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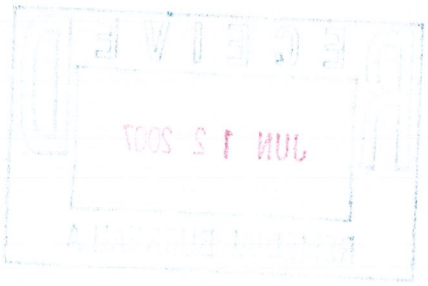

DRAFT SITE INSPECTION TECHNICAL MEMORANDUM Sites 1 and 4

174th Fighter Wing
Hancock Air National Guard Base
Syracuse, New York

Air National Guard
3500 Fetchet Avenue
Andrews A.F.B., Maryland

June 2007

CH2MHILL

ANG Delivery Order Number 0073

Executive Summary

The Hancock Air National Guard (ANG) Base is located in Syracuse, New York immediately south of and adjacent to the Syracuse International Airport (Hancock Field). The ANG Base consists of several buildings and operational facilities separated into three main tracts of land (Tracts I, II, and III). Previous environmental investigations were conducted under the Installation Restoration Program (IRP) at the ANG Base and five specific sites (Site 1, Site 4, Site 9, Site 11, and Site AOC-P) were identified as potential areas of concern. The previous environmental investigations included a Phase 1 investigation conducted in 1982, Phase 2 investigations conducted in 1984 and 1989, and a Site Assessment (SA) investigation conducted in 1999. Aneptek Corp. conducted a SA investigation and report in 2003. In 2004, CH2M HILL conducted additional Site Inspection (SI) activities at IRP Sites 1, 4, 9, 11, and AOC-P.

The SI Report for IRP Sites 1, 4, 9, 11, and AOC-P recommended no additional activities for Sites 9, 11, and AOC-P, and limited additional investigations for Sites 1 and 4. A letter prepared on August 24, 2004 by the NYSDEC provided concurrence with the Site Inspection Report recommendations. The additional activities at Sites 1 and 4 were recommended to complete delineation at these sites. Specifically, these additional activities include the installation of an additional monitoring well at Site 4, the collection of surface and subsurface soil samples from the new monitoring well location, and the collection of groundwater samples from the new and existing monitoring wells at Site 4 and from the existing monitoring wells at Site 1.

In the surface and subsurface soil samples collected, three SVOCs [benzo(a)anthracene, benzo(a)pyrene, and chrysene] were detected above NYSDEC Recommended Soil Cleanup Objective criteria. These detections are consistent with SVOC detections in soil associated with the Site 4 area. However, SVOC were not detected in groundwater at Site 4 above the NYSDEC Drinking Water Quality Standard (DWQS) values. In addition, there were no exceedances of VOCs in the collected Site 4 groundwater samples. Therefore, SVOC exceedances in soils are insufficient to impact groundwater, and no further action is recommended at Site 4.

Aluminum, iron, manganese, nickel, and sodium were found in dissolved groundwater samples from Site 1 at concentrations that exceed the NYSDEC DWQS. These exceedances are similar to those detected in January 2004, indicating that metals concentrations at Site 1 are stable. A review of the distribution of the dissolved metals detected, the aluminum, iron, nickel, and sodium concentrations that exceed the NYSDEC DWQS were found in upgradient or side-gradient monitoring wells and are not related to the Site 1 activities. However, the manganese concentrations that exceed the NYSDEC DWQS are found in the monitoring well immediately adjacent to the suspected Site 1 source area and in the monitoring well hydraulically downgradient from the source area. Since the manganese concentrations in groundwater appear stable between the January 2004 and December 2006 sampling events, there is apparently little migration potential to further downgradient areas. No additional Site Inspection activities are recommended at Site 1.

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Acronyms and Abbreviations

ANG	Air National Guard
DoD	Department of Defense
DWQS	Drinking Water Quality Standards
IRP	Installation Restoration Program
NAVD	North American Vertical Datum
NYSDEC	New York State Department of Environmental Conservation
PID	Photoionization Detector
QAPP	Quality Assurance Project Plan
RSCO	Recommended Soil Cleanup Objective
SA	Site Assessment
SI	Site Inspection
SVOC	Semi-Volatile Organic Compound
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 Introduction

The Defense Environmental Restoration Program was established in 1984 to promote and coordinate efforts for the evaluation and cleanup of contamination at Department of Defense (DoD) installations. The program currently includes the Installation Restoration Program (IRP), through which potential contamination at DoD installations and formerly owned or used properties are investigated and, as necessary, site cleanups are conducted. The Air National Guard (ANG), through ANG Headquarters, conducts that portion of the IRP that is applicable to ANG units and facilities.

The Hancock ANG Base is located in Syracuse, NY immediately south of and adjacent to the Syracuse International Airport (Hancock Field). The ANG Base consists of several buildings and operational facilities separated into three main tracts of land (Tracts I, II, and III) (Figure 1). Previous environmental investigations were conducted under the IRP at the ANG Base and five specific sites (Site 1, Site 4, Site 9, Site 11, and Site AOC-P) were identified as potential areas of concern. The previous environmental investigations included a Phase 1 investigation conducted in 1982, Phase 2 investigations conducted in 1984 and 1989, and a Site Assessment (SA) investigation conducted in 1999. Aneptek Corp. completed the SA investigation and report in 2003 (Aneptek, 2003). In 2004, CH2M HILL conducted additional Site Inspection (SI) activities at IRP Sites 1, 4, 9, 11, and AOC-P.

Sites which are a focus for CH2MHill

The Site Inspection Report for IRP Sites 1, 4, 9, 11, and AOC-P (CH2M HILL, 2004) recommended no additional activities for Sites 9, 11, and AOC-P, and limited additional investigations for Sites 1 and 4. A letter prepared on August 24, 2004 by the New York State Department of Environmental Conservation (NYSDEC) provided concurrence with the Site Inspection Report recommendations. The additional activities at Sites 1 and 4 were recommended to complete delineation at these sites. Specifically, these additional activities include the installation of an additional monitoring well at Site 4, and the collection of groundwater samples from the new and existing monitoring wells at Site 4 and from the existing monitoring wells at Site 1.

CH2M HILL developed a Scope of Work, under ANG Contract Number DAHA 92-01-D-009, to complete site delineation of IRP Sites 1 and 4 as required by the NYSDEC, and submitted a Site Inspection Addendum #1, Work Plan Addendum to the ANG and NYSDEC in November 2006. The Work Plan was implemented after receiving NYSDEC approval. The purposes of this Technical Memorandum are to describe the activities conducted during the SI addendum, present the analytical results from the SI addendum activities, compare these results with historical data, and assess if delineation has been completed at Sites 1 and 4.

1.1 Site Geology

A simple layer-cake stratigraphy is found beneath the site with unconsolidated lacustrine (former lake) sediments overlying glacial till sediments overlying sedimentary bedrock. The lacustrine sediment occur from near the surface to depths of about 50 ft below grade and are

composed of silts with varying amounts of clay and fine to medium sand. The glacial till sediments are about 30 to 50 ft thick and consist of large cobbles and gravel in a silty clay matrix. This glacial till unit acts as a confining unit for the groundwater in the underlying sedimentary bedrock. The sedimentary bedrock is composed of shales and siltstones of the Vernon Formation.

An unconfined water table aquifer occurs in the lacustrine sediments at depth of 5 to 10 feet across the site, although the low transmissivity of the aquifer precludes it as a viable potable water source. Existing overburden monitoring wells are screened across the first-encountered groundwater table to assess the potential of floating product in the groundwater. A confined aquifer occurs in the bedrock below the glacial till aquitard. Existing bedrock monitoring wells indicate that there is a strong upward flow potential between the confined bedrock aquifer and the unconfined water table aquifer. This strong upward flow potential indicates that potential site-related contaminants would be limited to the water table aquifer.

1.2 Site Descriptions

1.2.1 Site 1 – Former Fire Training Area, Tract III

Site 1 (FT001 Fire Training Area) (Figure 2) encompasses an area of about 0.75 acres and is located approximately 250 feet northwest of the intersection of Avenue D and Thompson Road. The site is located on top of an abandoned concrete aircraft parking area, and was used from 1948 to 1985 for fire training exercises where waste fuels such as fuel oils, jet fuel, etc. were used as accelerants.

During the 2004 site investigation, CH2M HILL advanced soil borings, installed one monitoring well (MW-1A), and collected soil and groundwater samples from Site 1. There are currently six monitoring wells at Site 1, consisting of five shallow water table monitoring wells, and one bedrock monitoring well.

Site 1 Conceptual Site Model

The use and disposal of flammable liquids resulted in potential environmental impacts at Site 1. Unburned liquid and residuals represent the majority of the potential contaminants and these may have migrated from the concrete pad surface to the surface and subsurface soils along the outside of the concrete pad. Once in the soil, these contaminants would either adhere to soil particles, migrate further down into the soil column, leach to groundwater, or vaporize into the soil gas based on their chemical-specific properties and the properties of the soil. Dissolved contaminants in groundwater would flow vertically and horizontally based on the groundwater flow conditions and natural dispersion.

Overburden groundwater flow at Site 1 is to the southeast under a hydraulic gradient of about 0.007 ft/ft. Based data gathered during previous investigations, exceedances of volatile organic compounds (VOCs) (xylene and toluene) and semivolatile organic compounds (SVOCs) (phenol and benzo(a)pyrene) in soil are limited in nature and extent to the area immediately adjacent to the concrete pad, and have not impacted the groundwater at the site (CH2M HILL, 2004). The SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and dibenzo(a,h)anthracene were

detected at concentrations above the recommended soil cleanup objective (RSCO) in the shallow (0 to 2 inch depth) soil samples collected in 2004, and, as these compounds are also found in the shallow background soil samples, these detections may represent a background condition at the ANG Base. Aluminum, iron, magnesium, manganese, nickel, and sodium were found to exceed the applied standards for both the soil and groundwater samples collected in 2004. The exceedances of aluminum, magnesium, manganese, nickel, and sodium in groundwater are from monitoring well MW-1A located near the concrete pad and in the hydraulically downgradient wells MW-12 and MW-13.

1.2.2 Site 4 – D5 Disposal Site, Tract III

Site 4 (DP004 Disposal Site) (Figure 3) is an unlined disposal area located approximately 250 feet north of Avenue D. The site surrounds an old concrete aircraft hardstand (parking area) that extends north from Avenue D. The disposal area was approximately 100 feet by 150 feet wide, and was used from 1950 to 1976 to dispose of construction debris, empty ammunition boxes, sod, empty drums, and possibly a few drums that contained hazardous wastes (paints, thinners, and solvents) generated by shops at the installation. After 1976, the aircraft hardstand was used by the ANG as an engine test pad. During the 2004 site investigation, CH2M HILL advanced soil borings, installed two monitoring wells (MW-4A and MW-4B), excavated three trenches, and collected soil and groundwater samples from Site 4. There are currently five existing and one newly installed shallow water table monitoring wells at Site 4.

Site 4 Conceptual Site Model

The disposal of construction debris, empty ammunition boxes, sod, and drums may have resulted in environmental impacts at Site 4. Since these items were buried in unlined pits, water from precipitation would migrate downward through the disposal area, potentially leaching metals and residual liquids further into the soil column. Once in the soil, these contaminants would adhere to soil particles, migrate further down into the soil column, leach to groundwater, or may vaporize into the soil gas based on their chemical-specific properties and the properties of the soil. Dissolved contaminants in groundwater would flow vertically and horizontally based on the groundwater flow conditions and natural dispersion.

Overburden groundwater flow at Site 4 is to the northeast-east under a hydraulic gradient of about 0.007 ft/ft. The presence of buried debris at Site 4 was confirmed in 2004 during the course of investigation activities. Three test pits, designated as TP-4A, TP-4B, and TP-4C, were excavated to assess the source of the geophysical anomalies (Figure 3). Each test pit was excavated using a conventional backhoe which removed the soil in 6-inch to 1-foot lifts. The completed test pits were about 20 feet long, 3 feet wide, and six feet deep. During the excavation of test pit TP-4A, various automotive parts and other debris were uncovered including a muffler, rubber hoses, copper tubing, concrete, 55-gallon drum lid, and unidentified debris. Excavation TP-4B revealed similar debris including an empty 55-gallon drum. Test pit TP-4C contained automotive metallic and other debris including wires, a wet cell battery, bumper, tailpipe, and asphalt. Soil samples collected during this time had concentrations of VOCs below the applicable NYSDEC RSCO standard. Several SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and dibenzo(a,h)anthracene, dimethylphthalate, indeno(1,2,3-cd) pyrene, phenol,

and pyrene) were detected in the shallow (0.5-feet below grade) and deeper (5.0 feet below grade) soil samples at concentrations above the RSCO Standards (CH2M HILL, 2004). These SVOC exceedances in soil are likely related to the debris that was found in the test pits. The SVOCs detected in groundwater were below the applicable standard and therefore the SVOC exceedances in the soils are insufficient to impact groundwater. Two metals (iron and manganese) were found to exceed the established standards for both soil and groundwater samples. It is noted that the iron and manganese exceedances in groundwater are from the upgradient monitoring well MW-18, suggesting that these metals may not be related to the buried metals at the site.

2.0 Site Investigation Activities

CH2M HILL implemented site investigation activities identified in the Work Plan Addendum (November 2006) with the support of ANG personnel, and various subcontractors. ANG personnel assisted with underground utility clearance, security clearance, facilitating communications at the ANG Base, providing access to the sites, and other logistical issues. Parratt Wolfe of East Syracuse, New York provided the subsurface drilling crew. RJ Rybinski, LS of Manlius, New York conducted the surveying of the sample locations and monitoring well elevations, and STL Laboratories of Edison, New Jersey provided the analytical laboratory services. The activities described below were conducted in accordance with the NYSDEC-approved Site Inspection Addendum #1, Final Work Plan Addendum (November 29, 2006), including decontamination between sampling locations and sampling intervals, management of the investigation derived waste, adherence to the site-specific health and safety plan, and implementation of the quality assurance project plan.

2.1 Site 1

Synoptic water level measurements were recorded and groundwater samples were collected from the five existing monitoring wells (MW-1A, MW-09, MW-11, MW-12, and MW-13). Together, these wells form an effective monitoring network around Site 1 to assess the groundwater quality related to historic site activities. A groundwater sample was not collected from deeper monitoring well MW-13D based on the strong upward hydraulic gradient (near artesian conditions) noted in the SA Report (Aneptek, 2003) that would limit the potential downward vertical migration of groundwater at the site. As detailed in the NYSDEC-approved Work Plan (November 29, 2006), groundwater samples were collected from monitoring wells MW-1A, MW-09, MW-12, and MW-13 using the United States Environmental Protection Agency (USEPA) low flow method with 2-inch-diameter Grundfos pump and dedicated Teflon-lined polyethylene tubing. Due to the presence of an obstruction (see Section 2.3) USEPA low flow sampling was performed using a peristaltic pump for monitoring well MW-11 to collect samples for metals analysis. The low-flow sampling method was used during this investigation to minimize the sample turbidity. Total and dissolved groundwater samples were collected from each monitoring well. Groundwater samples collected for dissolved metals were filtered in the field using a 0.45 micron in-line filter prior to metals analysis. The groundwater samples were collected in labeled containers, placed in an ice-filled cooler, and submitted for laboratory analysis of total (unfiltered) and dissolved (filtered) metals (EPA Method 6010B).

2.2 Site 4

Field activities at Site 4 included the installation of one monitoring well (MW-4C), collection of one surface soil sample, collecting synoptic water elevation measurements, and sampling existing and newly installed monitoring wells.

