatics [3]			<100	<100	**760**	**1000**	**570**	<100
C_{19}-C_{36} Aliphatics	42,000	NE	<100	<100	**130**	**210**	**120**	<100
C_{11}-C_{22} Aromatics [3]			<100	<100	**190**	**300**	**280**	<100
MADEP VPH + EPH (ug/L)								
C_9-C_{12} + C_9-C_{18} Aliphatics [3]	4200	NE	<200	<200	**920**	**1150**	**730**	<200
C_9-C_{10} + C_{11}-C_{22} Aromatics [3]	210	NE	<200	<200	**190**	**300**	**280**	<200

[1] DUP is a duplicate sample collected from well MW-4

[2] Laboratory quantiation is performed on the m,p-xylene isomers and on the o-xylene isomer; the NCGWQS is based on the sum of the m-, p-, and o-xylene isomers; the sum of the m,p-xylene isomers and the o-xylene isomer is presented as Total Xylenes

[3] Laboratory quantiation is performed on each of the indicated hydrocarbon fractions; NCGWQSs are based on the sum of the indicated fractions; the sums for the indicated fractions are presented as MADEP VPH + EPH

J: Estimated concentration below reporting limits or estimated concentration for TIC quantitations

NS: Not Sampled; measurable free product detected

GCL: Gross Contamination Level

NE: Not Established; a GCL has not been established for the analyte

NCGWQS: North Carolina Groundwater Quality Standard

ug/L: micrograms per liter

Bold type indicates analyte detection

Shaded area in bold indicates analyte detection at a concentration above the NCGWQS

Shaded area in bold italics indicates analyte detection at a concentration above the GCL

Table 3
Groundwater Quality Analytical Data Over Time
Site AS-843

EPA Method 602, 601, or 6210D (ug/L)	NCGWQS	GCL	MW-1					MW-2								MW-3						MW-4							MW-5			
			July 1993	January 1998	July 1998	August 1999	August 2005	July 1993	January 1998	July 1998	August 1999	October 2000	April 2001	May 2002	August 2005	July 1993 Primary	July 1993 Dup	August 1999	April 2001	May 2002	August 2005	July 1995	August 1999	October 2000	April 2001	May 2002	August 2005 Primary	August 2005 Dup	October 2000	April 2001	May 2002	August 2005
Benzene	1	5,000	<0.2	ND	ND	ND	<1.00	<0.2	**1.24**	**1.66**	**1**	**1**	**0.6**	<0.5	<1.00	<0.2	na	ND	**3**	<0.5	**1.09**	**11**	ND	**0.8**	ND	**0.7**	<1.00	<1.00	ND	nr	<2	<1.00
n-Butylbenzene	70	6,900	nr	nr	nr	nr	na	nr	nr	nr	nr	nr	nr	<0.5	na	nr	na	nr	**0.8**	<0.5	na	nr	nr	nr	ND	**0.9**	na	na	nr	nr	<2	na
sec-Butylbenzene	70	8,500	nr	nr	nr	nr	na	nr	nr	nr	nr	**0.8**	ND	**0.6**	na	nr	na	nr	**0.7**	**0.5**	na	nr	nr	**0.7**	ND	**1.0**	na	na	ND	nr	<2	na
cis-1,2-Dichloroethene	70	70,000	nr	nr	nr	nr	<1.00	nr	nr	nr	nr	**2**	**2**	**0.8**	<1.00	nr	na	nr	**3**	<0.5	<1.00	nr	nr	ND	ND	<0.5	<1.00	<1.00	ND	nr	<2	<1.00
Ethylbenzene	29	29,000	<0.8	ND	ND	ND	<1.00	<0.8	ND	ND	**1**	ND	ND	<0.5	<1.00	**1.0**	na	ND	**9**	<0.5	**3.69**	**27**	ND	**2**	**1**	**0.7**	<1.00	<1.00	ND	nr	<2	**0.322 J**
Isopropylbenzene	70	25,000	nr	nr	nr	nr	na	nr	nr	nr	nr	ND	nr	<0.5	na	nr	nr	nr	**3**	<0.5	na	nr	nr	**1**	**0.7**	**2.0**	na	na	ND	nr	<2	na
Naphthalene	21	15,500	nr	nr	nr	nr	na	nr	nr	nr	nr	**0.5**	**0.7**	<0.5	na	nr	nr	nr	**10**	**0.9**	na	nr	nr	**1**	**2**	**4.0**	na	na	**32**	**23**	**97**	na
n-Propyl benzene	70	30,000	nr	nr	nr	nr	na	nr	nr	nr	nr	ND	nr	<0.5	na	nr	nr	nr	**2**	<0.5	na	nr	nr	**0.7**	**0.7**	**0.9**	na	na	ND	nr	<2	na
Toluene	1,000	257,500	<0.5	ND	ND	ND	<1.00	<0.5	ND	ND	ND	ND	nr	nr	**0.632 J**	**0.7**	na	ND	nr	nr	**0.729 J**	**1**	ND	ND	nr	nr	**0.491 J**	**0.485 J**	nr	nr	nr	**0.679 J**
1,3,5-Trimethylbenzene	350	25,000	nr	nr	nr	nr	na	nr	nr	nr	nr	ND	nr	nr	na	nr	nr	nr	**3**	nr	na	nr	nr	ND	**0.7**	nr	na	na	nr	nr	nr	na
Total Xylenes	530	87,500	<1.7	ND	ND	ND	<4.00	<1.7	ND	ND	ND	ND	nr	nr	<4.00	<1.7	na	ND	**7**	nr	**0.647 J**	**81**	ND	ND	ND	nr	<4.00	<4.00	nr	nr	nr	**0.927 J**
EPA Method 625 (ug/L)																																
Acenaphthene	80	2,120	nr	**1.59**	ND	ND	<10.0	nr	ND	ND	ND	ND	ND	nr	**2.20 J**	nr	nr	**19**	**16**	nr	**5.60 J**	nr	ND	ND	ND	nr	**4.80 J**	**5.80 J**	ND	nr	nr	**1.90 J**
Acenaphthylene	210	1,965	nr	nr	nr	nr	<10.0	nr	nr	nr	nr	nr	nr	nr	<10.0	nr	nr	nr	nr	nr	<10.0	nr	nr	nr	nr	nr	<10.0	**1.20 J**	nr	nr	nr	<10.0
Anthracene	2100	2,100	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	ND	ND	nr	<10.0	nr	nr	**23**	**10**	nr	<10.0	nr	ND	ND	ND	nr	<10.0	<10.0	ND	nr	nr	<10.0
Benzo[a]anthracene	0.0479	22	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	nr	nr	nr	<10.0	nr	nr	**15**	**13**	nr	<10.0	nr	ND	nr	ND	nr	<10.0	<10.0	nr	nr	nr	<10.0
Benzo[k]fluoranthene	0.479	0.47	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	nr	nr	nr	<10.0	nr	nr	***10***	nr	nr	<10.0	nr	ND	nr	nr	nr	<10.0	<10.0	nr	nr	nr	<10.0
Benzo[a]pyrene	0.00479	1.5	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	nr	nr	nr	<10.0	nr	nr	***11***	nr	nr	<10.0	nr	ND	nr	nr	nr	<10.0	<10.0	nr	nr	nr	<10.0
Bis(2-ethylhexyl)phthalate	3	3,000	<12	nr	nr	nr	<10.0	**1.2 JB**	nr	nr	nr	nr	nr	nr	<10.0	**1.3 JB**	**280 B**	nr	nr	nr	<10.0	nr	nr	nr	nr	nr	<10.0	<10.0	nr	nr	nr	<10.0
Chrysene	4.79	5	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	ND	ND	nr	<10.0	nr	nr	***17***	***14***	nr	<10.0	nr	ND	ND	ND	nr	<10.0	<10.0	ND	nr	nr	<10.0
Fluoranthene	280	280	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	nr	nr	nr	<10.0	nr	nr	**71**	**35**	nr	<10.0	nr	ND	nr	ND	nr	<10.0	<10.0	nr	nr	nr	<10.0
Fluorene	280	950	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	ND	ND	nr	<10.0	nr	nr	**37**	**26**	nr	**5.30 J**	**11**	ND	ND	ND	nr	**5.10 J**	**6.00 J**	ND	nr	nr	<10.0
Naphthalene	21	15,500	<12	**2.7**	ND	ND	<10.0	<10	**6.64**	ND	ND	ND	ND	<10	<10.0	**16**	**17 J**	ND	**15**	<10	**12.7**	**87**	ND	ND	ND	<10	**1.30 J**	**1.30 J**	**29**	**24**	**54**	**23.8**
Phenanthrene	210	410	nr	nr	nr	nr	<10.0	nr	nr	nr	nr	ND	ND	nr	<10.0	nr	nr	nr	**15**	nr	<10.0	nr	nr	ND	ND	nr	**4.30 J**	**7.40 J**	ND	nr	nr	<10.0
Pyrene	210	210	nr	nr	nr	ND	<10.0	nr	nr	nr	ND	ND	ND	nr	<10.0	nr	nr	**44**	**34**	nr	<10.0	nr	ND	ND	ND	nr	<10.0	<10.0	ND	nr	nr	<10.0
TICs (total)			nr	nr	nr	None	na	nr	nr	nr	**93 J**	**10.8 J**	**10.9 J**	None	na	nr	nr	**1077 J**	**1444 J**	**885 J**	na	**503 J**	**73 J**	None	**103 J**	**122.3 J**	na	na	**92 J**	**53 J**	**537.2**	na
MADEP VPH + EPH (ug/L)																																
C_9-C_{18} Aliphatics	4,200	NE	na	na	na	ND	<200	na	na	na	**28**	**120**	ND	<100	<200	na	na	**140,033**	**3,530**	**750**	**920**	na	**3,278**	**120**	**160**	**1,000**	**1,150**	**730**	ND	ND	<100	<200
C_{19}-C_{36} Aliphatics	42,000	NE	na	na	na	ND	<100	na	na	na	ND	ND	ND	<100	<100	na	na	**45,000**	**1,300**	**250**	**130**	na	ND	ND	ND	460	**210**	**120**	ND	ND	<100	<100
C_9-C_{22} Aromatics	210	NE	na	na	na	ND	<200	na	na	na	**25**	**120**	**290**	<100	<200	na	na	**8,828**	**1,500**	**530**	**190**	na	**1,954**	**190**	**340**	**1,000**	**300**	**280**	ND	ND	<100	<200