Prior to advancing the boring for monitoring well MW-4C, a surface soil sample was collected at this location. This sample was collected at a depth of 0.5-feet below grade due to a shallow water table (less than one foot below grade). The soil sample was submitted to a NY-licensed laboratory for analysis of VOCs and SVOCs.

One groundwater monitoring well, MW-4C, was installed at Site 4, northeast of the geophysical survey area (Figure 3), to complete the groundwater monitoring network for this area. This monitoring well was completed in accordance with SOP C.6 of the December 2003 NYSDEC-approved Site Inspection Work Plan for Sites 1, 4, 9, 11, and AOC-P.

Monitoring well MW-4C (Figure 3) was installed by advancing a nominal 6-inch diameter boring to 14-feet below grade using hollow-stem auger methods. Soil samples were collected continuously every two feet using split-barrel samplers, and were logged for lithologic purposes. In addition, the soil samples were screened using a photoionization detector (PID) to assess the presence of VOCs. After reaching the target depth, a monitoring well, consisting of 2 inch diameter PVC materials with a 10 foot section of 0.010-inch slotted well screen, was placed into the borehole. A sand filter pack was installed around the monitoring well screen from the bottom of the borehole to about 2 feet above the top of the well screen. A bentonite-grout seal was then placed on top of the filter pack. The monitoring well was completed with a stick-up outer-protective casing with a concrete pad and locking cap. Excess drill cuttings were spread on the ground adjacent to the drilling location as approved by the NYSDEC. A well construction diagram is included in Appendix A.

After installation, MW-4C was developed in accordance with SOP C.6 of the December 2003 NYSDEC-approved Site Inspection Work Plan for Sites 1, 4, 9, 11, and AOC-P. Development consisted of purging the well using a submersible pump and continued until the well yield consisted of relatively sediment-free water. Development purge water was allowed to infiltrate into the ground adjacent to the monitoring well location.

A NY-licensed surveyor surveyed the location and elevation of the MW-4C in accordance with SOP C.11. The location of the monitoring well was established within 0.1 ft and the casing elevation was established within 0.01 ft of the North American Vertical Datum (NAVD) 1988.

Synoptic water level measurements were recorded and groundwater samples were collected from four existing monitoring wells (MW-4A, MW-4B, MW-17, and MW-18), and one newly installed monitoring well MW-4C. Monitoring well MW-16 was not sampled since it was inaccessible at the time of the December 2006 site inspection (see Section 2.3).

As detailed in the NYSDEC-approved Work Plan (November 2006), groundwater samples were collected from MW-4A, MW-4B, and MW-4C using the USEPA low flow method with 2-inch-diameter Grundfos pump and dedicated Teflon-lined polyethylene tubing. Due to the presence of an obstruction (see Section 2.3), monitoring wells MW-17 and MW-18 were sampled using dedicated Teflon bailers. The groundwater samples were collected in labeled containers, placed in an ice-filled cooler, and submitted for laboratory analysis of VOCs and SVOCs using EPA Method 8260B and 8270C, respectively.

2.3 Deviations

Low-flow groundwater sampling using a 2-inch diameter Grundfos pump was not possible in monitoring wells MW-11, MW-17, and MW-18, due to the fact that the well casings were damaged. Evidence of construction activity was observed in the general vicinity of these monitoring wells, as large vehicle tracks were present on the ground around the concrete well pads. Monitoring well MW-11, at Site 1, was sampled for metals using a peristaltic pump and Teflon-lined polyethylene tubing for the purpose of collecting a low turbidity groundwater sample. Monitoring wells MW-17 and MW-18, at Site 4 were sampled for VOCs and SVOCs using a dedicated Teflon bailer.

In addition, monitoring well MW-16 was inaccessible since the outer casing cap was pinched into the outer casing, and could not be safely removed. As mentioned above, construction equipment was parked in the vicinity of this monitoring well, and there was evidence of construction vehicle traffic directly adjacent to MW-16.

3.0 Site Investigation Results and Conclusions

3.1 Analytical Results

A data validation effort was completed on the analytical data set received from the laboratory. The data validation effort was conducted in accordance with the Quality Assurance Project Plan (QAPP) (December 2003) and included a review of the data accuracy, precision, and completeness. A data validation memorandum (Appendix B) summarizes the data qualifiers added to the data and concludes that the data are of good quality and are acceptable as reported and qualified. Appendix C contains summary tables of the validated data set. The soil results for metals were compared to an established background standard (as described in the September 2004 Final Technical Memorandum for Sites 1, 4, 9, 11, and AOC-P). The VOC and SVOC analyses were compared to the NYSDEC Recommended Soil Cleanup Objective (RSCO). Groundwater results were compared to the NYSDEC Drinking Water Quality Standards (DWQS).

3.2 Hydrogeological Characterization

Depths to groundwater (DTW) measurements of the water table monitoring wells were collected at Sites 1 and 4 on December 12, 2006. These data are presented below in Table 1 along with groundwater elevation measurements collected during the previous SI investigation at these sites on February 3, 2004. The water level elevations in the monitoring wells were calculated by subtracting the DTW measurement from the well casing elevation.

TABLE 1
Depth to Groundwater Measurements
174th Fighter Wing, Hancock Air National Guard Base, Syracuse, New York

		February 3, 2004		December 12, 2006	
Monitoring Well	Well Casing Elevation (feet AMSL)	Depth to Groundwater (ft)	Water Level Elevation (feet AMSL)	Depth to Groundwater (ft)	Water Level Elevation (feet AMSL)
		Site 1 Monitoring Wells			
MW-1A	400.37	11.58	388.79	8.86	391.51
MW-09	397.63	8.41	389.22	6.25	391.38
MW-11	400.10	10.25	389.85	6.97	393.13
MW-12	398.89	11.13	387.76	8.74	390.15
MW-13	398.77	11.61	387.16	8.94	389.83

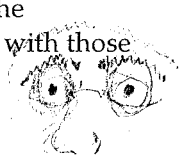
TABLE 1
Depth to Groundwater Measurements
174th Fighter Wing, Hancock Air National Guard Base, Syracuse, New York

		February 3, 2004		December 12, 2006	
Monitoring Well	Well Casing Elevation (feet AMSL)	Depth to Groundwater (ft)	Water Level Elevation (feet AMSL)	Depth to Groundwater (ft)	Water Level Elevation (feet AMSL)
		Site 4 Monitoring Wells			
MW-4A	396.53	3.87	392.66	3.76	392.77
MW-4B	396.49	3.55	392.94	3.34	393.15
MW-4C	394.76	NM	NM	2.29	392.47
MW-16	398.79	5.42	393.37	NM	NM
MW-17	398.19	5.46	392.73	4.89	393.3
MW-18	398.16	4.74	393.42	4.32	393.84

NM – Not Measured

AMSL – Above mean sea level

Groundwater elevations from December 12, 2006 were contoured on Figures 4, 5, and 6, for Site 1, Site 4, and the overall ANG Base, respectively. Groundwater flow at Site 1 (Figure 4) is to the southeast under a hydraulic gradient of about 0.007 ft/ft. At Site 4 (Figure 5), the groundwater flow direction is to the northeast-east under a hydraulic gradient of about 0.007 ft/ft. Groundwater flow of the water table aquifer across Sites 1 and 4 (Figure 6) is generally to the east under an apparent hydraulic gradient of about 0.003 ft/ft. The groundwater flow direction and hydraulic gradient at Sites 1 and 4 are consistent with those measured in January 2004.



3.3 Site 1 – Groundwater

A summary of the analytical detections in groundwater are presented on Tables 2 and 3 for total (unfiltered) metals and dissolved (filtered) metals, respectively.

The groundwater sampling method employed during the January 2004 and December 2006 SI at Site 1 was focused on reducing the turbidity of the samples submitted for total metals (unfiltered) using low-flow sampling methods. Also, filtered samples were collected during the sampling event to further assess the dissolved fraction of metals in groundwater. During the previous SA investigation (Aneptek, 2003), groundwater samples to be analyzed for total metals were collected using a bailer, which tends to increase the amount of turbidity in the sample. The total metals (unfiltered) results are summarized in Table 2. The analytical results from the January 2004 and December 2006 sampling events at Site 1 demonstrate that the low-flow sampling method effectively reduced the metals concentrations in the unfiltered groundwater samples, suggesting that particles in the groundwater samples are likely resulting in the number of metals exceeding the groundwater quality standard. As such, the nine metals that exceed the groundwater

quality standard (aluminum, chromium, cobalt, copper, iron, magnesium, manganese, nickel, and sodium) are not likely representative of the dissolved metals that could potentially migrate in the groundwater.

Five metals exceeded the NYSDEC DWQS in the dissolved (filtered) groundwater samples collected from Site 1 monitoring wells (Table 3), and these are aluminum and iron in monitoring well MW-09, manganese in monitoring wells MW-1A and MW-12, nickel in monitoring well MW-13, and sodium in monitoring wells MW-12 and MW-13. The distribution of the wells where dissolved metal concentrations exceed the NYSDEC DWQS provides an understanding of the potential sources.

Aluminum and Iron

Monitoring well MW-09 is located about 350 ft north (side-gradient) of the former fire training pad area and the aluminum and iron are likely related to naturally occurring metals in the soils and not from activities associated with fire training.

Manganese

Monitoring wells MW-1A and MW-12 are located adjacent to and immediately downgradient from the suspected source area, respectively. The dissolved manganese concentrations in these wells (1,510 µg/L for MW-1A and 400 µg/L for MW-12) are consistent with the January 2004 groundwater sampling results, which suggests that these concentrations are stable. The distribution of the dissolved manganese groundwater concentrations suggest that they may be associated with the previous fire training activities, with the highest concentration detected in the adjacent well (MW-1A) and the concentration decreases to near the NYSDEC DWQS (300 µg/L) in the downgradient well (MW-12). The stability of the dissolved manganese concentration from January 2004 to December 2006 indicates that additional manganese is not being introduced into the groundwater (i.e., no on-going manganese soil source) and that the migration potential of manganese is limited.

Nickel

Nickel was detected in monitoring well MW-13 at a concentration of 251 µg/L, which exceeds the NYSDEC DWQS of 100 µg/L. The concentration of nickel in this monitoring well decreased from the previous sampling event (652 µg/L in January 2004). As nickel was not detected at concentrations above the NYSDEC DWQS in January 2004 or December 2006 in the monitoring well immediately adjacent to the suspected source area, the nickel is not considered to be related to the former fire training activities.

Sodium

Exceedances of sodium were detected in monitoring wells MW-12 and MW-13 at concentrations of 53,000 µg/L and 76,600 µg/L, respectively. These two monitoring wells are located along side a road that is treated with salt to assist in melting snow during the winter months. The elevated concentrations of sodium are most likely the result of these winter salt treatments.

Overall, the results confirm the conclusions of the January 2004 Site Inspection Technical Memorandum (CH2M HILL, 2004), which state that metals concentrations at Site 1 are stable. Further, the land occupying Site 1 and surrounding area is to be used for

military/industrial purposes indefinitely, and there are no known or planned uses of groundwater from this area. Based on this information, no further action for Site 1 is needed.

3.4 Site 4 – Soil

A summary of the analytical detections in the soil sample collected at Site 4 are presented on Tables 4 and 5 for VOC and SVOC analysis, respectively. No VOCs were detected above NYSDEC RSCO criteria in the soil sample collected from Site 4 (Table 4). SVOCs, specifically benzo(a)anthracene, benzo(a)pyrene, and chrysene, were detected in the shallow soil sample at concentrations above the RSCO Standards (Table 5). However, these compounds were detected at similar concentrations in the background soil samples collected for the SI Report (CH2M HILL, 2004) and are considered to be associated with the background conditions.

3.5 Site 4 – Groundwater

A summary of the analytical detections in groundwater are presented on Tables 6 and 7 for VOCs and SVOCs, respectively.

A review of Table 6 and 7 indicates there were no exceedances of the NYSDEC DWQS by VOCs or SVOCs detected in groundwater at Site 4. A groundwater sample was not collected from monitoring well MW-16 since this well was inaccessible during the December 2006 SI. MW-16 has historically been the upgradient monitoring well at Site 4, and has not historically exhibited concentrations of VOCs and SVOCs in exceedance of the NYSDEC DWQS.

It is noted that the SVOCs detected in the soil samples above NYSDEC RSCO criteria were not detected in the groundwater samples collected from Site 4. Therefore, the SVOC exceedance in soils does not represent a source to groundwater at Site 4.

4.0 Recommendations

4.1 Site 1

Overall, the results confirm the conclusions of the January 2004 Site Inspection Technical Memorandum (CH2M HILL, 2004), which state that metals concentrations at Site 1 are stable. Further, the land occupying Site 1 and surrounding area is to be used for military/industrial purposes indefinitely, and there are no known or planned uses of groundwater from this area. Based on this information, no further action for Site 1 is recommended.

4.2 Site 4

Since VOCs and SVOCs were not detected groundwater samples at Site 4 and concentrations of SVOCs in soil are insufficient to impact groundwater, no further action is recommended at Site 4.

5.0 References

Aneptek Corporation. 2003. Final Site Assessment Report Site 1, Site 4, Site 9, Site 10, Site 11, AOC 1-3. 174th Fighter Wing New York Air National Guard, Hancock Air National Guard Base, Syracuse, New York. February 2003.

CH2M HILL. 2004, Site Inspection Technical Memorandum, Syracuse, New York, Air National Guard. September 2004.

CH2M HILL. 2006. CH2M HILL Proposal for Site Inspection - Addendum #1 at Sites 1 and 4. Environmental Restoration Program Services. August 2006.

CH2M HILL. 2006. Site Inspection Addendum #1, Final Work Plan Addendum. New York, Air National Guard. November 2006.

Tables

TABLE 2
Summary of Total Metals Detected in Groundwater
Site 1 - Monitoring Wells
Air National Guard - Hancock Field Syracuse, NY

Monitoring Well Number		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Silver	Sodium	Thallium	Vanadium	Zinc
Standard*		100	3	50	1000	11	5	NS	50	50	200	300	50	35000	300	0.7	100	NS	50	20000	NS	NS	NS
Previous SA Report	MW-09	16000	3U	6	300U	3U	5	160000	50U	60	40	25000	9	48000	600	0.4U	100	6800	50U	6600	3U	300U	60
	MW-11	79000	3U	25	500	8	37	800000	180	440	250	140000	450	270000	4500	0.5	290	17000	50U	8300	31	300U	400
	MW-12	120000	3U	24	600	10	52	890000	250	760	380	220000	60	300000	9200	0.5	430	16000	90	9000	41	300U	670
	MW-13	18000	3U	6	300U	3U	9	200000	130	90	50	28000	11	65000	550	0.4U	180	8000	50U	29000	3U	300U	100
January 2004 Site 1 Investigation	MW-1A	18100	3.9U	6	203	0.77 UB	0.4U	270000	28.8	14.9 B	41.8	30600	13.6	101000	2430	0.1U	39.8 B	4030 B	0.7U	10900	4.4U	32.3 B	89.3
	MW-09	401	3.9U	3.4U	31.2 B	0.1U	0.4U	151000	2.8U	3.5U	2.1U	2680	2.2U	26700	235	0.1U	4.1 B	387 B	0.7U	4990	4.4U	1.5U	7.9 B
	MW-11	55800	3.9U	35.7	284	2.7	0.92 UB	532000	95.7	42.4 B	146	107000	57.8	203000	4380	0.12 B	117	7030	0.7U	5730	4.4U	97	285
	MW-12	59300	3.9U	52.1	314	2.9	1.1 UB	570000	99.3	44.8 B	173	142000	45.6	205000	4450	0.12 B	129	7010	0.7U	37000	4.4U	105	297
	MW-13	20900	6.3 B	14.2	180 B	0.89 UB	0.4U	320000	21200	137	277	113000	18.1	116000	1880	0.1U	2200	3780 B	0.98 B	54500	4.4U	107	273
December 2006 Site 1 Investigation	MW-1A	1440	5.8U	3.2U	57.8 B	0.3U	0.4U	128000	301	11.4 B	18.9 B	3750	2.7U	26300	1530	0.1U	197	1960 B	1.4U	18000	4.7U	4.7U	12.1 B
	MW-09	3630	5.8U	9.8	69.2 B	0.3U	0.4U	174000	55	4.2 B	17.9 B	34600	2.7U	35200	400	0.1U	37.6 B	1920 B	1.4U	5690	4.7U	7.6 B	14.4 B
	MW-11	4890	5.8U	3.5 B	56.4 B	0.53 B	0.4U	140000	7.5 B	2.0 B	13.8 B	8230	2.7U	26800	194	0.1U	8.7 B	3510 B	1.4U	3370 B	4.7U	9.0 B	32.2
	MW-12	19600	5.8U	12.9	131 B	0.79 B	0.4U	214000	158	13.6 B	53	38500	7.7	62900	1660	0.1U	86.2	6990	1.4U	52700	4.7U	34.4 B	87
	MW-13	1980	5.8U	7.5	132 B	0.3U	0.4U	127000	26800	51.9	232	118000	2.7U	30800	298	0.1U	1860	2010 B	1.4U	74300	4.7U	103	69.4

Units are in µg/L

B - Compound detected in associated field blank
U - Compound not detected, reporting limit shown
UB - Undetected due to blank contamination
NS - No standard
Standard* - NYSDEC Drinking Water Quality Standard (DWQS)
Exceeds NYSDEC DWQS

TABLE 3
Summary of Dissolved Metals Detected in Groundwater
Site 1 - Monitoring Wells
Air National Guard - Hancock Field Syracuse, NY

Monitoring Well Number		Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Silver	Sodium	Thallium	Vanadium	Zinc
*Standard		100	3	50	1000	11	5	NS	50	50	200	300	50	35000	300	0.7	100	NS	50	20000	NS	NS	NS
January 2004 Site 1 Investigation	MW-1A	427	3.9U	3.4U	118 B	0.1U	0.4U	130000	2.8U	3.5U	4.1 UB	625	2.2U	43900	1420	0.1U	5.5 B	1240 B	0.7U	11100	4.4U	1.5U	17.1 B
	MW-09	77.4U	3.9U	3.4U	31.8 B	0.1U	0.4U	154000	2.8U	3.5U	2.1U	982	2.2U	27300	233	0.1U	3.9U	415 B	0.7U	5130	4.4U	1.5U	9.8 B
	MW-11	77.4U	3.9U	3.4U	33.8 B	0.1U	0.4U	133000	2.8U	3.5U	2.1U	39.7U	2.2U	29200	2.9U	0.1U	3.9U	724 B	0.7U	3960 B	4.4U	1.5U	7.4 B
	MW-12	77.4U	3.9U	3.4U	36.4 B	0.1U	0.4U	158000	2.8U	3.5U	2.1U	39.7U	2.2U	41600	407	0.1U	3.9U	607 B	0.7U	37000	4.4U	1.5U	6.7 B
	MW-13	77.4U	3.9U	3.4U	25.5 B	0.1U	0.4U	141000	2.8U	16.2 B	2.1U	39.7U	2.2U	42600	148	0.1U	652	428 B	0.7U	53300	4.4U	1.5U	7.0 B
December 2006 Site 1 Investigation	MW-1A	62.6U	5.8U	3.2U	53.1 B	0.3U	0.4U	131000	7.5 B	7.1 B	7.3 B	261	2.7U	24300	1510	0.1U	26.5 B	1650 B	1.4U	19200	4.7U	4.7U	18.2 B
	MW-09	791	5.8U	3.2U	34.6 B	0.3U	0.4U	163000	10.2	1.7U	3.7U	1090	2.7U	28700	260	0.1U	4.3 B	470 B	1.4U	5550	4.7U	4.7U	14.5 B
	MW-11	62.6U	5.8U	3.2U	36.3 B	0.3U	0.4U	122000	1.6U	1.7U	3.7U	39.2U	2.7U	17500	2.7 B	0.1U	2.4U	2200 B	1.4U	3120 B	4.7U	4.7U	6.7 B
	MW-12	62.6U	5.8U	3.2U	38.6 B	0.3U	0.4U	147000	1.6U	1.7U	3.7U	68.2 B	2.7U	30200	400	0.1U	2.4U	1740 B	1.4U	53000	4.7U	4.7U	5.8U
	MW-13	62.6U	5.8U	3.2U	29.9 B	0.3U	0.4U	115000	4.1 B	6.2 B	4.3 B	159	2.7U	27200	51.2	0.1U	251	1360 B	1.4U	76600	4.7U	4.7U	18.9 B

Units are in µg/L

B - Compound detected in associated field blank
U - Compound not detected, reporting limit shown
UB - Undetected due to blank contamination
NS - No Standard
*Standard - NYSDEC Drinking Water Quality Standard (DWQS)
Exceeds NYSDEC DW(

TABLE 4
Summary of VOCs Detected in Soil
Site 4 Soil Borings
Air National Guard - Hancock Field

Soil Boring Number and Depth		Acetone	Methylene Chloride	Tetrachloroethene	Toluene	Xylenes (total)
	Standard*	200	100	1400	1500	1200
Previous SA Report	SB-01 2-4 ft	NA	NA	NA	NA	30U
	SB-01 5-7 ft	NA	NA	NA	NA	30U
	SB-02 2-4 ft	NA	NA	NA	NA	198
	SB-02 4-6 ft	NA	NA	NA	NA	30U
	SB-02 8-10 ft	NA	NA	NA	NA	30U
	SB-03 2-4 ft	NA	NA	NA	NA	25U
	SB-03 4-6 ft	NA	NA	NA	NA	25U
	SB-04 2-4 ft	NA	NA	NA	NA	95
	SB-04 4-6 ft	NA	NA	NA	NA	25U
January 2004 Site 4 Investigation	SB-4A 0.15 ft	22J	0.6 UB	1.1UJ	5.5UJ	5.5UJ
	SB-4B 0.15 ft	140J	4UJ	1.3UJ	6.6UJ	6.6UJ
	SB-4B 3 ft	33J	3.7U	1.2U	6.2U	6.2U
	SB-4B 5 ft	26	0.9 UB	1.2U	5.9U	5.9U
	SB-4C 0.15 ft	36J	4UJ	1.3UJ	6.6UJ	6.6UJ
	SB-4C 3 ft	18J	3.4U	1.1U	5.7U	5.7U
	SB-4C 0.15 ft	32J	3.5UJ	1.2UJ	5.9UJ	5.9UJ
	SB-4D 0.15 ft	6R	3.6U	1.2U	6U	6U
	SB-4D 3 ft	34J	1.0 UB	1.2UJ	1.4 J	6.2UJ
	SB-4D 7 ft	19J	3.5U	1.2U	1.1 J	5.9U
	MW-4A 0.15 ft	52J	3.4UJ	1.1UJ	1.1 J	5.7UJ
	MW-4A 3 ft	24J	1.4 UB	1.3U	6.3U	6.3U
	MW-4A 11 ft	29J	3.6UJ	1.2UJ	5.9UJ	5.9UJ
	MW-4B 0.15 ft	60J	4UJ	1.4UJ	1.9 J	6.8UJ
	MW-4B 3 ft	21J	0.7 UB	1.1U	5.7U	5.7U
	MW-4B 6 ft	23J	2.5 UB	1.2UJ	5.9UJ	5.9UJ
	TP-4A 4 ft - A	6.4U	3.9U	1.3U	6.4U	6.4U
	TP-4A 4 ft - B	22	8	0.6 J	5.6U	5.6U
	TP-4A 4 ft - C	45	8.9	1.3U	6.4U	6.4U
	TP-4B 4.5 ft - A	23	12	1.1U	5.7U	5.7U
	TP-4B 4.5 ft - B	37	18	1.1U	5.6U	5.6U
	TP-4B 5 ft - C	39	12	1.1U	5.6U	5.6U
	TP-4C 3 ft - A	34	9.4	1.2U	5.9U	5.9U
	TP-4C 4 ft - B	73	16	210	6.2U	6.2U
	TP-4C 5 ft - C	41	20	1.2U	6U	6U
December 2006 Site 4 Investigation	MW-4C 0.5 ft	6.9U	1.1 J	1.4U	6.9U	6.9U

Units are in µg/L

J - Estimated value
U - Compound not detected, reporting limit shown
UJ - Undetected due and biased low due to QA/QC deficiencies, reporting limit shown
NA - Data not available
NS - No standard
Standard* - NYSDEC Recommended Soil Cleanup Objective
Exceeds NYSDEC Recommended Soil Cleanup Objective

TABLE 5
Summary of SVOCs Detected in Soil
Site 4 Soil Borings
Air National Guard - Hancock Field

Soil Boring Number and Depth		2-Methylnaphthalene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	bis(2-Ethylhexyl)phthalate	Carbazole	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dimethylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Napthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
	Standard*	36400	50000	NS	224	61	1100	NS	1100	50000	NS	400	14	NS	2000	50000	50000	3200	NS	NS	NS	30	50000
Previous SA Report Borings	SB-01 2-4 ft	NA	NA	3900U	3900U	3900U	3900U	3900U	3900U	NA	3900U	3900U	NA	3900U	NA	6500	3900U	3900U	3900U	7800	4500	NA	5400
	SB-01 5-7 ft	NA	NA	400U	400U	400U	400U	400U	400U	NA	400U	400U	NA	400U	NA	400U	400U	400U	400U	800	400U	NA	400U
	SB-02 2-4 ft	NA	NA	19000U	19000U	19000U	19000U	19000U	19000U	NA	19000U	19000U	NA	19000U	NA	44000	19000U	19000U	19000U	38000U	45000	NA	40000
	SB-02 4-6 ft	NA	NA	810	970	780	980	440	410	NA	380U	840	NA	380U	NA	2400	380U	470	380U	760	2400	NA	1800
	SB-02 8-10 ft	NA	NA	390U	390U	390U	390U	390U	390U	NA	390U	390U	NA	390U	NA	390U	390U	390U	390U	780	390U	NA	390U
	SB-03 2-4 ft	NA	NA	3900U	7600	7400	8300	4700	4000	NA	3900U	6800	NA	3900	NA	16000	3900	4600	3900U	7800	12000	NA	14000
	SB-03 4-6 ft	NA	NA	380	380	380	380	380	380	NA	380	380	NA	380	NA	380	380	380	380	760	380	NA	380
	SB-04 2-4 ft	NA	NA	10000	13000	10000	13000	5400	5800	NA	4300	11000	NA	4900	NA	26000	6200	5700	4100	8100	33000	NA	25000
	SB-04 4-6 ft	NA	NA	390U	390U	390U	390U	390U	390U	NA	390U	390U	NA	390U	NA	390U	390U	390U	390U	780	390U	NA	390U
January 2004 Site 4 Investigation	SB-4A 0.15 ft	38 J	170 J	380U	2500	2800	2400	3300	2700	380U	310 J	3400	920	110 J	380U	5000	220 J	2800	38 J	1500U	2700	380U	6300
	SB-4B 0.15 ft	150 J	360J	24 J	2700	2600	1800	2100	2300	940U	640 J	2800	580	670 J	940U	5100	770 J	2000	120 J	3800U	5800	940U	6100
	SB-4B 3 ft	420U	420U	420U	9.5 J	42U	42U	420U	42U	420U	420U	420U	42U	420U	420U	17 J	420U	42U	420U	1700U	420U	420U	15 J
	SB-4B 5 ft	420U	420U	420U	42U	42U	42U	420U	42U	420U	420U	420U	42U	420U	420U	15 J	420U	42U	420U	1700U	420U	420U	13 J
	SB-4C 0.15 ft	3000 J	3200 J	4400U	11000	8200	6500	4400 J	7900	4400U	2800 J	9800	1600	5000	4400U	25000	7600	4700	3100 J	18000U	34000	6500	23000
	SB-4C 3 ft	390U	390U	390U	39U	39U	39U	390U	39U	390U	390U	390U	39U	390U	390U	390U	390U	39U	390U	1600U	390U	390U	390U
	SB-4C 5 ft	400U	400U	400U	40U	40U	40U	400U	40U	400U	400U	400U	40U	400U	400U	400U	400U	40U	400U	1600U	400U	400U	400U
	SB-4D 0.15 ft	410 J	1000 J	2000U	7300	6700	5000	5500	5500	2000U	1200 J	7400	1900	880 J	2000U	12000	1700 J	5200	440 J	8200U	12000	2000U	16000
	SB-4D 3 ft	29 J	180 J	440U	1600	1600	1200	1300	1400	190 J	200 J	1800	360	96 J	440U	3100	220 J	1200	37 J	1800U	2200	440U	3800
	SB-4D 7 ft	410U	410U	410U	41U	41U	41U	410U	41U	410U	410U	410U	41U	410U	410U	410U	410U	41U	410U	1600U	410U	410U	410U
	MW-4A 0.15 ft	400U	400U	400U	40 J	39 J	31 J	23 J	40 J	400U	400U	48 J	40U	400U	400U	96 J	400U	21 J	400U	1600U	68 J	400U	74 J
	MW-4A 3 ft	22 J	19 J	420U	280	310	280	260 J	330	420U	77 J	340 J	55	24 J	420U	590	26 J	230	20 J	1700U	410 J	420U	540
	MW-4A 11 ft	420U	420U	420U	42U	42U	42U	420U	42U	420U	420U	420U	42U	420U	420U	420U	420U	42U	420U	1700U	420U	420U	420U
	MW-4B 0.15 ft	450U	450U	450U	31 J	38 J	36 J	450U	45 J	100 J	450U	56 J	45U	450U	450U	85 J	450U	25 J	450U	1800U	50 J	450U	85 J
	MW-4B 3 ft	400U	400U	400U	40U	40U	40U	400U	40U	400U	400U	400U	40U	400U	400U	400U	400U	40U	400U	1600U	400U	400U	400U
	MW-4B 6 ft	410U	410U	410U	41U	41U	41U	410U	41U	410U	410U	410U	41U	410U	410U	410U	410U	41U	410U	1600U	410U	410U	410U
	TP-4A 4 ft - A	110 J	300 J	440U	2000	1900	1400	1600J	1800	100 J	300 J	2100	480	280 J	440U	3600	540	1500	110 J	24 J	3400	440U	5300J
	TP-4A 4 ft - B	3800U	3500 J	3800U	22000	18000	14000	14000J	18000	3800U	3800U	21000	4500	3800U	3800	47000	6500	13000	1400 J	15000U	41000	3800U	53000J
	TP-4A 4 ft - C	94 J	430 J	850U	4600	5100	4000	2900J	4300	850U	470 J	5100	1200	450 J	850U	7100	910	3100	84 J	920 J	6400	850U	9800J
	TP-4B 4.5 ft - A	46 J	200 J	390U	2200	2000	1600	1500J	2000	88 J	290 J	2300	420	160 J	390U	4300	330 J	1400	65 J	1600U	3000	390U	4700J
	TP-4B 4.5 ft - B	900 J	2300 J	3800U	18000	16000	14000	12000J	16000	3800U	2600 J	19000	35000	2200 J	3800U	37000	4200	11000	1300 J	15000U	30000	3800U	43000J
	TP-4B 5 ft - C	150 J	690 J	760U	5500	5300	3800	3500J	5000	760U	750 J	5900	1300	550 J	760U	9100	990	3700	180 J	3000U	8700	760U	12000J
	TP-4C 3 ft - A	220 J	790 J	790U	4700	4500	3500	2800J	3800	280 J	740 J	5400	1100	540 J	790U	8100	880	2700	180 J	3200U	8100	790U	8700J
	TP-4C 4 ft - B	400J	2800J	4200U	23000	22000	19000	15000J	21000	4200U	3700J	24000	5300	1600J	4200U	49000	3600J	13000	560J	17000U	31000	4200U	52000J
	TP-4C 5 ft - C	59 J	270 J	410U	3200	3000	2500	2800J	2500	100 J	310 J	3500	970	210 J	410U	5600	440	2500	56 J	490 J	4100	410U	7200J
December 2006 Site 4 Investigation	MW-4C 0.5 ft	96 J	180 J	460 J	670	540	480	230 J	520	220 J	160 J	610	47U	210 J	470U	1700	320 J	200	180 J	1400U	1800	470U	1300