J: Estimated concentration below reporting limits or estimated concentration for TIC quantitations
B: compound detected in the laboratory blank
na: Not Analyzed, compound not quantitated in the analytic suite specified for the sample
nr: Not Reported; compound not reported in source document summary table (either not analyzed or not detected)
ns: Not Sampled
ND: Not Detected; compound quantitated and not detected; detection limit not specified in source document summay table
<#: Not detected at the indicated detection limit
None: TIC analysis conducted, no TICs detected

GCL:Gross Contamination Level
NE: Not Established; a GCL has not been established for the analyte
NCGWQS: North Carolina Groundwater Quality Standard
TICs (total): Tentatively Identified Compound; sum of all TICs; all TIC concentrations are estimated
ug/L: micrograms per liter

Bold type indicates analyte detection
Shaded area in bold indicates analyte detection at a concentration above the NCGWQS
Shaded area in bold italics indicates analyte detection at a concentration above the GCL

Table 4
Summary of Product Thickness Data Over Time
Site AS-843

Date	MW-1	MW-2	MW-3	MW-4	MW-5
20 July 1993	NP	NP	NP	ni	ni
21 July 1995	nm	nm	nm	Droplets	ni
28 January 1998	NP	NP	NP	0.08	ni
8 July 1998	NP	NP	nr	nr	ni
2 August 1999	NP	NP	NP	NP	ni
19 July 2000	NP	NP	NP	NP	ni
4 August 2000	nm	nm	nm	nm	NP
12 October 2000	NP	NP	0.02	NP	NP
16 January 2001	NP	NP	NP	NP	NP
13 April 2001	NP	NP	NP	NP	NP
12 September 2001	NP	NP	NP	NP	NP
16 November 2001	NP	NP	NP	NP	NP
5 March 2002	NP	NP	NP	NP	NP
29 May 2002	NP	NP	NP	NP	NP
29 November 2004	NP	NP	NP	0.04	NP
25 February 2005	NP	NP	NP	Sheen	NP
31 May 2005	NP	NP	NP	NP	NP
31 August 2005	NP	NP	NP	NP	NP

Product thickness data expressed in feet
"Droplets" and "Sheen" indicate non-measurable thickness of product (<0.01 foot)

ni: Not Installed; well not installed at the time gauging was conducted
nl: Not Located: well could not be located
nr: Not Reported; gauging data, if collected, were not reported
nm: Not Measured; well not measured during the gauging event
NP: Not Present; no measurable thickness of free product present in the well

Attachment C

Field Data Sheets

ENGINEERING AND ENVIRONMENT, INC. **Water Levels, AS-843** **Date: 11/29/2004**

Well ID	MW01	Depth to Bottom		Depth to Product		Depth to Water	6.60
Well ID	MW02	Depth to Bottom		Depth to Product		Depth to Water	6.79
Well ID	MW03	Depth to Bottom		Depth to Product		Depth to Water	5.52
Well ID	MW04	Depth to Bottom		Depth to Product	4.13	Depth to Water	4.17
Well ID	MW05	Depth to Bottom		Depth to Product		Depth to Water	6.72

removed approximately two ounces of product from well MW-04 via hand bailing

ENGINEERING AND ENVIRONMENT, INC.

Water Levels, AS-843

Date: 2/25/2005

Well ID	MW01	Depth to Bottom		Depth to Product		Depth to Water	5.90
Well ID	MW02	Depth to Bottom		Depth to Product		Depth to Water	5.14
Well ID	MW03	Depth to Bottom		Depth to Product		Depth to Water	4.90
Well ID	MW04	Depth to Bottom		Depth to Product	3.24	Depth to Water	3.24
Well ID	MW05	Depth to Bottom		Depth to Product		Depth to Water	5.69

no measurable thickness at well MW04, but a sheen was observed and a sorbent sock was installed

ENGINEERING AND ENVIRONMENT, INC.

Water Levels, AS-843 **Date: 5/31/2005**

Well ID	MW01	Depth to Bottom		Depth to Product		Depth to Water	5.33
Well ID	MW02	Depth to Bottom		Depth to Product		Depth to Water	4.75
Well ID	MW03	Depth to Bottom		Depth to Product		Depth to Water	4.85
Well ID	MW04	Depth to Bottom		Depth to Product		Depth to Water	2.50
Well ID	MW05	Depth to Bottom		Depth to Product		Depth to Water	5.60

sorbvent sock at well MW04 was removed 17 May 2005; sorbent sock was not re-installed at well MW04 after 31 May 2005gauging event

ENGINEERING AND ENVIRONMENT, INC.

Water Levels, AS-843

Date: 8/31/2005

Well ID	MW01	Depth to Bottom		Depth to Product		Depth to Water	6.45
Well ID	MW02	Depth to Bottom		Depth to Product		Depth to Water	5.95
Well ID	MW03	Depth to Bottom		Depth to Product		Depth to Water	5.91
Well ID	MW04	Depth to Bottom		Depth to Product		Depth to Water	3.94
Well ID	MW05	Depth to Bottom		Depth to Product		Depth to Water	6.62

ENGINEERING AND ENVIRONMENT, INC.

Bldg. AS-843 Field Data

Project #LD03-016

Date 8/31/2005 **Time** 15:40 **Weather** partly sunny

Sampler BS **Well/Sample #** AS843 - MW01

Depth To Bottom (ft) 16.75 **Depth To Water (ft)** 6.45 **Water Depth (ft)** 10.30

Well Vol. 1.68 **Purge Vol.** **Vol. Purged**

Sampling Device (pump/Bailer)

	ONE	TWO	THREE	FOUR	FIVE	SIX	UNIT
Time	15:27	15:30	15:33	15:36	15:39		N/A
Temperature	23.64	22.96	22.69	22.51	22.40		©
Spec. Conductivity	0.177	0.177	0.177	0.178	0.179		(m s/m)
Dissolved Oxygen	0.94	0.50	0.37	0.30	0.25		ms/L
PH	5.77	5.67	5.59	5.54	5.53		STD
ORP	-78.20	-75.60	-79.20	-79.00	-79.70		(G/L)
Turbitidy	121.00	61.70	36.20	21.50			(NTU)

Analyte	Size	Preserv.
6210D	3 X 40 ml	HCL
625	1 X 1 L	None
VPH	2 X 40 ml	HCL

Comments:

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

Pid							
Time							
SWL							
Pump Depth							

ENGINEERING AND ENVIRONMENT, INC.

Bldg. AS-843 Field Data

Project #LD03-016

Date 8/31/2005 **Time** 12:58 **Weather** sunny

Sampler BS **Well/Sample #** AS843 - MW02

Depth To Bottom (ft) 18.50 **Depth To \Water (ft)** 5.95 **Water Depth (ft)** 12.55

Well Vol. 2.05 **Purge Vol.** **Vol. Purged**

Sampling Device (pump/Bailer)

	ONE	TWO	THREE	FOUR	FIVE	SIX	UNIT
Time	12:27	12:33	12:40	12:48	12:56		N/A
Temperature	24.13	24.11	23.77	23.82	23.80		©
Spec. Conductivity	0.187	0.268	0.299	0.296	0.290		(m s/m)
Dissolved Oxygen	2.67	1.07	0.60	0.44	0.45		ms/L
PH	7.21	6.38	6.41	6.40	6.46		STD
ORP	-150.20	-144.00	-141.30	-138.50	-138.60		(G/L)
Turbitidy	78.60	52.10	33.90	21.00	15.10		(NTU)

Analyte	Size	Preserv.
6210D	3 X 40 ml	HCL
625	1 X 1 L	None
VPH	2 X 40 ml	HCL

Comments:

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

Pid							
Time							
SWL							
Pump Depth							

ENGINEERING AND ENVIRONMENT, INC.

Bldg. AS-843 Field Data

Project #LD03-016

Date 8/31/2005 **Time** 15:10 **Weather** partly sunny

Sampler BS **Well/Sample #** AS843 - MW03

Depth To Bottom (ft) 16.33 **Depth To \ Water (ft)** 5.91 **Water Depth (ft)** 11.23

Well Vol. 1.83 **Purge Vol.** **Vol. Purged**

Sampling Device (pump/Bailer)

	ONE	TWO	THREE	FOUR	FIVE	SIX	UNIT
Time	14:47	14:52	14:58	15:03	15:08		N/A
Temperature	23.08	22.40	22.22	22.23	22.37		©
Spec. Conductivity	0.169	0.198	0.223	0.222	0.221		(m s/m)
Dissolved Oxygen	1.26	0.67	0.75	0.74	0.84		ms/L
PH	6.51	6.34	6.39	6.41	6.44		STD
ORP	-126.20	-128.20	-130.40	-129.80	-130.00		(G/L)
Turbitidy	O/L	O/L	430.00	246.00	168.00		(NTU)

Analyte	Size	Preserv.
6210D	3 X 40 ml	HCL
625	1 X 1 L	None
VPH	2 X 40 ml	HCL

Comments:

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

Pid							
Time							
SWL							
Pump Depth							

ENGINEERING AND ENVIRONMENT, INC.

Bldg. AS-843 Field Data

Project #LD03-016

Date 8/31/2005 **Time** 13:48 **Weather** partly sunny

Sampler BS **Well/Sample #** AS843 - MW04

Depth To Bottom (ft) 12.15 **Depth To \ Water (ft)** 3.94 **Water Depth (ft)** 8.21

Well Vol. 5.36 **Purge Vol.** **Vol. Purged**

Sampling Device (pump/Bailer)

	ONE	TWO	THREE	FOUR	FIVE	SIX	UNIT
Time	13:16						N/A
Temperature	25.88						©
Spec. Conductivity	0.573						(m s/m)
Dissolved Oxygen	1.29						ms/L
PH	6.99						STD
ORP	-154.30						(G/L)
Turbitidy	34.30						(NTU)

Analyte	Size	Preserv.
6210D	3 X 40 ml	HCL
625	1 X 1 L	None
VPH	2 X 40 ml	HCL

Comments:	Dry at 1.5 vol.; waited 20 minutes; took sample
	DUP

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

Pid							
Time							
SWL							
Pump Depth							

ENGINEERING AND ENVIRONMENT, INC.

Bldg. AS-843 Field Data

Project #LD03-016

Date 8/31/2005 **Time** 14:25 **Weather** partly sunny

Sampler BS **Well/Sample #** AS843 - MW05

Depth To Bottom (ft) 26.70 **Depth To \Water (ft)** 6.62 **Water Depth (ft)** 20.08

Well Vol. 3.28 **Purge Vol.** **Vol. Purged**

Sampling Device (pump/Bailer)

	ONE	TWO	THREE	FOUR	FIVE	SIX	UNIT
Time	14:01	14:08	14:16	14:24			N/A
Temperature	20.93	21.08	20.95	20.82			©
Spec. Conductivity	0.262	0.167	0.151	0.151			(m s/m)
Dissolved Oxygen	0.82	0.50	0.35	0.28			ms/L
PH	6.93	6.28	6.14	6.08			STD
ORP	-129.70	-123.40	-122.70	-120.70			(G/L)
Turbitidy	199.00	32.20	11.90	9.60			(NTU)

Analyte	Size	Preserv.
6210D	3 X 40 ml	HCL
625	1 X 1 L	None
VPH	2 X 40 ml	HCL

Comments:

2" well vol.=water depth X 0.1632 4" well vol.=water depth x 0.6528

Pid							
Time							
SWL							
Pump Depth							

Attachment D

Laboratory Analytical Report

Mr. Bill Morris
Engineering & Environment, Inc.
824 Gum Branch Road
Jacksonville NC 28546

Report Number: G546-52

Client Project: AS 843

Dear Mr. Morris:

Enclosed are the results of the analytical services performed under the referenced project. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or the services performed during this project, please call Paradigm at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using Paradigm Analytical Labs for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,
Paradigm Analytical Laboratories, Inc.

9/14/05

Laboratory Director — Date
J. Patrick Weaver

Results for Volatiles

by GC 601

Client Sample ID: USTAS843-MW01
Client Project ID: AS 843
Lab Sample ID: G546-52-1A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 15:40
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	38.1	95.3

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 601

Client Sample ID: USTAS843-MW03
Client Project ID: AS 843
Lab Sample ID: G546-52-2A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 15:10
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	40.6	102

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 601

Client Sample ID: USTAS843-MW05
Client Project ID: AS 843
Lab Sample ID: G546-52-3A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 14:25
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	40.8	102

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 601

Client Sample ID: USTAS843-MW04
Client Project ID: AS 843
Lab Sample ID: G546-52-4A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 13:48
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	40.1	100

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 601

Client Sample ID: USTAS843-MW02
Client Project ID: AS 843
Lab Sample ID: G546-52-5A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 12:58
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	41.0	102

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 601

Client Sample ID: USTAS843-Dup
Client Project ID: AS 843
Lab Sample ID: G546-52-6A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 0:00
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	41.5	104

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW01
Client Project ID: AS 843
Lab Sample ID: G546-52-1A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 15:40
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.316	1	9/6/2005	
Diisopropyl ether (DIPE)	BQL	1.00	0.294	1	9/6/2005	
Ethylbenzene	BQL	1.00	0.299	1	9/6/2005	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.588	1	9/6/2005	
Toluene	BQL	1.00	0.302	1	9/6/2005	
m/p-Xylene	BQL	2.00	0.608	1	9/6/2005	
o-Xylene	BQL	2.00	0.596	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.6	104

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW03
Client Project ID: AS 843
Lab Sample ID: G546-52-2A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 15:10
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	**1.09**	1.00	0.316	1	9/6/2005	
Diisopropyl ether (DIPE)	BQL	1.00	0.294	1	9/6/2005	
Ethylbenzene	**3.69**	1.00	0.299	1	9/6/2005	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.588	1	9/6/2005	
Toluene	**0.729**	1.00	0.302	1	9/6/2005	J
m/p-Xylene	**0.647**	2.00	0.608	1	9/6/2005	J
o-Xylene	BQL	2.00	0.596	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.5	104