Units are in µg/L

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U - Compound not detected, reporting limit shown
UJ - Undetected due and biased low due to QA/QC deficiencies, reporting limit shown
NA - Data not available
NS - No Standard
Standard* - NYSDEC Recommended Soil Cleanup Objective
Exceeds NYSDEC Recommended Soil Cleanup Objective

TABLE 6
Summary of VOCs Detected in Groundwater
Site 4 Monitoring Wells
Air National Guard - Hancock Field

Monitoring Well Number		Acetone	Methylene Chloride	Tetrachloroethane	Toluene	Xylenes (total)
	Standard*	50	5	5	5	5
Previous SA Report	MW-17GW	5U	3U	1U	5U	0.05U
January 2004 Site 4 Investigation	MW-4A	5U	3U	1U	5U	5U
	MW-4B	5U	3U	1U	5U	5U
	MW-16	5U	3U	1U	5U	5U
	MW-17	5U	3U	1U	5U	5U
	MW-18	5U	3U	1U	5U	5U
December 2006 Site 4 Investigation	MW-4A	5U	3U	1U	5U	5U
	MW-4B	5U	3U	1U	5U	5U
	MW-4C	5U	3U	1U	5U	5U
	MW-16	*	*	*	*	*
	MW-17	5U	3U	1U	5U	5U
	MW-18	5U	3U	1U	5U	5U

Units are in µg/L

J - Estimated value
U - Compound not detected, reporting limit shown
UJ - Undetected due and biased low due to QA/QC deficiencies, reporting limit shown
NA - Data not available
NS - No standard
Standard* - NYSDEC Drinking Water Quality Standard (DWQS)
Exceeds NYSDEC DWQS
* - This monitoring well was not sampled during the December 2006 Site 4 Investigation since it was not accessable

TABLE 7
Summary of SVOCs Detected in Groundwater
Site 4 Monitoring Wells
Air National Guard - Hancock Field

Monitoring Well Number		Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(ghi)perylene	Benzo(k)fluoranthene	Carbazole	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dimethylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Napthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene
	Standard*	**20**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**50**	**NS**	**50**	**NS**	**50**	**NS**	**NS**	**1**	**50**	**1**	**50**
Previous SA Report	**MW-17 GW**	NA	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	5U	10U	5U	5U	5U
January 2004 Site 4 Investigation	**MW-4A**	11U	11U	1.1U	1.1U	1.1U	11U	1.1U	11U	11U	1.1U	11U	11U	11U	11U	1.1U	11U	42U	11U	11U	11U
	MW-4B	10U	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	10U	1U	10U	40U	10U	10U	10U
	MW-16	10UJ	10UJ	1UJ	1UJ	1UJ	10UJ	1UJ	10UJ	10UJ	1UJ	10UJ	10UJ	10UJ	10UJ	1UJ	10UJ	42UJ	0.7J	10UJ	0.3J
	MW-17	11U	11U	1.1U	1.1U	1.1U	11U	1.1U	11U	11U	1.1U	11U	11U	11U	11U	1.1U	11U	46U	11U	11U	11U
	MW-18	1.4 J	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	0.4 J	1U	10U	41U	10U	10U	10U
December 2006 Site 4 Investigation	**MW-4A**	10U	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	10U	1U	10U	30U	10U	10U	10U
	MW-4B	10U	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	10U	1U	10U	30U	10U	10U	10U
	MW-4C	10U	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	10U	1U	10U	30U	10U	10U	10U
	MW-16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	MW-17	10U	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	10U	1U	10U	30U	10U	10U	10U
	MW-18	0.9 J	10U	1U	1U	1U	10U	1U	10U	10U	1U	10U	10U	10U	0.3 J	1U	10U	30U	10U	10U	10U

Units are in µg/L

J - Estimated value
U - Compound not detected, reporting limit shown
UJ - Undetected due and biased low due to QA/QC deficiencies, reporting limit shown
NA - Data not available
NS - No standard
Standard* - NYSDEC Drinking Water Quality Standard (DWQS)
Exceeds NYSDEC DWQS

Figures

f21_180533.dgn 16-OCT-2006

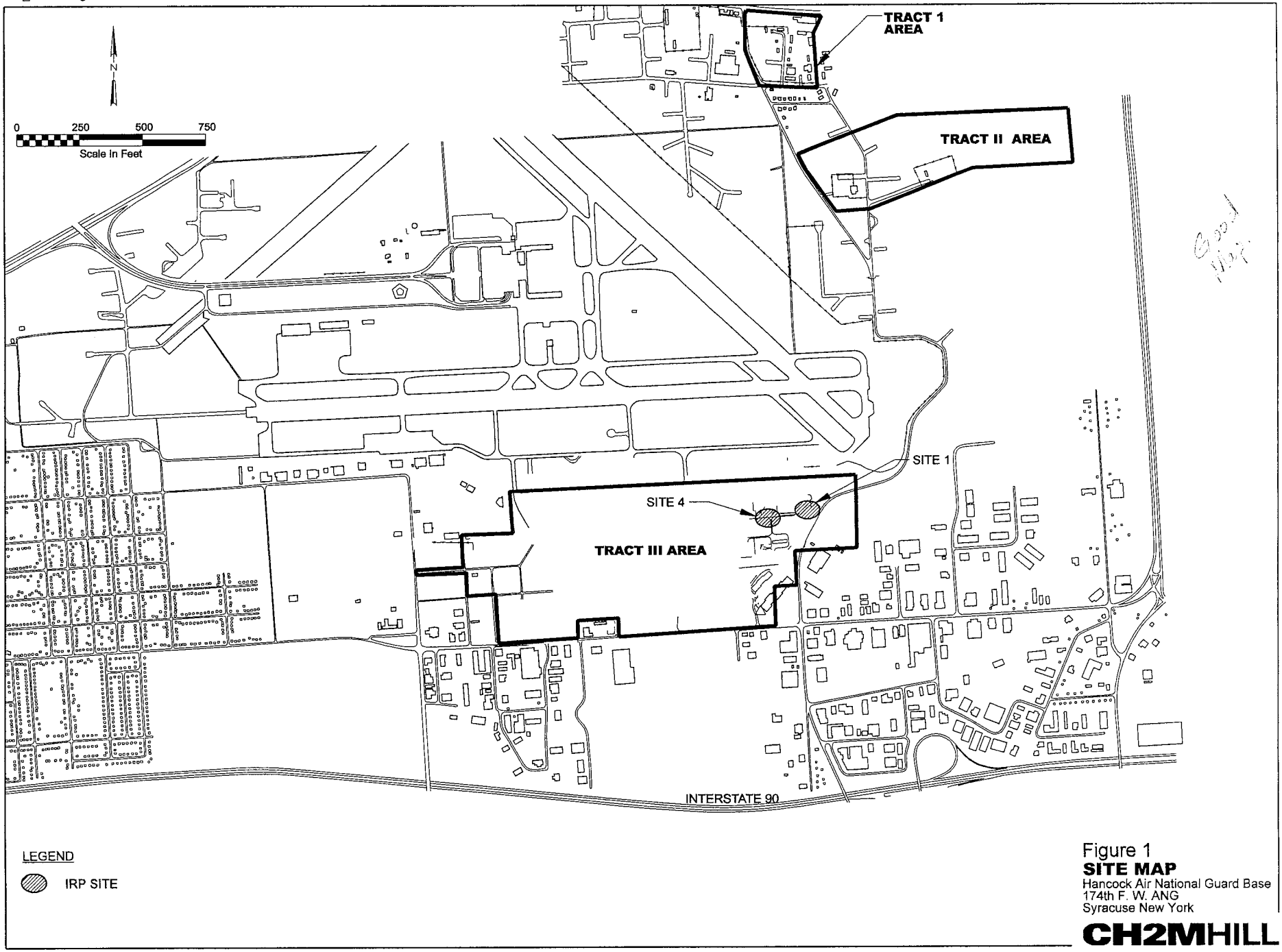


Figure 1
SITE MAP
Hancock Air National Guard Base
174th F. W. ANG
Syracuse New York