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW02
Client Project ID: AS 843
Lab Sample ID: G546-52-5A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 12:58
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.316	1	9/6/2005	
Diisopropyl ether (DIPE)	BQL	1.00	0.294	1	9/6/2005	
Ethylbenzene	BQL	1.00	0.299	1	9/6/2005	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.588	1	9/6/2005	
Toluene	**0.632**	1.00	0.302	1	9/6/2005	J
m/p-Xylene	BQL	2.00	0.608	1	9/6/2005	
o-Xylene	BQL	2.00	0.596	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.3	103

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles
by GC 602

Client Sample ID: USTAS843-Dup
Client Project ID: AS 843
Lab Sample ID: G546-52-6A
Lab Project ID: G546-52

Analyzed By: MJC
Date Collected: 8/31/2005 0:00
Date Received: 9/2/2005
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.316	1	9/6/2005	
Diisopropyl ether (DIPE)	BQL	1.00	0.294	1	9/6/2005	
Ethylbenzene	BQL	1.00	0.299	1	9/6/2005	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.588	1	9/6/2005	
Toluene	**0.485**	1.00	0.302	1	9/6/2005	J
m/p-Xylene	BQL	2.00	0.608	1	9/6/2005	
o-Xylene	BQL	2.00	0.596	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.5	104

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 601

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK3090605A
Lab Project ID:

Analyzed By: MJC
Date Collected:
Date Received:
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Bromodichloromethane	BQL	1.00	0.412	1	9/6/2005	
Bromoform	BQL	2.00	0.332	1	9/6/2005	
Bromomethane	BQL	1.00	0.36	1	9/6/2005	
Carbon tetrachloride	BQL	1.00	0.884	1	9/6/2005	
Chlorobenzene	BQL	1.00	0.36	1	9/6/2005	
Chloroethane	BQL	1.00	0.269	1	9/6/2005	
Chloroform	BQL	1.00	0.422	1	9/6/2005	
Chloromethane	BQL	1.00	0.374	1	9/6/2005	
Dibromochloromethane	BQL	1.00	0.397	1	9/6/2005	
1,2-Dibromoethane (EDB)	BQL	1.00	0.394	1	9/6/2005	
1,2-Dichlorobenzene	BQL	1.00	0.336	1	9/6/2005	
1,3-Dichlorobenzene	BQL	1.00	0.286	1	9/6/2005	
1,4-Dichlorobenzene	BQL	1.00	0.322	1	9/6/2005	
1,1-Dichloroethane	BQL	1.00	0.373	1	9/6/2005	
1,2-Dichloroethane	BQL	1.00	0.441	1	9/6/2005	
1,1-Dichloroethene	BQL	1.00	0.379	1	9/6/2005	
cis-1,2-Dichloroethene	BQL	1.00	0.887	1	9/6/2005	
trans-1,2-Dichloroethene	BQL	1.00	0.316	1	9/6/2005	
1,2-Dichloropropane	BQL	1.00	0.4	1	9/6/2005	
cis-1,3-Dichloropropene	BQL	1.00	0.373	1	9/6/2005	
trans-1,3-Dichloropropene	BQL	1.00	0.394	1	9/6/2005	
Methylene Chloride	BQL	5.00	0.413	1	9/6/2005	
1,1,2,2-Tetrachloroethane	BQL	1.00	1	1	9/6/2005	
Tetrachloroethene	BQL	1.00	0.784	1	9/6/2005	
1,1,1-Trichloroethane	BQL	1.00	0.365	1	9/6/2005	
1,1,2-Trichloroethane	BQL	1.00	0.482	1	9/6/2005	
Trichloroethene	BQL	1.00	0.442	1	9/6/2005	
Trichlorofluoromethane	BQL	1.00	0.289	1	9/6/2005	
Vinyl Chloride	BQL	1.00	0.273	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
1,4-Dichlorobutane	40	39.3	98.1

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Results for Volatiles

by GC 602

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK3090605A
Lab Project ID:

Analyzed By: MJC
Date Collected:
Date Received:
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.316	1	9/6/2005	
Diisopropyl ether (DIPE)	BQL	1.00	0.294	1	9/6/2005	
Ethylbenzene	BQL	1.00	0.299	1	9/6/2005	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.588	1	9/6/2005	
Toluene	BQL	1.00	0.302	1	9/6/2005	
m/p-Xylene	BQL	2.00	0.608	1	9/6/2005	
o-Xylene	BQL	2.00	0.596	1	9/6/2005	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.4	104

Comments:
All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: _____

Control Limits for QC Check / Laboratory Control Spike

Method : 601 **Spike[ppb] : 10**
Instrument : gc3
Filename : 090605\004f0101.txt

				QC Limits			LCS Limits	
	Compound	ppb	Q(%)	Lower	Upper	P_s(%)	Lower	Upper
	Bromodichloromethane	10.5	105.1	76.0	124.0	105	42	172
	Bromoform	11.0	110.0	73.5	126.5	110	13	159
	Bromomethane	8.8	87.9	58.5	141.5	88	D	144
	Carbon tetrachloride	10.6	106.3	68.5	131.5	106	43	143
	Chlorobenzene	10.8	107.5	72.0	128.0	108	38	150
	Chloroethane	8.9	89.4	77.0	123.0	89	46	137
	Chloroform	10.6	106.5	76.0	125.0	106	49	133
	Chloromethane	9.3	93.0	59.5	140.5	93	D	193
	Dibromochloromethane	10.8	107.8	66.5	134.5	108	24	191
•	1,2-Dibromoethane	10.6	106.1	13.6	186.4	106	D	206
	1,2-Dichlorobenzene	10.6	106.0	70.0	130.0	106	D	208
	1,3-Dichlorobenzene	10.9	108.9	49.5	150.5	109	7	187
	1,4-Dichlorobenzene	11.1	111.4	69.5	130.5	111	42	143
	1,1-Dichloroethane	10.7	107.2	84.0	116.0	107	47	132
	1,2-Dichloroethane	10.1	101.2	71.5	128.5	101	51	147
	1,1-Dichloroethene	10.2	101.7	63.0	137.0	102	28	167
•	cis-1,2-Dichloroethene	10.8	108.4	34.4	180.6	108	19	181
	trans-1,2-Dichloroethene	10.8	107.7	64.0	136.0	108	38	155
	1,2-Dichloropropane	10.8	108.1	74.0	126.0	108	44	156
	cis-1,3-Dichloropropene	10.8	108.4	64.0	136.0	108	22	178
	trans-1,3-Dichloropropene	10.4	104.0	64.0	136.0	104	22	178
	Methylene Chloride	10.5	105.1	77.5	122.5	105	26	162
	1,1,2,2-Tertrachloroethane	10.8	107.6	49.0	151.0	108	8	184
	Tetrachloroethane	10.6	106.1	70.0	130.0	106	26	162
	1,1,1-Trichloroethane	10.5	105.3	71.0	129.0	105	41	138
	1,1,2-Trichloroethane	10.4	104.3	78.5	121.5	104	39	136
	Trichloroethene	10.4	104.2	77.0	123.0	104	35	146
	Trichlorofluromethane	8.9	88.8	66.5	133.5	89	21	156
	Vinyl Chloride	8.9	88.8	68.5	131.5	89	28	163

Method: 602 **Spike[ppb] : 10**
Instrument : gc3
Filename : 090605\004r0101.txt

				QC Limits			LCS Limits	
	Compound	ppb	Q(%)	Lower	Upper	P_s(%)	Lower	Upper
	Benzene	10.1	100.7	77.0	123.0	101	39	150
	Chlorobenzene	10.2	101.6	80.5	119.5	102	55	135
	1,2-Dichlorobenzene	10.4	103.9	68.0	132.0	104	37	154
	1,3-Dichlorobenzene	10.1	101.3	72.5	127.5	101	50	141
	1,4-Dichlorobenzene	10.2	102.4	69.5	130.5	102	42	143
•	Diisopropyl ether	10.1	100.9	43.1	156.9	101	30	170
	Ethylbenzene	10.3	102.6	63.0	137.0	103	32	160
•	MTBE	10.0	100.4	46.8	153.2	100	35	165
	Toluene	10.2	101.7	77.5	127.0	102	46	148
•	m,p-Xylene	20.7	103.3	11.2	188.8	103	D	239
•	o-Xylene	10.0	100.3	47.6	152.4	100	36	164

Flags :

+ = out of QC limits.
• = lab generated limits.
D = Detected

Reviewed by: RDV

Control Limits for MS-MSD

Method : 601 **Spike[ppb] :** 10
Instrument : gc3
Sample : 090605\018f0101.txt
MS : 090605\019f0101.txt
MSD : 090605\020f0101.txt

		µg/L		P(%)		P Limits	
	Compound	Sam.	MS	MSD	MS	MSD	Lower	Upper
	Bromodichloromethane	ND	10.8	10.9	108	109	42	172
	Bromoform	ND	11.4	11.5	114	115	13	159
	Bromomethane	ND	7.8	8.5	78	85	D	144
	Carbon tetrachloride	ND	10.9	11.0	109	110	43	143
	Chlorobenzene	ND	10.9	10.8	109	108	38	150
	Chloroethane	ND	8.8	9.0	88	90	46	137
	Chloroform	ND	11.0	11.1	110	111	49	133
	Chloromethane	ND	9.1	9.4	91	94	D	193
	Dibromochloromethane	ND	11.1	11.1	111	111	24	191
•	1,2-Dibromoethane	ND	10.9	10.9	109	109	D	206
	1,2-Dichlorobenzene	ND	10.8	10.8	108	108	D	208
	1,3-Dichlorobenzene	ND	10.9	10.8	109	108	7	187
	1,4-Dichlorobenzene	ND	11.1	11.1	111	111	42	143
	1,1-Dichloroethane	ND	10.7	11.0	107	110	47	132
	1,2-Dichloroethane	ND	10.7	10.9	107	109	51	147
	1,1-Dichloroethene	ND	10.5	10.7	105	107	28	167
•	cis-1,2-Dichloroethene	ND	10.7	10.8	107	108	19	181
	trans-1,2-Dichloroethene	ND	10.8	11.0	108	110	38	155
	1,2-Dichloropropane	ND	11.1	11.1	111	111	44	156
	cis-1,3-Dichloropropene	ND	10.8	10.8	108	108	22	178
	trans-1,3-Dichloropropene	ND	10.7	10.6	107	106	22	178
	Methylene Chloride	ND	10.5	10.8	105	108	25	162
	1,1,2,2-Tertrachloroethane	ND	11.1	11.0	111	110	8	184
	Tetrachloroethane	ND	11.0	10.8	110	108	26	162
	1,1,1-Trichloroethane	ND	10.8	11.0	108	110	41	138
	1,1,2-Trichloroethane	ND	11.0	10.9	110	109	39	136
	Trichloroethene	ND	10.7	10.8	107	108	35	146
	Trichlorofluromethane	ND	8.6	9.1	86	91	21	156
	Vinyl Chloride	ND	8.6	8.9	86	89	28	163

Method: 602 **Spike[ppb] :** 10
Instrument : gc3
Sample : 090605\018r0101.txt
MS : 090605\019r0101.txt
MSD : 090605\020r0101.txt

		µg/L		P(%)		P Limits	
	Compound	Sam.	MS	MSD	MS	MSD	Lower	Upper
	Benzene	11.3	21.6	21.7	103	104	39	150
	Chlorobenzene	ND	10.6	10.4	106	104	55	135
	1,2-Dichlorobenzene	ND	10.5	10.5	105	105	37	154
	1,3-Dichlorobenzene	ND	10.3	10.3	103	103	50	141
	1,4-Dichlorobenzene	ND	10.4	10.3	104	103	42	143
•	Diisopropyl ether	3.0	13.4	13.4	104	104	30	170
	Ethylbenzene	2.1	12.9	12.8	108	107	32	160
•	MTBE	ND	11.3	11.3	105	105	35	165
	Toluene	15.4	26.0	26.0	107	106	46	148
•	m,p-Xylene	8.1	29.9	29.8	109	109	D	239
•	o-Xylene	1.4	12.0	12.0	106	106	36	164

Flags :

+ = out of QC limits.
• = lab generated limits.
D = Detected
ND = None Detected

Reviewed by: _____

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW01
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/09/05
Date Analyzed	09/09/05
Dry Weight	
Dilution Factor	1
C_5-C_8 Aliphatics**	< 100 (µg/L)
C_9-C_{12} Aliphatics**	< 100 (µg/L)
C_9-C_{10} Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	96
Surrogate % Recovery - FID	97

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G546-52-1E

Reviewed By: _____

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW03
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/09/05
Date Analyzed	09/09/05
Dry Weight	
Dilution Factor	1
C_5-C_8 Aliphatics**	< 100 (µg/L)
C_9-C_{12} Aliphatics**	160 (µg/L)
C_9-C_{10} Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	100
Surrogate % Recovery - FID	100

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G546-52-2D

Reviewed By: _____

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW05
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/09/05
Date Analyzed	09/09/05
Dry Weight	
Dilution Factor	1
C_5-C_8 Aliphatics**	< 100 (µg/L)
C_9-C_{12} Aliphatics**	< 100 (µg/L)
C_9-C_{10} Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	96
Surrogate % Recovery - FID	99

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G546-52-3D

Reviewed By: _____

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW04
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/09/05
Date Analyzed	09/09/05
Dry Weight	
Dilution Factor	1
C_5-C_8 Aliphatics**	< 100 (µg/L)
C_9-C_{12} Aliphatics**	150 (µg/L)
C_9-C_{10} Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	95
Surrogate % Recovery - FID	98

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G546-52-4D

Reviewed By: _____

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 09/01/05 PID Initial Calibration Date: 09/01/05

Calibration Ranges and Limits

Range	MDL (07/15/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C_5-C_8 Aliphatics	4.4	14	100	10
C_9-C_{12} Aliphatics	3.4	11	100	10
C_9-C_{10} Aromatics	0.13	0.41	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	%RSD or CCC	Method of Quantitation
C_5-C_8 Aliphatics	40	4.6	Calibration Factor
	1000		
	2000		
	3000		
	4000		
C_9-C_{12} Aliphatics	10	24.5	Calibration Factor
	250		
	500		
	750		
	1000		
C_9-C_{10} Aromatics	10	24.4	Calibration Factor
	250		
	500		
	750		
	1000		

Calibration Check Date: 09/09/05

Calibration Check

Range	Levels (µg/L)	(mg/Kg)	RPD
C_5-C_8 Aliphatics	2000	200	0.6
C_9-C_{12} Aliphatics	500	50	-12.8
C_9-C_{10} Aromatics	500	50	-13.0

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit
RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW01
Sample Matrix	Water
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/06/05
Date Analyzed	09/07/05
Dry Weight	
Dilution Factor	1
C_9-C_{18} Aliphatics*	< 100 (ug/L)
C_{19}-C_{36} Aliphatics*	< 100 (ug/L)
C_{11}-C_{22} Aromatics*	< 100 (ug/L)
Aliphatic Surrogate % Recovery	83
Aromatic Surrogate % Recovery	85

Comments:

* = Excludes any surrogates or internal standards.
Sample did not require fractionation.

Lab info: G546-52-1H

Reviewed By: ____

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW04
Sample Matrix	Water
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/06/05
Date Analyzed	09/08/05
Dry Weight	
Dilution Factor	1:1
C_9-C_{18} Aliphatics*	1000 (ug/L)
C_{19}-C_{36} Aliphatics*	210 (ug/L)
C_{11}-C_{22} Aromatics*	300 (ug/L)
Aliphatic Surrogate % Recovery	57
Aromatic Surrogate % Recovery	65
Fractionation Surrogate 1 % Recovery	70

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G546-52-4H

Reviewed By: _____

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-MW02
Sample Matrix	Water
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/06/05
Date Analyzed	09/08/05
Dry Weight	
Dilution Factor	1:1
C_9-C_{18} Aliphatics*	< 100 (ug/L)
C_{19}-C_{36} Aliphatics*	< 100 (ug/L)
C_{11}-C_{22} Aromatics*	< 100 (ug/L)
Aliphatic Surrogate % Recovery	68
Aromatic Surrogate % Recovery	70
Fractionation Surrogate 1 % Recovery	81

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G546-52-5H

Reviewed By: [signature]

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Engineering & Environment, Inc.