CH2MHILL

f24_345202.dgn 28-JAN-2007

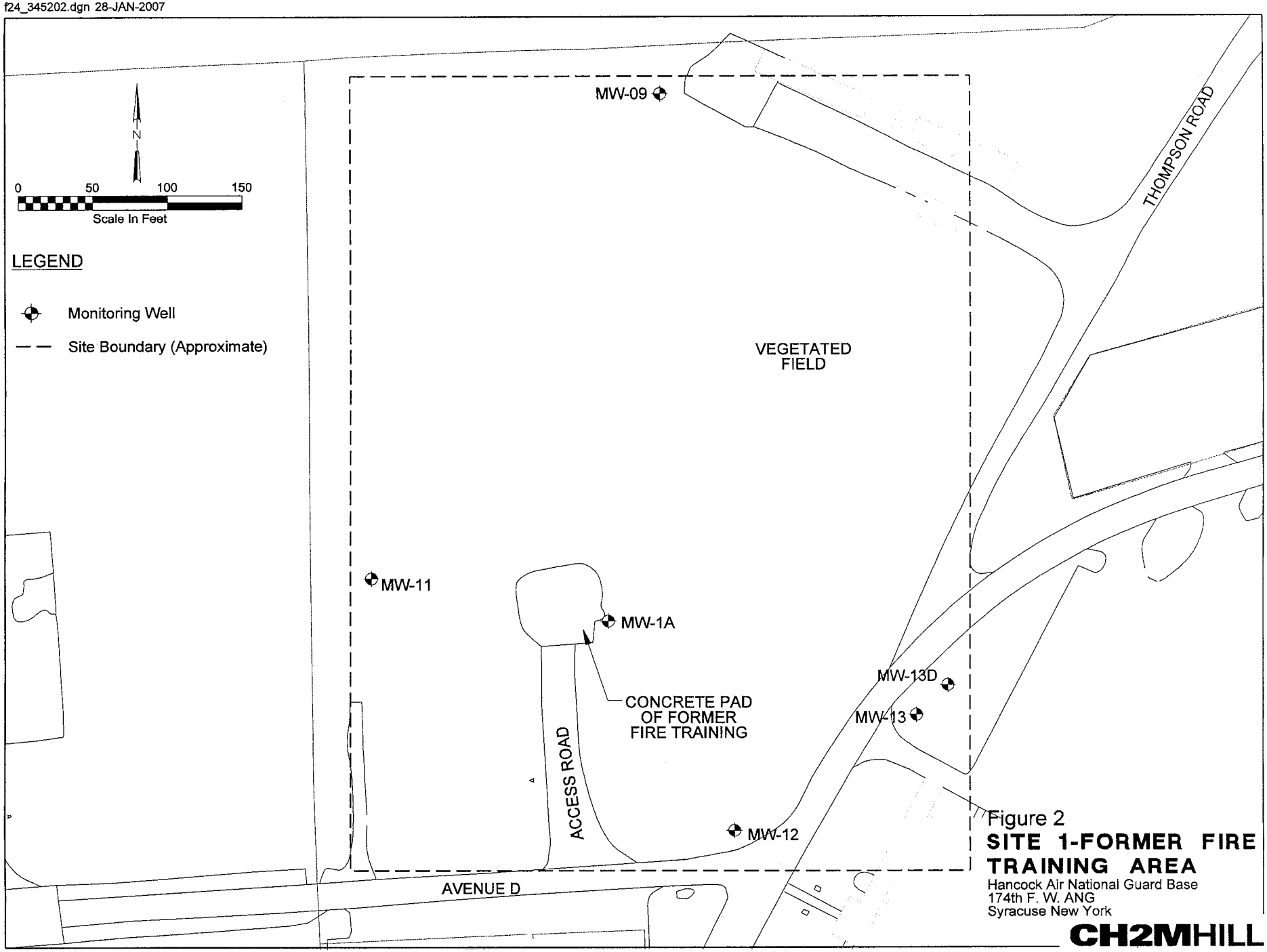


Figure 2

SITE 1-FORMER FIRE TRAINING AREA

Hancock Air National Guard Base
174th F. W. ANG
Syracuse New York

CH2MHILL

f27_180533.dgn

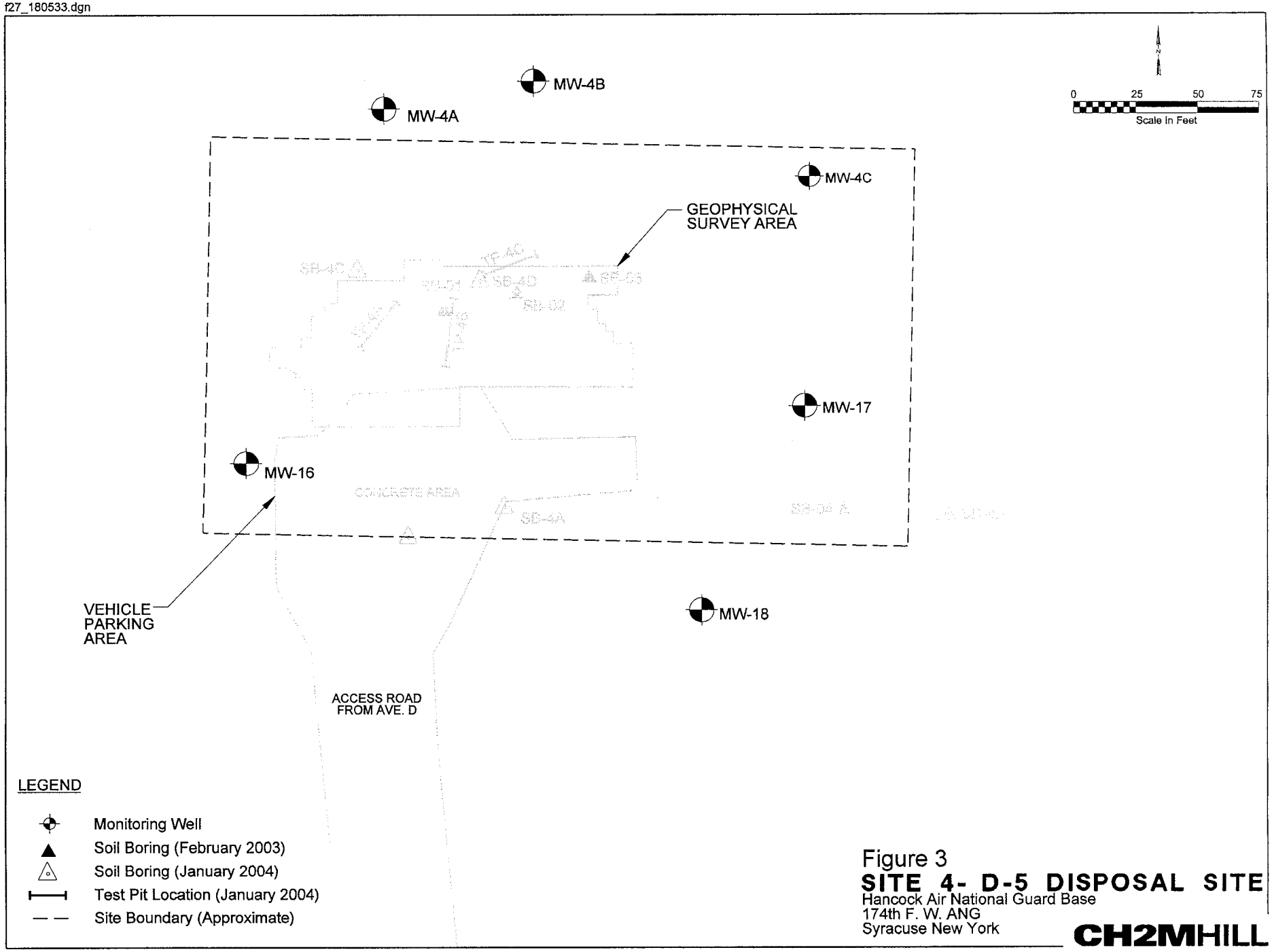


Figure 3

SITE 4- D-5 DISPOSAL SITE

Hancock Air National Guard Base
174th F. W. ANG
Syracuse New York

CH2MHILL

f26_345202.dgn 02-FEB-2007

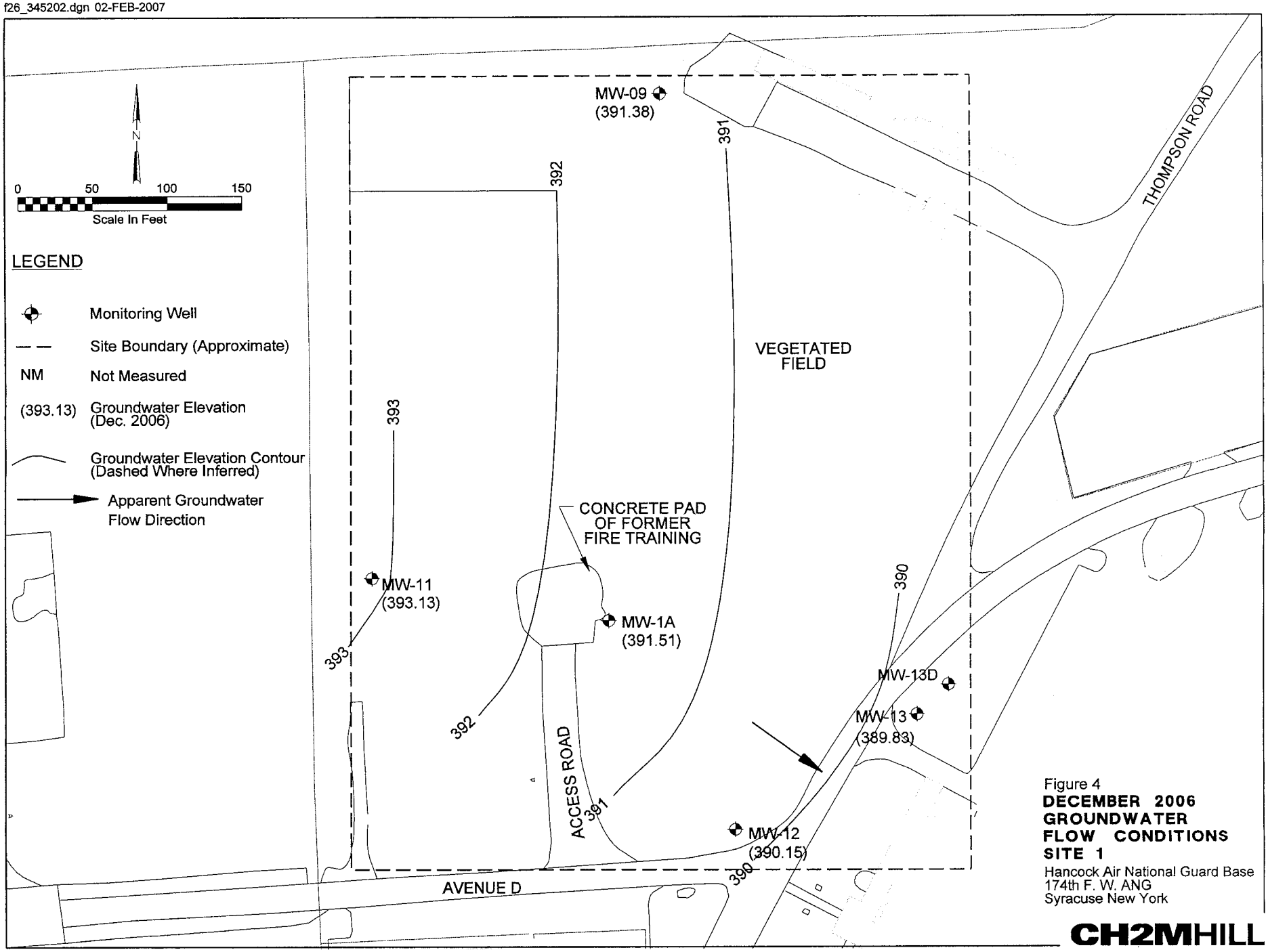


Figure 4
DECEMBER 2006 GROUNDWATER FLOW CONDITIONS SITE 1
Hancock Air National Guard Base
174th F. W. ANG
Syracuse New York

CH2MHILL

f25_345202.dgn 05-APR-2007

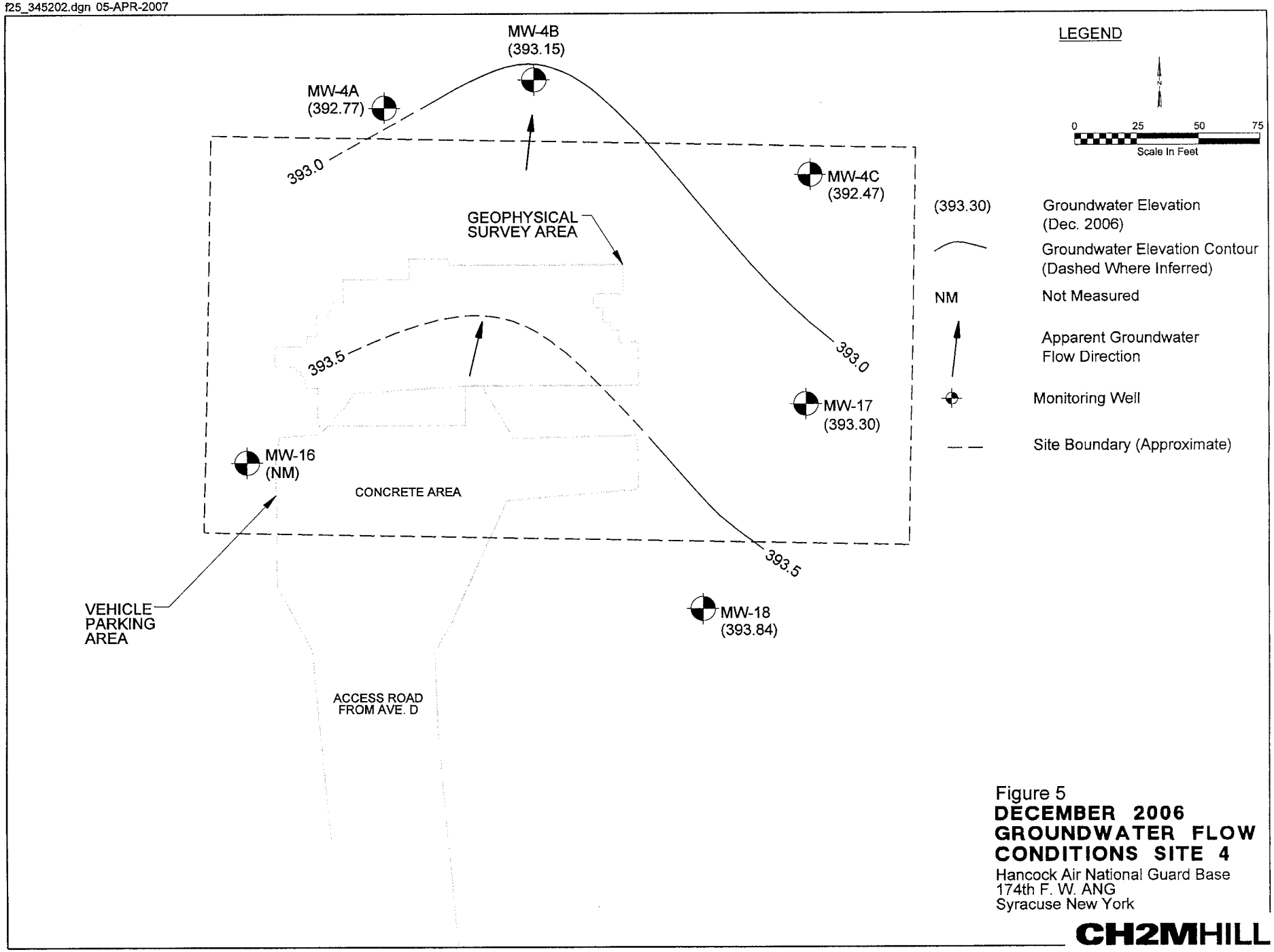


Figure 5
DECEMBER 2006 GROUNDWATER FLOW CONDITIONS SITE 4
Hancock Air National Guard Base
174th F. W. ANG
Syracuse New York

CH2MHILL

f29_345202.dgn 05-APR-2007

N

0 50 100 150
Scale In Feet

LEGEND

- Monitoring Well
- (393) Groundwater Elevation (December 2006)
- Groundwater Elevation Contour (Dashed Where Inferred)
- NM Not Measured
- Apparent Groundwater Flow Direction

SITE 4

SITE 1

MW-4B (383.15)
MW-4A (392.77)
MW-4C (392.47)
MW-17 (393.30)
MW-16 (NM)
MW-18 (393.64)
MW-11 (393.13)
MW-09 (391.38)
MW-1A (391.51)
MW-13D
MW-13 (389.83)
MW-12 (390.15)

GEOPHYSICAL SURVEY AREA
CONCRETE PAD
VEHICLE PARKING AREA

393
392
391
390

Figure 6
DECEMBER 2006 GROUNDWATER FLOW CONDITIONS SITES 1 AND 4
Hancock Air National Guard Base
174th F. W. ANG
Syracuse New York

CH2MHILL

Appendixes

Appendix A

Soil Boring Log and Well Construction Diagram for MW-4C

CH2MHILL

PROJECT NUMBER	BORING NUMBER	SHEET / OF /
	MW-4C	

SOIL BORING LOG

PROJECT: ANG Hancock / Syracuse, NY LOCATION: Syracuse, NY

ELEVATION: DRILLING CONTRACTOR: Parratt-Wolff

DRILLING METHOD AND EQUIPMENT USED: Diedrich D-120 - Hollow-Stem / 2' split spoon

WATER LEVELS: START: 1230 12/14/06 END: 1430 12/14/06 LOGGER: T. Zemetra

DEPTH BELOW SURFACE (FT)	SAMPLE INTERVAL	SAMPLE NUMBER AND TYPE	SAMPLE RECOVERY (FT)	STANDARD PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone / Headspace
0					Top 8" - Grass & Top Soil, Wet, Organics, 10YR 3/2, Dk. Yellowish Brn. V.F. Sand & Clay, Slight Plasticity, Med. Density	0.0 ppm
5 (22)	Hand Auger Top 2 ft				8-12" - 5 YR 6/3 - Lt. Reddish Brn, V.F. Sand & Silt, Med. Density, Wet.	
					1'-2' - 7.5 YR 5/4 - Brn, F. Clay, Silt, & F. Sand. Slight Plasticity	0.0 ppm
				2-2.5	2.5' bgs, SAA - 7.5 YR 5/4	
5	4-6'	SS1	22"	WOH-1-2-3 (5) 2-2-2-3	Brn, Clay, Silt, & F. Sand, Wet, Dense, Slight Plasticity	0.0 ppm
					2.5-3' - 10 YR 5/3, Brn, Clay & Silt, Trace F. Sand, Wet Dense, V. Plastic	
	6-8'	SS2	22"	WOH-1-2-3	3-4' - SAA, 10 YR 5/3, Brn	0.0 ppm
15 (5)					4-6' - SAA, 10 YR 5/3, Brn	
	8-10'	SS3	15"	2-1-1-2	6-8', SAA, 10 YR 5/3, Brn	0.0 ppm
					8-10', SAA, 10 YR 5/3, Brn	
10	10-12'	SS4	12"	1-1-2-2	10-12', SAA, 10 YR 5/3, Brn	0.0 ppm
25 (27)	12-14'	SS5	24" Full Rec Coverage	1-2-1-2	12-14', SAA, 10 YR 5/3, Brn	0.0 ppm
					B.O.B. @ ≈ 14' bgs	MW-4C Set to 14' bgs, Screened interval: 4-14' bgs

(27) 15

CH2MHILL

PROJECT NUMBER	WELL NUMBER
345202	MW-4C SHEET 1 OF 1

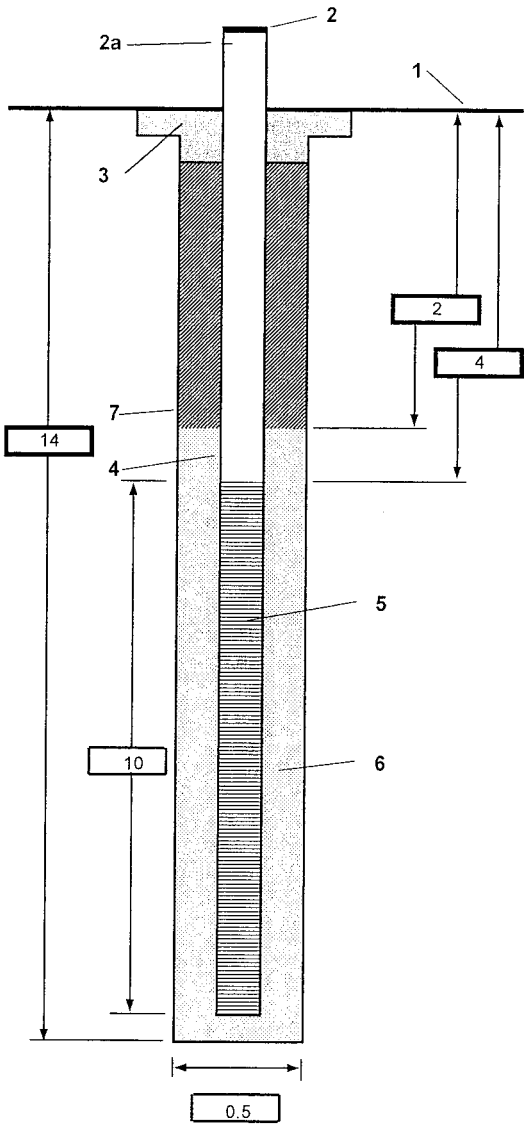
WELL COMPLETION DIAGRAM

PROJECT : Air National Guard Hancock, Sites 1 and 4 SI addendum LOCATION : Site 4

DRILLING CONTRACTOR : Parratt Wolfe

DRILLING METHOD AND EQUIPMENT USED : Hollow-stem auger, 4 1/2-inch inside diameter augers, 2-foot x 2-inch split spoons

WATER LEVELS : START : END : LOGGER : Ian Zmudzin



1- Ground elevation at well	392.52
2- Top of casing elevation	394.76
a) vent hole?	NA
3- concrete pad dimensions	2 feet x 2 feet
4- Dia./type of well casing	2-inch schedule 40 PVC
5- Type/slot size of screen	2-inch schedule 40 PVC 0.010-inch slot screen
6- Type screen filter	No. 2 morie sand
a) Quantity used	
7- Type of seal	Bentonite chips
Development method	Pump and surge, 2-inch submersible pump
Development time	1 hour
Estimated purge volume	10 gallons
Comments	Units are in feet.

Appendix B

Data Validation Memorandum

Appendix C

Data Validation Results

The following primary flags were used to qualify the data:

[=] Detected. The analyte was analyzed for and detected at the concentration shown.

[J] Estimated. The analyte was present but the reported value may not be accurate or precise.

[U] Undetected. The analyte was analyzed for but not detected above the method detection limit.

[UJ] Detection limit estimated. The analyte was analyzed for but qualified as not detected; the result is estimated.

[R] Rejected. The data is not useable.

Secondary Qualifier Codes

Code	Definition
2SH	Second Source Accuracy High
2SL	Second Source Accuracy Low
BD	Blank Spike/Blank Spike Duplicate (LCS/LCSD) Precision
BL	Blank
BSH	Blank Spike/LCS Recovery High
BSL	Blank Spike/LCS Recovery Low
CCH	Continuing Calibration Verification Accuracy High
CCL	Continuing Calibration Verification Accuracy Low
DL	Dilution
FD	Field Duplicate
HT	Holding Time
ICH	Initial Calibration High
ICL	Initial Calibration Low
ISH	Internal Standard Area Response High
ISL	Internal Standard Area Response Low
LR	Linear Range (Exceeded calibration range)
MD	Matrix Spike/Matrix Spike Duplicate Precision
MI	Matrix Interference
MSH	Matrix Spike and/or Matrix Spike Duplicate Recovery High
MSL	Matrix Spike and/or Matrix Spike Duplicate Recovery Low
OT	Other
RE	Re-extraction
RF	Response Factor outside acceptance criteria
SSH	Spiked Surrogate Recovery High
SSL	Spiked Surrogate Recovery Low
ST	Sample Temperature outside acceptance criteria
TN	Tune
T/D	Dissolved results were greater than total results

Table 1 - Chemical Analytical Methods – Field and Quality Control Samples

SDG	Sample ID	Lab Sample ID	Matrix	Sample Type	Date Collected	Analyses Performed
A988	MW4B121106R	794400	GW	N	12/11/2006	[1], [2]
A988	MW4A121106R	794401	GW	N	12/11/2006	[1], [2]
A988	MW17121206R	794402	GW	N	12/12/2006	[1], [2]
A988	MW18121206R	794403	GW	N	12/12/2006	[1], [2]
A988	MW1A121206R	794404	GW	N	12/12/2006	[3]
A988	MW9121306R	794405	GW	N	12/13/2006	[3]
A988	MW13121306R	794406	GW	N	12/13/2006	[3]
A988	DUP121306	794407	GW	FD	12/13/2006	[3]
A988	MW12121306R	794409	GW	N	12/13/2006	[3]
A988	MW11121306R	794410	GW	N	12/13/2006	[3]
A988	MW4C_0.5_121406R	794411	S	N	12/14/2006	[1], [2]
A988	MW4C121506R	794412	GW	N	12/15/2006	[1], [2]
A988	EB121506	794413	WQ	EB	12/15/2006	[1]
A988	MW1A121206R-D	794414	GW	N	12/12/2006	[4]
A988	MW9121306R-D	794415	GW	N	12/13/2006	[4]
A988	MW13121306R-D	794416	GW	N	12/13/2006	[4]
A988	DUP121306-D	794417	GW	FD	12/13/2006	[4]
A988	MW12121306R-D	794418	GW	N	12/13/2006	[4]
A988	MW11121306R-D	794419	GW	N	12/13/2006	[4]
A988	TB	794421	WQ	TB	12/13/2006	[1]

MATRIX CODE

GW – Groundwater
S - Soil
WQ – Water Quality Control

SAMPLE TYPE CODE

N - Native Sample
FD – Field Duplicate
TB – Trip Blank
EB – Equipment Blank

ANALYSIS CODE

[1] – VOC –Volatile Organic Compounds by SW-846 method 8260B
[2] – SVOC – Semi-Volatile Organic Compounds by SW-846 method 8270C
[3] – MET – Total Metals and Dissolved Metals by SW-846 method 6010B
[4] – MET –Dissolved Metals by SW-846 method 6010B

Organic Parameters

Quality Control Review

The following list represents the QA/QC measures that were reviewed during the data quality evaluation procedure for organic data.

- **Holding Times** – The holding times are evaluated to verify that samples were extracted and analyzed within holding times.
- **Blank samples** – Method blanks and trip blanks were provided for this project. Blank samples enable the reviewer to determine if an analyte may be attributed to sampling or laboratory procedures, rather than environmental contamination from site activities.
- **Surrogate Recoveries** – Surrogate Compounds are added to each sample and the recoveries are used to monitor lab performance and possible matrix interference.
- **Lab Control Sample (LCS)** – This sample is a "controlled matrix", either laboratory reagent water or Ottawa sand, in which target compounds have been added prior to extraction/analysis. The recoveries serve as a monitor of the overall performance of each step during the analysis, including sample preparation.
- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples** – Spike recovery is used to evaluate potential matrix interferences, as well as accuracy. Precision information is also determined by calculating the reproducibility between the recoveries of each spiked parameter.
- **GC/MS Tuning** – The mass spectrum of the tuning compound is evaluated for method compliance. The criteria are established to verify the proper mass assignment and mass resolution.
- **Initial Calibration** – The initial calibration ensures that the instrument is capable of producing acceptable qualitative and quantitative data for the compounds of interest.
- **Continuing Calibration** – The continuing calibration checks satisfactory performance of the instrument and its predicted response to the target compounds.
- **Internal Standards** – The internal standards (retention time and response) are evaluated for method compliance. The internal standards are used in quantitation of the target parameters and monitor the instrument sensitivity and response for stability during each analysis.

Volatile Organic Compounds (VOC) Analyses

The QA/QC parameters for VOC analyses for all of the samples were within acceptable control limits, except as noted below:

Continuing Calibration

All continuing calibration criteria were met, except as listed in Table 1.

TABLE 1
Exceptions to Continuing Calibration: VOC
Hancock ANG Site 1 and 4 December 2006

Instrument/Calibration Date	Analyte	%Relative Standard Deviation or R^2 (ICAL)/ %Difference (CCAL)	Associated Samples
CCV-12/19/06, 17:58	Trichlorofluoromethane	27.48% low	MW4B121106R MW4A121106R MW17121206R MW18121206R MW4C121506R

CCV – Continuing Calibration

Flags were applied to the compounds in the associated samples in the following manner:

- When the percent difference (%D) was outside acceptance criteria in the continuing calibration, detected compounds were flagged "J" and non-detected compounds were flagged "UJ", as estimated with a validation note of "CCL" for low percent recovery.

Initial and Continuing Calibration Response Factor Criteria

All initial and continuing calibration response factor criteria were met, except as listed in Table 2.

TABLE 2
Exceptions to Initial and Continuing Calibration Response Factor Criteria: VOC
Hancock ANG Site 1 and 4 December 2006

Instrument/Calibration Date	Analyte	Relative Response Factor (RRF) for ICAL or CCAL	Associated Samples

TABLE 2
Exceptions to Initial and Continuing Calibration Response Factor Criteria: VOC
Hancock ANG Site 1 and 4 December 2006

Instrument/Calibration Date	Analyte	Relative Response Factor (RRF) for ICAL or CCAL	Associated Samples
ICV-12/18/06, 21:26	Acetone	0.035 low	MW4B121106R
	2-Butanone	0.038 low	MW4A121106R
			MW17121206R
			MW18121206R
			MW4C121506R
ICV-12/20/06, 23:23	2-Butanone	0.039 low	MW4C_0.5_121406R
CCV-12/19/06, 17:58	Acetone	0.031 low	MW4B121106R
	2-Butanone	0.035 low	MW4A121106R
			MW17121206R
			MW18121206R
			MW4C121506R
CCV-12/22/06, 10:18	Acetone	0.045 low	MW4C_0.5_121406R
	2-Butanone	0.037 low	
CCV – Continuing Calibration ICV – Initial Continuing Calibration			

Flags were applied to the compounds in the associated samples in the following manner:

- When the relative response factor (RRF) was outside the acceptance criteria in the initial and continuing calibrations, the non-detected compounds were flagged "UR", as qualitatively invalid with a validation note of "RF". Poor initial and continuing calibration RRF precisions indicate a lack of instrument stability for these compounds.

Blanks

The Volatile Organic Compounds target parameters detected in blank samples are listed in Table 3.

TABLE 3
Blank Contamination: VOC
Hancock ANG Site 1 and 4 December 2006

SDG	Sample ID	Sample Type	Parameter	Lab Result	Units	Samples Affected	Flag Concentrations less than the value listed below
A988	Method Blank	MB	Methylene Chloride	0.8	ug/kg	MW4C_0.5_121406R	8.0 ug/kg

Flags were applied to the parameters in the associated samples in the following manner:

- When the parameter is detected in the method blank, the detected compound that was less than 10 times the concentration detected for the parameter listed, was flagged "U" due to possible laboratory contamination with a validation note of "BL".

Semi-volatile Organic Compounds (SVOC) Analyses

The QA/QC parameters for SVOC analyses for all of the samples were within acceptable control limits, except as noted below:

Initial Calibration

All initial calibration criteria were met, except as listed in Table 4.

TABLE 4
Exceptions to Continuing Calibration: SVOC
Hancock ANG Site 1 and 4 December 2006

Instrument/Calibration Date	Analyte	%Relative Standard Deviation or R^2 (ICAL)/ %Difference (CCAL)	Associated Samples
ICV-12/26/06, 11:15	Benzaldehyde	R^2 - 0.897 low	MW4B121106R
	Atrazine	R^2 – 0.964 low	MW4A121106R
			MW17121206R
			MW18121206R
			MW4C121506R
ICV – Initial Calibration			

Flags were applied to the compounds in the associated samples in the following manner:

- When the linearity was outside acceptance criteria in the initial calibration, non-detected compounds were flagged "UJ", as estimated with a validation note of "ICL".

The quantitation limits or positive results reported for sample MW4C_0.5_121406R for the semi-volatile organic analysis should be considered quantitative estimates due to the sample was re-extracted outside of the method technical holding time due to low surrogate recoveries noted in the initial extraction. All results for sample MW4C_0.5_121406R for the semi-volatile analysis were flagged with a "J" for detects, and "UJ" for non-detects to indicate that the reported values are quantitative estimates due to holding time exceedances.

Rejected Data

No data were rejected based upon the validation process for this sampling event.

Inorganic Parameters

Quality Control Review

The following list represents the QA/QC measures that were reviewed during the data quality evaluation procedure for inorganic data.

- **Holding Times** – The holding times are evaluated to verify that samples were extracted and analyzed within holding times.
- **Blank samples** – Method blanks, initial calibration, and continuing calibration blanks were provided for this project. Blank samples enable the reviewer to determine if an analyte may be attributed to sampling or laboratory procedures, rather than environmental contamination from site activities.
- **Lab Control Sample (LCS)** – This sample is a "controlled matrix", either laboratory reagent water or Ottawa sand, in which target compounds have been added prior to extraction/analysis. The recoveries serve as a monitor of the overall performance of each step during the analysis, including sample preparation.
- **Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples** – Spike recovery is used to evaluate potential matrix interferences, as well as accuracy. Precision information is also determined by calculating the reproducibility between the recoveries of each spiked parameter.
- **Field Duplicate Samples** – These samples are collected to determine precision between a native and it's duplicate. This information can only be determined when target compounds are detected.
- **Initial Calibration** – The initial calibration ensures that the instrument is capable of producing acceptable qualitative and quantitative data for the compounds of interest.
- **Continuing Calibration** – The continuing calibration checks satisfactory performance of the instrument and its predicted response to the target compounds.

Total and Dissolved Metals Analyses

The QA/QC parameters for the Total and Dissolved Metals analyses for all of the samples were within acceptable control limits, except as noted below:

Blanks

The Total and Dissolved metals target parameters detected in blank samples are listed in Table 5.

TABLE 5
Blank Contamination: Total and Dissolved Metals
Hancock ANG Site 1 and 4 December 2006

SDG	Sample ID	Sample Type	Parameter	Lab Result	Units	Samples Affected	Flag Concentrations less than the value listed below
A988	Initial Calibration Blank	ICB	Copper	4.1	ug/L	MW1A121206R MW9121306R MW11121306R MW1A121206R-Diss MW13121306R-Diss DUP121306-Diss	20.5 ug/L
A988	Method Blank	MB	Cobalt	1.9	ug/L	MW9121306R MW11121306R MW1A121206R-Diss MW13121306R-Diss DUP121306-Diss	9.5 ug/L
A988	Initial Calibration Blank	ICB	Beryllium	0.4	ug/L	MW12121306R MW11121306R	2.0 ug/L
A988	Continuing Calibration Blank	CCB	Beryllium	0.4	ug/L	MW12121306R	2.0 ug/L
A988	Method Blank	MB	Chromium	2.6	ug/L	MW11121306R MW1A121206R-Diss MW9121306R-Diss MW13121306R-Diss DUP121306-Diss	13.0 ug/L
A988	Continuing Calibration	CCB	Beryllium	0.6	ug/L	MW11121306R	3.0 ug/L

TABLE 5
Blank Contamination: Total and Dissolved Metals
Hancock ANG Site 1 and 4 December 2006

SDG	Sample ID	Sample Type	Parameter	Lab Result	Units	Samples Affected	Flag Concentrations less than the value listed below
	Blank						
A988	Method Blank	MB	Manganese	2.2	ug/L	MW11121306R-Diss	11.0 ug/L

Flags were applied to the elements in the associated samples in the following manner:

- When the elements were detected in the method, initial calibration, and/or continuing calibration blanks, the detected elements that were less than 5 times the concentration detected for the elements listed, was flagged "U" due to possible laboratory contamination with a validation note of "BL".

The positive results reported for the total and dissolved metals listed in table 6 below should be considered quantitative estimates. The dissolved metals results for each of the samples listed below were reported at higher concentrations than the total metals. This indicates a possible problem with field and/or laboratory contamination for the specified metals. A "J" qualifier was placed next to the positive results for the total and dissolved metals on the data summary tables for the samples listed below.

TABLE 6
Metals
Hancock ANG Site 1 and 4 December 2006

Element	Affected Samples
Calcium	MW1A121206R
	MW1A121206R-D
Sodium	MW1A121206R
	MW13121306R
	MW12121306R
	MW1A121206R-D
	MW13121306R-D
	MW12121306R-D
Zinc	MW1A121206R
	MW9121306R
	MW1A121206R-D
	MW9121306R-D

TABLE 6
Metals
Hancock ANG Site 1 and 4 December 2006

Element	Affected Samples
Selenium	DUP121306-D

Dilutions

The sample presented below in table 7 was analyzed at a dilution for the analysis indicated. This dilution was required to prevent saturation of the instrument, to allow quantitation of the compounds within the linear range of the calibration curve, and/or to reduce the effects of the matrix on the target compounds. The positive result for the compound reported above the calibration range in the initial analysis has been reported from the diluted analysis.