Project Name: AS 843

Sample Information and Analytical Results	
Sample Identification	USTAS843-Dup
Sample Matrix	Water
Date Collected	08/31/05
Date Received	09/02/05
Date Extracted	09/06/05
Date Analyzed	09/10/05
Dry Weight	
Dilution Factor	1:1
C_9-C_{18} Aliphatics*	570 (ug/L)
C_{19}-C_{36} Aliphatics*	120 (ug/L)
C_{11}-C_{22} Aromatics*	280 (ug/L)
Aliphatic Surrogate % Recovery	45
Aromatic Surrogate % Recovery	66
Fractionation Surrogate 1 % Recovery	82

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G546-52-6H

Reviewed By:

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 07/05/05

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C_9-C_{18} Aliphatics	3.84	12.2	100	10
C_{19}-C_{36} Aliphatics	0.57	1.8	100	10
C_{11}-C_{22} Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C_9-C_{18} Aliphatics	6	16.80	Calibration Factor
	30		
	60		
	120		
	240		
C_{19}-C_{36} Aliphatics	8	9.4	Calibration Factor
	40		
	80		
	160		
	320		
C_{11}-C_{22} Aromatics	17	16.4	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 09/07/05

Calibration Check

Range	Levels (µg/mL)	RPD
C_9-C_{18} Aliphatics	120	24.2
C_{19}-C_{36} Aliphatics	160	7.0
C_{11}-C_{22} Aromatics	340	2.4

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit
RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 07/05/05

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C_9-C_{18} Aliphatics	3.84	12.2	100	10
C_{19}-C_{36} Aliphatics	0.57	1.8	100	10
C_{11}-C_{22} Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C_9-C_{18} Aliphatics	6	16.80	Calibration Factor
	30		
	60		
	120		
	240		
C_{19}-C_{36} Aliphatics	8	9.4	Calibration Factor
	40		
	80		
	160		
	320		
C_{11}-C_{22} Aromatics	17	16.4	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 09/08/05

Calibration Check

Range	Levels (µg/mL)	RPD
C_9-C_{18} Aliphatics	120	20.0
C_{19}-C_{36} Aliphatics	160	13.3
C_{11}-C_{22} Aromatics	340	-0.7

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit
RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 07/05/05

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C_9-C_{18} Aliphatics	3.84	12.2	100	10
C_{19}-C_{36} Aliphatics	0.57	1.8	100	10
C_{11}-C_{22} Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C_9-C_{18} Aliphatics	6	16.80	Calibration Factor
	30		
	60		
	120		
	240		
C_{19}-C_{36} Aliphatics	8	9.4	Calibration Factor
	40		
	80		
	160		
	320		
C_{11}-C_{22} Aromatics	17	16.4	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 09/09/05

Calibration Check

Range	Levels (µg/mL)	RPD
C_9-C_{18} Aliphatics	120	22.2
C_{19}-C_{36} Aliphatics	160	15.3
C_{11}-C_{22} Aromatics	340	1.7

MDL = Method Detection Limit
ML = Minimum Limit
RL = Reportable Limit
RPD = Relative Percent Difference
%RSD = Percent Relative Standard Deviation
CCC = Correlation Coefficient of Curve

Results for Semivolatiles by GCMS 625

Client Sample ID: USTAS843-MW01
Client Project ID: AS 843
Lab Sample ID: G546-52-1I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 15:40
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	10.0	1.22	1	9/10/2005	
Acenaphthylene	BQL	10.0	1.12	1	9/10/2005	
Anthracene	BQL	10.0	1.75	1	9/10/2005	
Benzo[a]anthracene	BQL	10.0	1.36	1	9/10/2005	
Benzo[a]pyrene	BQL	10.0	1.27	1	9/10/2005	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	9/10/2005	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	9/10/2005	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	9/10/2005	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	9/10/2005	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	9/10/2005	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	9/10/2005	
Butylbenzylphthalate	BQL	10.0	1.53	1	9/10/2005	
2-Chloronaphthalene	BQL	10.0	1.25	1	9/10/2005	
2-Chlorophenol	BQL	10.0	4.22	1	9/10/2005	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	9/10/2005	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	9/10/2005	
Chrysene	BQL	10.0	1.11	1	9/10/2005	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	9/10/2005	
Di-n-Butylphthalate	BQL	10.0	1.65	1	9/10/2005	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	9/10/2005	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	9/10/2005	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	9/10/2005	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	9/10/2005	
2,4-Dichlorophenol	BQL	10.0	3.75	1	9/10/2005	
Diethylphthalate	BQL	10.0	1.48	1	9/10/2005	
Dimethylphthalate	BQL	10.0	1.04	1	9/10/2005	
2,4-Dimethylphenol	BQL	10.0	9.25	1	9/10/2005	
Di-n-octylphthalate	BQL	10.0	1.16	1	9/10/2005	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	9/10/2005	
2,4-Dinitrophenol	BQL	50.0	4.20	1	9/10/2005	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	9/10/2005	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	9/10/2005	
Diphenylamine *	BQL	10.0	1.53	1	9/10/2005	
Fluoranthene	BQL	10.0	1.41	1	9/10/2005	
Fluorene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobenzene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobutadiene	BQL	10.0	1.58	1	9/10/2005	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	9/10/2005	
Hexachloroethane	BQL	10.0	1.58	1	9/10/2005	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	9/10/2005	

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW01
Client Project ID: AS 843
Lab Sample ID: G546-52-1I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 15:40
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Isophorone	BQL	10.0	1.27	1	9/10/2005	
Naphthalene	BQL	10.0	1.08	1	9/10/2005	
Nitrobenzene	BQL	10.0	1.32	1	9/10/2005	
2-Nitrophenol	BQL	10.0	3.52	1	9/10/2005	
4-Nitrophenol	BQL	50.0	3.17	1	9/10/2005	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	9/10/2005	
Pentachlorophenol	BQL	50.0	2.83	1	9/10/2005	
Phenanthrene	BQL	10.0	1.38	1	9/10/2005	
Phenol	BQL	10.0	3.38	1	9/10/2005	
Pyrene	BQL	10.0	2.08	1	9/10/2005	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	9/10/2005	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	9/10/2005	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9	90
2-Fluorophenol	10	8.8	88
Nitrobenzene-d5	10	8.8	88
Phenol-d6	10	8.7	87
2,4,6-Tribromophenol	10	7.7	77
4-Terphenyl-d14	10	8.8	88

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: _____

Results for Semivolatiles by GCMS 625

Client Sample ID: USTAS843-MW03
Client Project ID: AS 843
Lab Sample ID: G546-52-2I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 15:10
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	**5.60**	10.0	1.22	1	9/10/2005	J
Acenaphthylene	BQL	10.0	1.12	1	9/10/2005	
Anthracene	BQL	10.0	1.75	1	9/10/2005	
Benzo[a]anthracene	BQL	10.0	1.36	1	9/10/2005	
Benzo[a]pyrene	BQL	10.0	1.27	1	9/10/2005	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	9/10/2005	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	9/10/2005	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	9/10/2005	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	9/10/2005	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	9/10/2005	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	9/10/2005	
Butylbenzylphthalate	BQL	10.0	1.53	1	9/10/2005	
2-Chloronaphthalene	BQL	10.0	1.25	1	9/10/2005	
2-Chlorophenol	BQL	10.0	4.22	1	9/10/2005	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	9/10/2005	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	9/10/2005	
Chrysene	BQL	10.0	1.11	1	9/10/2005	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	9/10/2005	
Di-n-Butylphthalate	BQL	10.0	1.65	1	9/10/2005	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	9/10/2005	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	9/10/2005	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	9/10/2005	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	9/10/2005	
2,4-Dichlorophenol	BQL	10.0	3.75	1	9/10/2005	
Diethylphthalate	BQL	10.0	1.48	1	9/10/2005	
Dimethylphthalate	BQL	10.0	1.04	1	9/10/2005	
2,4-Dimethylphenol	BQL	10.0	9.25	1	9/10/2005	
Di-n-octylphthalate	BQL	10.0	1.16	1	9/10/2005	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	9/10/2005	
2,4-Dinitrophenol	BQL	50.0	4.20	1	9/10/2005	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	9/10/2005	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	9/10/2005	
Diphenylamine *	BQL	10.0	1.53	1	9/10/2005	
Fluoranthene	BQL	10.0	1.41	1	9/10/2005	
Fluorene	**5.30**	10.0	1.22	1	9/10/2005	J
Hexachlorobenzene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobutadiene	BQL	10.0	1.58	1	9/10/2005	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	9/10/2005	
Hexachloroethane	BQL	10.0	1.58	1	9/10/2005	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	9/10/2005	