TABLE 7
Dilutions: Total Metals
Hancock ANG Site 1 and 4 December 2006

Sample ID	Analysis	Dilution Factor
MW13121306R	Total Chromium	5X

Field Duplicate Sample Results

Field duplicate analyses measure both field and laboratory precision and can also be affected by the homogeneity of the samples. Therefore the results may have more variability than laboratory duplicates, which measure only laboratory performance. Duplicate samples are not spiked; therefore, evaluation of duplicate sample results can only be performed on the comparison of positive sample results. Sample results are not qualified based on duplicate sample results; instead, the information is used to support the overall assessment of precision. According to the EPA *National Functional Guidelines*, there are no qualification criteria for field duplicate precision.

One field duplicate sample was submitted for the total metals and dissolved metals analyses.

A control limit of ± 20 percent for the RPD was used for original and duplicate aqueous sample values greater than or equal to five times the RL. A control limit of ± the RL was used if either the sample for the duplicate value was less than five times the RL. In the cases where only one result is more than five times the RL level and the other is below, the ± RL

All of the precision data were not within criteria for dissolved selenium, total aluminum, total arsenic, total chromium, total cobalt, total copper, total iron, total manganese, total

nickel, total vanadium, and total zinc indicating that the sample matrix possibly interfered with the overall analytical process.

Rejected Data

No data were rejected based upon the validation process for this sampling event.

Conclusion

A review of the analytical data submitted regarding the investigation of Hancock Air National Guard Sites 1 and 4 December 2006 sampling, by CH2M HILL has been completed. An overall evaluation of the data indicates that the sample handling, shipment, and analytical procedures have been adequately completed, and that the analytical results should be considered usable as qualified.

The validation review demonstrated that the analytical systems were generally in control and the data results can be used in the decision making process.

Appendix C

Data Validation Results

Client ID: **MW4B121106R**
Site: Hancock

Lab Sample No: **794400**
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15621.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND u	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	~~ND~~ UR-RF	5.0
Carbon Disulfide	ND u	5.0
Trichlorofluoromethane	~~ND~~ UJ-CCL	5.0
1,1-Dichloroethene	ND u	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	~~ND~~ UR-RF	5.0
1,1,1-Trichloroethane	ND u	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0

Client ID: MW4B121106R
Site: Hancock

Lab Sample No: 794400
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15621.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND U	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: MW4A121106R
Site: Hancock

Lab Sample No: 794401
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15622.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND U	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	5.0
Acetone	ND UR-RF	3.0
Carbon Disulfide	~~ND~~ UR-RF	5.0
Trichlorofluoromethane	ND U	5.0
1,1-Dichloroethene	~~ND~~ UJ-CCL	5.0
1,1-Dichloroethane	ND U	2.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	2.0
1,1,1-Trichloroethane	~~ND~~ UR-RF	5.0
Carbon Tetrachloride	ND U	5.0
Bromodichloromethane	ND	2.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	1.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	3.0
trans-1,3-Dichloropropene	ND	1.0
Bromoform	ND	5.0
4-Methyl-2-Pentanone	ND	4.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	1.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
Styrene	ND	4.0
	ND	5.0

Client ID: **MW4A121106R**
Site: Hancock

Lab Sample No: **794401**
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15622.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND U	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: MW17121206R
Site: Hancock

Lab Sample No: 794402
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15623.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND U	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	ND UR-RF	5.0
Carbon Disulfide	ND U	5.0
Trichlorofluoromethane	ND U LCS-CCL	5.0
1,1-Dichloroethene	ND U	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	ND UR-RF	5.0
1,1,1-Trichloroethane	ND U	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0

Client ID: **MW17121206R**
Site: Hancock

Lab Sample No: **794402**
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15623.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: MW18121206R
Site: Hancock

Lab Sample No: 794403
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15626.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	5.0
Acetone	ND	3.0
Carbon Disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	5.0
1,1-Dichloroethane	ND	2.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND	2.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	5.0
Bromodichloromethane	ND	2.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	1.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	3.0
trans-1,3-Dichloropropene	ND	1.0
Bromoform	ND	5.0
4-Methyl-2-Pentanone	ND	4.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	1.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
Styrene	ND	4.0
	ND	5.0

Client ID: **MW18121206R**
Site: Hancock

Lab Sample No: **794403**
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15626.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND U	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: MW4C_0.5_121406R
Site: Hancock

Lab Sample No: 794411
Lab Job No: A988

Date Sampled: 12/14/06
Date Received: 12/16/06
Date Analyzed: 12/22/06
GC Column: DB624
Instrument ID: VOAMS13.i
Lab File ID: p09157.d

Matrix: SOIL
Level: LOW
Sample Weight: 5.1 g
Purge Volume: 5.0 ml
% Moisture: 29

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Results Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
Chloromethane	ND U	6.9
Bromomethane	ND	6.9
Vinyl Chloride	ND	6.9
Chloroethane	ND	6.9
Methylene Chloride	~~1.1JB~~ 4.2U-BL	4.2
Acetone	~~ND~~ UR-RF	6.9
Carbon Disulfide	ND U	6.9
Trichlorofluoromethane	ND	6.9
1,1-Dichloroethene	ND	2.8
1,1-Dichloroethane	ND	6.9
trans-1,2-Dichloroethene	ND	6.9
cis-1,2-Dichloroethene	ND	6.9
Chloroform	ND	6.9
1,2-Dichloroethane	ND	2.8
2-Butanone	~~ND~~ UR-RF	6.9
1,1,1-Trichloroethane	ND U	6.9
Carbon Tetrachloride	ND	2.8
Bromodichloromethane	ND	1.4
1,2-Dichloropropane	ND	1.4
cis-1,3-Dichloropropene	ND	6.9
Trichloroethene	ND	1.4
Dibromochloromethane	ND	6.9
1,1,2-Trichloroethane	ND	4.2
Benzene	ND	1.4
trans-1,3-Dichloropropene	ND	6.9
Bromoform	ND	5.5
4-Methyl-2-Pentanone	ND	6.9
2-Hexanone	ND	6.9
Tetrachloroethene	ND	1.4
1,1,2,2-Tetrachloroethane	ND	1.4
Toluene	ND	6.9
Chlorobenzene	ND	6.9
Ethylbenzene	ND	5.5
Styrene	ND	6.9

Client ID: **MW4C_0.5_121406R**
Site: Hancock

Lab Sample No: **794411**
Lab Job No: A988

Date Sampled: 12/14/06
Date Received: 12/16/06
Date Analyzed: 12/22/06
GC Column: DB624
Instrument ID: VOAMS13.i
Lab File ID: p09157.d

Matrix: SOIL
Level: LOW
Sample Weight: 5.1 g
Purge Volume: 5.0 ml
% Moisture: 29

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Results Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
Xylene (Total)	ND U	6.9
Freon TF	ND	6.9
MTBE	ND	6.9
Cyclohexane	ND	6.9
1,2-Dibromoethane	ND	6.9
1,3-Dichlorobenzene	ND	6.9
1,4-Dichlorobenzene	ND	6.9
1,2-Dichlorobenzene	ND	6.9
Dichlorodifluoromethane	ND	6.9
1,2,4-Trichlorobenzene	ND	6.9
Isopropylbenzene	ND	6.9
Methyl acetate	ND	6.9
Methyl cyclohexane	ND	6.9
1,2-Dibromo-3-chloropropane	ND	6.9

Client ID: MW4C121506R
Site: Hancock

Lab Sample No: 794412
Lab Job No: A988

Date Sampled: 12/15/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15627.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND U	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	5.0
Acetone	ND UR-RF	3.0
Carbon Disulfide	ND U	5.0
Trichlorofluoromethane	ND U J-CCL	5.0
1,1-Dichloroethene	ND U	5.0
1,1-Dichloroethane	ND	2.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	5.0
2-Butanone	ND UR-RF	2.0
1,1,1-Trichloroethane	ND U	5.0
Carbon Tetrachloride	ND	5.0
Bromodichloromethane	ND	2.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	5.0
Dibromochloromethane	ND	1.0
1,1,2-Trichloroethane	ND	5.0
Benzene	ND	3.0
trans-1,3-Dichloropropene	ND	1.0
Bromoform	ND	5.0
4-Methyl-2-Pentanone	ND	4.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	1.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	5.0
Styrene	ND	4.0
	ND	5.0

Client ID: **MW4C121506R**
Site: Hancock

Lab Sample No: **794412**
Lab Job No: A988

Date Sampled: 12/15/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15627.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: **EB121506**
Site: Hancock

Lab Sample No: **794413**
Lab Job No: A988

Date Sampled: 12/15/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15624.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND U	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	ND	5.0
Carbon Disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0

Client ID: EB121506
Site: Hancock

Lab Sample No: 794413
Lab Job No: A988

Date Sampled: 12/15/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15624.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND U	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: TB
Site: Hancock

Lab Sample No: 794421
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15620.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Chloromethane	ND U	5.0
Bromomethane	ND	5.0
Vinyl Chloride	ND	5.0
Chloroethane	ND	5.0
Methylene Chloride	ND	3.0
Acetone	ND	5.0
Carbon Disulfide	ND	5.0
Trichlorofluoromethane	ND	5.0
1,1-Dichloroethene	ND	2.0
1,1-Dichloroethane	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
cis-1,2-Dichloroethene	ND	5.0
Chloroform	ND	5.0
1,2-Dichloroethane	ND	2.0
2-Butanone	ND	5.0
1,1,1-Trichloroethane	ND	5.0
Carbon Tetrachloride	ND	2.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	5.0
Trichloroethene	ND	1.0
Dibromochloromethane	ND	5.0
1,1,2-Trichloroethane	ND	3.0
Benzene	ND	1.0
trans-1,3-Dichloropropene	ND	5.0
Bromoform	ND	4.0
4-Methyl-2-Pentanone	ND	5.0
2-Hexanone	ND	5.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Toluene	ND	5.0
Chlorobenzene	ND	5.0
Ethylbenzene	ND	4.0
Styrene	ND	5.0

Client ID: TB
Site: Hancock

Lab Sample No: 794421
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06
Date Analyzed: 12/19/06
GC Column: Rtx-VMS
Instrument ID: VOAMS3.i
Lab File ID: ca15620.d

Matrix: WATER
Level: LOW
Purge Volume: 5.0 ml
Dilution Factor: 1.0

VOLATILE ORGANICS - GC/MS (cont'd)
METHOD 8260B

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Xylene (Total)	ND	5.0
Freon TF	ND	5.0
MTBE	ND	5.0
Cyclohexane	ND	5.0
1,2-Dibromoethane	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
Dichlorodifluoromethane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
1,2-Dibromo-3-chloropropane	ND	5.0
Isopropylbenzene	ND	5.0
Methyl Acetate	ND	5.0
Methyl Cyclohexane	ND	5.0

Client ID: MW4B121106R
Site: Hancock

Lab Sample No: 794400
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/26/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29781.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Phenol	ND	10
2-Chlorophenol	ND	10
2-Methylphenol	ND	10
4-Methylphenol	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
2,4-Dichlorophenol	ND	10
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2,4-Dinitrophenol	ND	30
4-Nitrophenol	ND	30
4,6-Dinitro-2-methylphenol	ND	30
Pentachlorophenol	ND	30
bis(2-Chloroethyl)ether	ND	1.0
bis(2-chloroisopropyl)ether	ND	10
N-Nitroso-di-n-propylamine	ND	1.0
Hexachloroethane	ND	1.0
Nitrobenzene	ND	1.0
Isophorone	ND	10
bis(2-Chloroethoxy)methane	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	2.0
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	10
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	20
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	2.0
3-Nitroaniline	ND	20
Acenaphthene	ND	10
Dibenzofuran	ND	10

Client ID: MW4B121106R
Site: Hancock

Lab Sample No: 794400
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/26/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29781.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
2,4-Dinitrotoluene	ND UJ	2.0
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	20
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	1.0
Phenanthrene	ND	10
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	20
Benzo(a)anthracene	ND	1.0
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	1.0
Dibenz(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	10
Diphenyl	ND	10
Acetophenone	ND	10
Benzaldehyde	ND UJ ICL	10
Caprolactam	ND UJ	10
Atrazine	ND UJ - ICL	10

Client ID: MW4A121106R
Site: Hancock

Lab Sample No: 794401
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29782.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Phenol	ND U	10
2-Chlorophenol	ND	10
2-Methylphenol	ND	10
4-Methylphenol	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
2,4-Dichlorophenol	ND	10
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2,4-Dinitrophenol	ND	10
4-Nitrophenol	ND	30
4,6-Dinitro-2-methylphenol	ND	30
Pentachlorophenol	ND	30
bis(2-Chloroethyl)ether	ND	30
bis(2-chloroisopropyl)ether	ND	1.0
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	1.0
Nitrobenzene	ND	1.0
Isophorone	ND	1.0
bis(2-Chloroethoxy)methane	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
2-Methylnaphthalene	ND	2.0
Hexachlorocyclopentadiene	ND	10
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	10
Dimethylphthalate	ND	20
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	2.0
Acenaphthene	ND	20
Dibenzofuran	ND	10
	ND	10

Client ID: **MW4A121106R**
Site: Hancock

Lab Sample No: 794401
Lab Job No: A988

Date Sampled: 12/11/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29782.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
2,4-Dinitrotoluene	ND U	2.0
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	20
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	1.0
Phenanthrene	ND	10
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	20
Benzo(a)anthracene	ND	1.0
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	1.0
Dibenz(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	10
Diphenyl	ND	10
Acetophenone	ND	10
Benzaldehyde	ND UJ-ICL	10
Caprolactam	ND U	10
Atrazine	ND UJ-ICL	10

Client ID: MW17121206R
Site: Hancock

Lab Sample No: 794402
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29786.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Phenol	ND U	10
2-Chlorophenol	ND	10
2-Methylphenol	ND	10
4-Methylphenol	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
2,4-Dichlorophenol	ND	10
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2,4-Dinitrophenol	ND	30
4-Nitrophenol	ND	30
4,6-Dinitro-2-methylphenol	ND	30
Pentachlorophenol	ND	30
bis(2-Chloroethyl)ether	ND	1.0
bis(2-chloroisopropyl)ether	ND	10
N-Nitroso-di-n-propylamine	ND	1.0
Hexachloroethane	ND	1.0
Nitrobenzene	ND	1.0
Isophorone	ND	10
bis(2-Chloroethoxy)methane	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	2.0
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	10
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	20
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	2.0
3-Nitroaniline	ND	20
Acenaphthene	ND	10
Dibenzofuran	ND	10

Client ID: MW17121206R
Site: Hancock

Lab Sample No: 794402
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29786.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
2,4-Dinitrotoluene	ND	2.0
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	20
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	1.0
Phenanthrene	ND	10
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	20
Benzo(a)anthracene	ND	1.0
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	1.0
Dibenz(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	10
Diphenyl	ND	10
Acetophenone	ND	10
Benzaldehyde	ND	10
Caprolactam	ND	10
Atrazine	ND	10