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW03
Client Project ID: AS 843
Lab Sample ID: G546-52-2I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 15:10
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Isophorone	BQL	10.0	1.27	1	9/10/2005	
Naphthalene	12.7	10.0	1.08	1	9/10/2005	
Nitrobenzene	BQL	10.0	1.32	1	9/10/2005	
2-Nitrophenol	BQL	10.0	3.52	1	9/10/2005	
4-Nitrophenol	BQL	50.0	3.17	1	9/10/2005	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	9/10/2005	
Pentachlorophenol	BQL	50.0	2.83	1	9/10/2005	
Phenanthrene	BQL	10.0	1.38	1	9/10/2005	
Phenol	BQL	10.0	3.38	1	9/10/2005	
Pyrene	BQL	10.0	2.08	1	9/10/2005	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	9/10/2005	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	9/10/2005	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.5	95
2-Fluorophenol	10	8.6	86
Nitrobenzene-d5	10	9.4	94
Phenol-d6	10	9.5	95
2,4,6-Tribromophenol	10	7.7	77
4-Terphenyl-d14	10	8	80

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: _____

Results for Semivolatiles by GCMS 625

Client Sample ID: USTAS843-MW05
Client Project ID: AS 843
Lab Sample ID: G546-52-3K
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 14:25
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	1.90	10.0	1.22	1	9/10/2005	J
Acenaphthylene	BQL	10.0	1.12	1	9/10/2005	
Anthracene	BQL	10.0	1.75	1	9/10/2005	
Benzo[a]anthracene	BQL	10.0	1.36	1	9/10/2005	
Benzo[a]pyrene	BQL	10.0	1.27	1	9/10/2005	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	9/10/2005	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	9/10/2005	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	9/10/2005	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	9/10/2005	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	9/10/2005	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	9/10/2005	
Butylbenzylphthalate	BQL	10.0	1.53	1	9/10/2005	
2-Chloronaphthalene	BQL	10.0	1.25	1	9/10/2005	
2-Chlorophenol	BQL	10.0	4.22	1	9/10/2005	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	9/10/2005	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	9/10/2005	
Chrysene	BQL	10.0	1.11	1	9/10/2005	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	9/10/2005	
Di-n-Butylphthalate	BQL	10.0	1.65	1	9/10/2005	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	9/10/2005	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	9/10/2005	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	9/10/2005	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	9/10/2005	
2,4-Dichlorophenol	BQL	10.0	3.75	1	9/10/2005	
Diethylphthalate	BQL	10.0	1.48	1	9/10/2005	
Dimethylphthalate	BQL	10.0	1.04	1	9/10/2005	
2,4-Dimethylphenol	BQL	10.0	9.25	1	9/10/2005	
Di-n-octylphthalate	BQL	10.0	1.16	1	9/10/2005	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	9/10/2005	
2,4-Dinitrophenol	BQL	50.0	4.20	1	9/10/2005	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	9/10/2005	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	9/10/2005	
Diphenylamine *	BQL	10.0	1.53	1	9/10/2005	
Fluoranthene	BQL	10.0	1.41	1	9/10/2005	
Fluorene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobenzene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobutadiene	BQL	10.0	1.58	1	9/10/2005	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	9/10/2005	
Hexachloroethane	BQL	10.0	1.58	1	9/10/2005	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	9/10/2005	

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW05
Client Project ID: AS 843
Lab Sample ID: G546-52-3K
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 14:25
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Isophorone	BQL	10.0	1.27	1	9/10/2005	
Naphthalene	**23.8**	10.0	1.08	1	9/10/2005	
Nitrobenzene	BQL	10.0	1.32	1	9/10/2005	
2-Nitrophenol	BQL	10.0	3.52	1	9/10/2005	
4-Nitrophenol	BQL	50.0	3.17	1	9/10/2005	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	9/10/2005	
Pentachlorophenol	BQL	50.0	2.83	1	9/10/2005	
Phenanthrene	BQL	10.0	1.38	1	9/10/2005	
Phenol	BQL	10.0	3.38	1	9/10/2005	
Pyrene	BQL	10.0	2.08	1	9/10/2005	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	9/10/2005	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	9/10/2005	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.7	87
2-Fluorophenol	10	9.2	92
Nitrobenzene-d5	10	8.7	87
Phenol-d6	10	9.4	94
2,4,6-Tribromophenol	10	8.1	81
4-Terphenyl-d14	10	8.5	85

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: _____

Results for Semivolatiles by GCMS 625

Client Sample ID: USTAS843-MW04
Client Project ID: AS 843
Lab Sample ID: G546-52-4I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 13:48
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	4.80	10.0	1.22	1	9/10/2005	J
Acenaphthylene	BQL	10.0	1.12	1	9/10/2005	
Anthracene	BQL	10.0	1.75	1	9/10/2005	
Benzo[a]anthracene	BQL	10.0	1.36	1	9/10/2005	
Benzo[a]pyrene	BQL	10.0	1.27	1	9/10/2005	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	9/10/2005	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	9/10/2005	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	9/10/2005	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	9/10/2005	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	9/10/2005	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	9/10/2005	
Butylbenzylphthalate	BQL	10.0	1.53	1	9/10/2005	
2-Chloronaphthalene	BQL	10.0	1.25	1	9/10/2005	
2-Chlorophenol	BQL	10.0	4.22	1	9/10/2005	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	9/10/2005	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	9/10/2005	
Chrysene	BQL	10.0	1.11	1	9/10/2005	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	9/10/2005	
Di-n-Butylphthalate	BQL	10.0	1.65	1	9/10/2005	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	9/10/2005	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	9/10/2005	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	9/10/2005	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	9/10/2005	
2,4-Dichlorophenol	BQL	10.0	3.75	1	9/10/2005	
Diethylphthalate	BQL	10.0	1.48	1	9/10/2005	
Dimethylphthalate	BQL	10.0	1.04	1	9/10/2005	
2,4-Dimethylphenol	BQL	10.0	9.25	1	9/10/2005	
Di-n-octylphthalate	BQL	10.0	1.16	1	9/10/2005	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	9/10/2005	
2,4-Dinitrophenol	BQL	50.0	4.20	1	9/10/2005	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	9/10/2005	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	9/10/2005	
Diphenylamine *	BQL	10.0	1.53	1	9/10/2005	
Fluoranthene	BQL	10.0	1.41	1	9/10/2005	
Fluorene	5.10	10.0	1.22	1	9/10/2005	J
Hexachlorobenzene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobutadiene	BQL	10.0	1.58	1	9/10/2005	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	9/10/2005	
Hexachloroethane	BQL	10.0	1.58	1	9/10/2005	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	9/10/2005	

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW04
Client Project ID: AS 843
Lab Sample ID: G546-52-4I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 13:48
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Isophorone	BQL	10.0	1.27	1	9/10/2005	
Naphthalene	**1.30**	10.0	1.08	1	9/10/2005	J
Nitrobenzene	BQL	10.0	1.32	1	9/10/2005	
2-Nitrophenol	BQL	10.0	3.52	1	9/10/2005	
4-Nitrophenol	BQL	50.0	3.17	1	9/10/2005	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	9/10/2005	
Pentachlorophenol	BQL	50.0	2.83	1	9/10/2005	
Phenanthrene	**4.30**	10.0	1.38	1	9/10/2005	J
Phenol	BQL	10.0	3.38	1	9/10/2005	
Pyrene	BQL	10.0	2.08	1	9/10/2005	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	9/10/2005	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	9/10/2005	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9	90
2-Fluorophenol	10	8.1	81
Nitrobenzene-d5	10	8.8	88
Phenol-d6	10	8.8	88
2,4,6-Tribromophenol	10	7.8	78
4-Terphenyl-d14	10	7.6	76

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: _____

Results for Semivolatiles by GCMS 625

Client Sample ID: USTAS843-Dup
Client Project ID: AS 843
Lab Sample ID: G546-52-6I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 0:00
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	**5.80**	10.0	1.22	1	9/10/2005	J
Acenaphthylene	**1.20**	10.0	1.12	1	9/10/2005	J
Anthracene	BQL	10.0	1.75	1	9/10/2005	
Benzo[a]anthracene	BQL	10.0	1.36	1	9/10/2005	
Benzo[a]pyrene	BQL	10.0	1.27	1	9/10/2005	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	9/10/2005	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	9/10/2005	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	9/10/2005	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	9/10/2005	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	9/10/2005	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	9/10/2005	
Butylbenzylphthalate	BQL	10.0	1.53	1	9/10/2005	
2-Chloronaphthalene	BQL	10.0	1.25	1	9/10/2005	
2-Chlorophenol	BQL	10.0	4.22	1	9/10/2005	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	9/10/2005	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	9/10/2005	
Chrysene	BQL	10.0	1.11	1	9/10/2005	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	9/10/2005	
Di-n-Butylphthalate	BQL	10.0	1.65	1	9/10/2005	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	9/10/2005	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	9/10/2005	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	9/10/2005	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	9/10/2005	
2,4-Dichlorophenol	BQL	10.0	3.75	1	9/10/2005	
Diethylphthalate	BQL	10.0	1.48	1	9/10/2005	
Dimethylphthalate	BQL	10.0	1.04	1	9/10/2005	
2,4-Dimethylphenol	BQL	10.0	9.25	1	9/10/2005	
Di-n-octylphthalate	BQL	10.0	1.16	1	9/10/2005	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	9/10/2005	
2,4-Dinitrophenol	BQL	50.0	4.20	1	9/10/2005	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	9/10/2005	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	9/10/2005	
Diphenylamine *	BQL	10.0	1.53	1	9/10/2005	
Fluoranthene	BQL	10.0	1.41	1	9/10/2005	
Fluorene	**6.00**	10.0	1.22	1	9/10/2005	J
Hexachlorobenzene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobutadiene	BQL	10.0	1.58	1	9/10/2005	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	9/10/2005	
Hexachloroethane	BQL	10.0	1.58	1	9/10/2005	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	9/10/2005	

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-Dup
Client Project ID: AS 843
Lab Sample ID: G546-52-6I
Lab Project ID: G546-52

Analyzed By: MRC
Date Collected: 8/31/2005 0:00
Date Received: 9/2/2005
Date Extracted: 9/7/2005
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Isophorone	BQL	10.0	1.27	1	9/10/2005	
Naphthalene	**1.30**	10.0	1.08	1	9/10/2005	J
Nitrobenzene	BQL	10.0	1.32	1	9/10/2005	
2-Nitrophenol	BQL	10.0	3.52	1	9/10/2005	
4-Nitrophenol	BQL	50.0	3.17	1	9/10/2005	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	9/10/2005	
Pentachlorophenol	BQL	50.0	2.83	1	9/10/2005	
Phenanthrene	**7.40**	10.0	1.38	1	9/10/2005	J
Phenol	BQL	10.0	3.38	1	9/10/2005	
Pyrene	BQL	10.0	2.08	1	9/10/2005	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	9/10/2005	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	9/10/2005	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	10.1	101
2-Fluorophenol	10	10.3	103
Nitrobenzene-d5	10	9.8	98
Phenol-d6	10	9.9	99
2,4,6-Tribromophenol	10	8.3	83
4-Terphenyl-d14	10	8.4	84

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: _____

Results for Semivolatiles by GCMS 625

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB3613
Lab Project ID:

Analyzed By: MRC
Date Collected:
Date Received:
Date Extracted: 9/7/2005
Matrix: WATER

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	10.0	1.22	1	9/10/2005	
Acenaphthylene	BQL	10.0	1.12	1	9/10/2005	
Anthracene	BQL	10.0	1.75	1	9/10/2005	
Benzo[a]anthracene	BQL	10.0	1.36	1	9/10/2005	
Benzo[a]pyrene	BQL	10.0	1.27	1	9/10/2005	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	9/10/2005	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	9/10/2005	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	9/10/2005	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	9/10/2005	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	9/10/2005	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	9/10/2005	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	9/10/2005	
Butylbenzylphthalate	BQL	10.0	1.53	1	9/10/2005	
2-Chloronaphthalene	BQL	10.0	1.25	1	9/10/2005	
2-Chlorophenol	BQL	10.0	4.22	1	9/10/2005	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	9/10/2005	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	9/10/2005	
Chrysene	BQL	10.0	1.11	1	9/10/2005	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	9/10/2005	
Di-n-Butylphthalate	BQL	10.0	1.65	1	9/10/2005	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	9/10/2005	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	9/10/2005	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	9/10/2005	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	9/10/2005	
2,4-Dichlorophenol	BQL	10.0	3.75	1	9/10/2005	
Diethylphthalate	BQL	10.0	1.48	1	9/10/2005	
Dimethylphthalate	BQL	10.0	1.04	1	9/10/2005	
2,4-Dimethylphenol	BQL	10.0	9.25	1	9/10/2005	
Di-n-octylphthalate	BQL	10.0	1.16	1	9/10/2005	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	9/10/2005	
2,4-Dinitrophenol	BQL	50.0	4.20	1	9/10/2005	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	9/10/2005	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	9/10/2005	
Diphenylamine *	BQL	10.0	1.53	1	9/10/2005	
Fluoranthene	BQL	10.0	1.41	1	9/10/2005	
Fluorene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobenzene	BQL	10.0	1.22	1	9/10/2005	
Hexachlorobutadiene	BQL	10.0	1.58	1	9/10/2005	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	9/10/2005	
Hexachloroethane	BQL	10.0	1.58	1	9/10/2005	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	9/10/2005	

Results for Semivolatiles by GCMS 625

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB3613
Lab Project ID:

Analyzed By: MRC
Date Collected:
Date Received:
Date Extracted: 9/7/2005
Matrix: WATER

Compound	Result ug/L	Quantitation Limit ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Isophorone	BQL	10.0	1.27	1	9/10/2005	
Naphthalene	BQL	10.0	1.08	1	9/10/2005	
Nitrobenzene	BQL	10.0	1.32	1	9/10/2005	
2-Nitrophenol	BQL	10.0	3.52	1	9/10/2005	
4-Nitrophenol	BQL	50.0	3.17	1	9/10/2005	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	9/10/2005	
Pentachlorophenol	BQL	50.0	2.83	1	9/10/2005	
Phenanthrene	BQL	10.0	1.38	1	9/10/2005	
Phenol	BQL	10.0	3.38	1	9/10/2005	
Pyrene	BQL	10.0	2.08	1	9/10/2005	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	9/10/2005	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	9/10/2005	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.3	93
2-Fluorophenol	10	9.3	93
Nitrobenzene-d5	10	9	90
Phenol-d6	10	9.2	92
2,4,6-Tribromophenol	10	6.9	69
4-Terphenyl-d14	10	9.5	95

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: _____

PARADIGM ANALYTICAL LABORATORIES, INC.
500 Business Drive, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 50691

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Client: Engineering + Environment | Project ID: AS 843 | Date: 9/1/05 | Report To: Bill Morris
Address: 824 Gumbranch rd Suite 5 | Contact: Bill Morris | Turnaround: standard
Address: Jacksonville NC 28540 | Phone: 910-989-3214 | Job Number:
Quote #: | Fax: 910-989-3341 | P.O. Number: | Invoice To:

Sample ID	Date	Time	Matrix	Preservatives: HCl	Preservatives: none			Analyses: 601/602	Analyses: VPH	Analyses: EPH	Analyses: 625							Comments: Please specify any special reporting requirements
TAS843-MW01	8/31/05	16:40	GW	X	X			3	2	1	1							
TAS843-MW03	8/31/05	15:10	GW	x	x			3	2	1	1							G546-52
TAS843-MW05	8/31/05	14:25	GW	x	x			3	2	1	1							
TAS843-MW04	8/31/05	13:48	GW	x	x			3	2	1	1							
TAS843-MW02	8/31/05	12:58	GW	x	x			3	2	1	1							
TAS843-Dup	8/31/05	—	GW	x	x			3	2	1	1							

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
			Julie Johnson	9/2/05	0950	2.3, 2.4°C	NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

NC CERTIFICATION #481

Attachment E

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