Client ID: MW18121206R
Site: Hancock

Lab Sample No: 794403
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29787.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Phenol	ND U	10
2-Chlorophenol	ND	10
2-Methylphenol	ND	10
4-Methylphenol	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
2,4-Dichlorophenol	ND	10
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2,4-Dinitrophenol	ND	30
4-Nitrophenol	ND	30
4,6-Dinitro-2-methylphenol	ND	30
Pentachlorophenol	ND	30
bis(2-Chloroethyl)ether	ND	1.0
bis(2-chloroisopropyl)ether	ND	10
N-Nitroso-di-n-propylamine	ND	1.0
Hexachloroethane	ND	1.0
Nitrobenzene	ND	1.0
Isophorone	ND	10
bis(2-Chloroethoxy)methane	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	2.0
2-Methylnaphthalene	ND	10
Hexachlorocyclopentadiene	ND	10
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	20
Dimethylphthalate	ND	10
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	2.0
3-Nitroaniline	ND	20
Acenaphthene	0.9J	10
Dibenzofuran	ND U	10

Client ID: MW18121206R
Site: Hancock

Lab Sample No: 794403
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29787.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
2,4-Dinitrotoluene	ND U	2.0
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	0.3J	10
4-Nitroaniline	ND U	20
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	1.0
Phenanthrene	ND	10
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	20
Benzo(a)anthracene	ND	1.0
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	1.0
Dibenz(a,h)anthracene	ND	10
Benzo(g,h,i)perylene	ND	10
Diphenyl	ND U5-ICL	10
Acetophenone	ND U	10
Benzaldehyde	ND U5-ICL	10
Caprolactam		
Atrazine		

CR

Client ID: MW4C_0.5_121406RRE
Site: Hancock

Lab Sample No: 794411RE
Lab Job No: A988

Date Sampled: 12/14/06
Date Received: 12/16/06
Date Extracted: 01/03/07
Date Analyzed: 01/05/07
GC Column: DB-5
Instrument ID: BNAMS6.i
Lab File ID: m26060.d

Matrix: SOIL
Level: LOW
Sample Weight: 15.0 g
Extract Final Volume: 1.0 ml
Dilution Factor: 1.0
% Moisture: 29

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Results Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
Phenol	ND UJ-HT	470
2-Chlorophenol	ND	470
2-Methylphenol	ND	470
4-Methylphenol	ND	470
2-Nitrophenol	ND	470
2,4-Dimethylphenol	ND	470
2,4-Dichlorophenol	ND	470
4-Chloro-3-methylphenol	ND	470
2,4,6-Trichlorophenol	ND	470
2,4,5-Trichlorophenol	ND	470
2,4-Dinitrophenol	ND	1400
4-Nitrophenol	ND	1400
4,6-Dinitro-2-methylphenol	ND	1400
Pentachlorophenol	ND	1400
bis(2-Chloroethyl)ether	ND	47
bis(2-chloroisopropyl)ether	ND	470
N-Nitroso-di-n-propylamine	ND	47
Hexachloroethane	ND	47
Nitrobenzene	ND	47
Isophorone	ND	470
bis(2-Chloroethoxy)methane	ND	470
Naphthalene	180 J - HT	470
4-Chloroaniline	ND UJ-HT	470
Hexachlorobutadiene	ND	94
2-Methylnaphthalene	96 J - HT	470
Hexachlorocyclopentadiene	ND UJ-HT	470
2-Chloronaphthalene	ND	470
2-Nitroaniline	ND	940
Dimethylphthalate	ND	470
Acenaphthylene	ND	470
2,6-Dinitrotoluene	ND	94
3-Nitroaniline	ND	940
Acenaphthene	180 J - HT	470
Dibenzofuran	210 J - HT	470

Client ID: MW4C_0.5_121406RRE
Site: Hancock

Lab Sample No: 794411RE
Lab Job No: A988

Date Sampled: 12/14/06
Date Received: 12/16/06
Date Extracted: 01/03/07
Date Analyzed: 01/05/07
GC Column: DB-5
Instrument ID: BNAMS6.i
Lab File ID: m26060.d

Matrix: SOIL
Level: LOW
Sample Weight: 15.0 g
Extract Final Volume: 1.0 ml
Dilution Factor: 1.0
% Moisture: 29

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Results Units: ug/kg (Dry Weight)	Quantitation Limit Units: ug/kg
2,4-Dinitrotoluene	ND UJ-HT	94
Diethylphthalate	ND ↓	470
4-Chlorophenyl-phenylether	ND ↓	470
Fluorene	320 J-HT	470
4-Nitroaniline	ND UJ-HT	940
N-Nitrosodiphenylamine	ND ↓	470
4-Bromophenyl-phenylether	ND ↓	470
Hexachlorobenzene	ND ↓	47
Phenanthrene	1800 J-HT	470
Anthracene	460 J-HT	470
Carbazole	160 J-HT	470
Di-n-butylphthalate	ND	470
Fluoranthene	1700	470
Pyrene	1300	470
Butylbenzylphthalate	ND UJ-HT	470
3,3'-Dichlorobenzidine	ND ↓	940
Benzo(a)anthracene	670 J-HT	47
Chrysene	610 J-HT	470
bis(2-Ethylhexyl)phthalate	220 J-HT	470
Di-n-octylphthalate	ND UJ-HT	470
Benzo(b)fluoranthene	480 J-HT	47
Benzo(k)fluoranthene	520 J-HT	47
Benzo(a)pyrene	540 J-HT	47
Indeno(1,2,3-cd)pyrene	200 J-HT	47
Dibenz(a,h)anthracene	ND UJ-HT	47
Benzo(g,h,i)perylene	230 J-HT	470
Diphenyl	ND UJ-HT	470
Acetophenone	ND ↓	470
Benzaldehyde	ND ↓	470
Caprolactam	ND ↓	470
Atrazine	ND ↓	470

Client ID: MW4C121506R
Site: Hancock

Lab Sample No: 794412
Lab Job No: A988

Date Sampled: 12/15/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29783.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
Phenol	ND	10
2-Chlorophenol	ND	10
2-Methylphenol	ND	10
4-Methylphenol	ND	10
2-Nitrophenol	ND	10
2,4-Dimethylphenol	ND	10
2,4-Dichlorophenol	ND	10
4-Chloro-3-methylphenol	ND	10
2,4,6-Trichlorophenol	ND	10
2,4,5-Trichlorophenol	ND	10
2,4-Dinitrophenol	ND	10
4-Nitrophenol	ND	30
4,6-Dinitro-2-methylphenol	ND	30
Pentachlorophenol	ND	30
bis(2-Chloroethyl)ether	ND	30
bis(2-chloroisopropyl)ether	ND	1.0
N-Nitroso-di-n-propylamine	ND	10
Hexachloroethane	ND	1.0
Nitrobenzene	ND	1.0
Isophorone	ND	1.0
bis(2-Chloroethoxy)methane	ND	10
Naphthalene	ND	10
4-Chloroaniline	ND	10
Hexachlorobutadiene	ND	10
2-Methylnaphthalene	ND	2.0
Hexachlorocyclopentadiene	ND	10
2-Chloronaphthalene	ND	10
2-Nitroaniline	ND	10
Dimethylphthalate	ND	20
Acenaphthylene	ND	10
2,6-Dinitrotoluene	ND	10
3-Nitroaniline	ND	2.0
Acenaphthene	ND	20
Dibenzofuran	ND	10

Client ID: MW4C121506R
Site: Hancock

Lab Sample No: 794412
Lab Job No: A988

Date Sampled: 12/15/06
Date Received: 12/16/06
Date Extracted: 12/18/06
Date Analyzed: 12/27/06
GC Column: DB-5
Instrument ID: BNAMS3.i
Lab File ID: t29783.d

Matrix: WATER
Level: LOW
Sample Volume: 1000 ml
Extract Final Volume: 2.0 ml
Dilution Factor: 1.0

SEMI-VOLATILE ORGANICS - GC/MS
METHOD 8270C

Parameter	Analytical Result Units: ug/l	Quantitation Limit Units: ug/l
2,4-Dinitrotoluene	ND U	2.0
Diethylphthalate	ND	10
4-Chlorophenyl-phenylether	ND	10
Fluorene	ND	10
4-Nitroaniline	ND	20
N-Nitrosodiphenylamine	ND	10
4-Bromophenyl-phenylether	ND	10
Hexachlorobenzene	ND	1.0
Phenanthrene	ND	10
Anthracene	ND	10
Carbazole	ND	10
Di-n-butylphthalate	ND	10
Fluoranthene	ND	10
Pyrene	ND	10
Butylbenzylphthalate	ND	10
3,3'-Dichlorobenzidine	ND	20
Benzo(a)anthracene	ND	1.0
Chrysene	ND	10
bis(2-Ethylhexyl)phthalate	ND	10
Di-n-octylphthalate	ND	10
Benzo(b)fluoranthene	ND	1.0
Benzo(k)fluoranthene	ND	1.0
Benzo(a)pyrene	ND	1.0
Indeno(1,2,3-cd)pyrene	ND	1.0
Dibenz(a,h)anthracene	ND	1.0
Benzo(g,h,i)perylene	ND	1.0
Diphenyl	ND	10
Acetophenone	ND	10
Benzaldehyde	ND	10
Caprolactam	ND 45-ICL	10
Atrazine	ND U	10
	ND 60-ICL	10

Client ID: **MW1A121206R**
Site: **Hancock**

Lab Sample No: 794404
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	1440	62.6		P
Antimony	ND U	5.8		P
Arsenic	ND U	3.2		P
Barium	57.8 J	1.7	B	P
Beryllium	ND U	0.30		P
Cadmium	ND U	0.40		P
Calcium	128000 J-T/D	42.5		P
Chromium	301	1.6		P
Cobalt	11.4 J	1.7	B	P
Copper	~~18.9~~ 3.7U-BL	3.7	B	P
Iron	3750	39.2		P
Lead	ND U	2.7		P
Magnesium	26300	41.6		P
Manganese	1530	1.2		P
Mercury	ND U	0.10		CV
Nickel	197	2.4		P
Potassium	1960 J	315	B	P
Selenium	ND U	4.2		P
Silver	ND U	1.4		P
Sodium	18000 J-T/D	396		P
Thallium	ND U	4.7		P
Vanadium	ND U	4.7		P
Zinc	12.1 J-T/D	5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: MW9121306R
Site: Hancock

Lab Sample No: 794405
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	3630	62.6		P
Antimony	ND U	5.8		P
Arsenic	9.8	3.2		P
Barium	69.2 J	1.7	B	P
Beryllium	ND U	0.30		P
Cadmium	ND ↓	0.40		P
Calcium	174000	42.5		P
Chromium	55.0	1.6		P
Cobalt	~~4.2~~ 1.7U-BL	1.7	B	P
Copper	~~17.9~~ 3.7U-BL	3.7	B	P
Iron	34600	39.2		P
Lead	ND U	2.7		P
Magnesium	35200	41.6		P
Manganese	400	1.2		P
Mercury	ND U	0.10		CV
Nickel	37.6 J	2.4	B	P
Potassium	1920 J	315	B	P
Selenium	ND U	4.2		P
Silver	ND ↓	1.4		P
Sodium	5690	396		P
Thallium	ND U	4.7		P
Vanadium	7.6 J	4.7	B	P
Zinc	14.4 J-TIP	5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

C-L

Client ID: MW13121306R
Site: Hancock

Lab Sample No: 794406
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l		Instrument Detection Limit	Qual	M
Aluminum	1980		62.6		P
Antimony	ND	U	5.8		P
Arsenic	7.5		3.2		P
Barium	132	J	1.7	B	P
Beryllium	ND	U	0.30		P
Cadmium	ND	U	0.40		P
Calcium	127000		42.5		P
Chromium	26800		8.0		P
Cobalt	51.9		1.7		P
Copper	232		3.7		P
Iron	118000		39.2		P
Lead	ND	U	2.7		P
Magnesium	30800		41.6		P
Manganese	298		1.2		P
Mercury	ND	U	0.10		CV
Nickel	1860		2.4		P
Potassium	2010	J	315	B	P
Selenium	ND	U	4.2		P
Silver	ND	U	1.4		P
Sodium	74300	J-T|P	396		P
Thallium	ND	U	4.7		P
Vanadium	103		4.7		P
Zinc	69.4		5.8		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: DUP121306
Site: Hancock

Lab Sample No: 794407
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l		Instrument Detection Limit	Qual	M
Aluminum	929		62.6		P
Antimony	ND	U	5.8		P
Arsenic	ND	U	3.2		P
Barium	59.4	J	1.7	B	P
Beryllium	ND	U	0.30		P
Cadmium	ND	U	0.40		P
Calcium	115000		42.5		P
Chromium	7020		1.6		P
Cobalt	18.4	J	1.7	B	P
Copper	68.4		3.7		P
Iron	33100		39.2		P
Lead	ND	U	2.7		P
Magnesium	27800		41.6		P
Manganese	115		1.2		P
Mercury	ND	U	0.10		CV
Nickel	693		2.4		P
Potassium	1700	J	315	B	P
Selenium	ND	U	4.2		P
Silver	ND	U	1.4		P
Sodium	75400		396		P
Thallium	ND	U	4.7		P
Vanadium	28.9	J	4.7	B	P
Zinc	45.0		5.8		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: MW12121306R
Site: Hancock

Lab Sample No: 794409
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	19600	62.6		P
Antimony	ND U	5.8		P
Arsenic	12.9	3.2		P
Barium	131 J	1.7	B	P
Beryllium	~~0.79~~ 0.30U-BL	0.30	B	P
Cadmium	ND U	0.40		P
Calcium	214000	42.5		P
Chromium	158	1.6		P
Cobalt	13.6 J	1.7	B	P
Copper	53.0	3.7		P
Iron	38500	39.2		P
Lead	7.7	2.7		P
Magnesium	62900	41.6		P
Manganese	1660	1.2		P
Mercury	ND U	0.10		CV
Nickel	86.2	2.4		P
Potassium	6990	315		P
Selenium	4.4 J	4.2	B	P
Silver	ND U	1.4		P
Sodium	52700 J-UJD	396		P
Thallium	ND U	4.7		P
Vanadium	34.4 J	4.7	B	P
Zinc	87.0	5.8		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

O.K.

Client ID: MW11121306R
Site: Hancock

Lab Sample No: 794410
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	4890	62.6		P
Antimony	~~ND~~ U	5.8		P
Arsenic	3.5 J	3.2	~~B~~	P
Barium	56.4 J	1.7	~~B~~	P
Beryllium	~~0.53~~ 0.304-BL	0.30	~~B~~	P
Cadmium	~~ND~~ U	0.40		P
Calcium	140000	42.5		P
Chromium	~~7.5~~ 1.64-BL	1.6	~~B~~	P
Cobalt	~~2.0~~ 1.74-BL	1.7	~~B~~	P
Copper	~~13.8~~ 3.74-BL	3.7	~~B~~	P
Iron	8230	39.2		P
Lead	~~ND~~ U	2.7		P
Magnesium	26800	41.6		P
Manganese	194	1.2		P
Mercury	~~ND~~ U	0.10		CV
Nickel	8.7 J	2.4	~~B~~	P
Potassium	3510	315	~~B~~	P
Selenium	~~ND~~ U	4.2		P
Silver	~~ND~~ U	1.4		P
Sodium	3370	396	~~B~~	P
Thallium	~~ND~~ U	4.7		P
Vanadium	9.0 J	4.7	~~B~~	P
Zinc	32.2	5.8		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: **MW1A121206R-D**
Site: **Hancock**

Lab Sample No: 794414
Lab Job No: A988

Date Sampled: 12/12/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	ND U	62.6		P
Antimony	ND U	5.8		P
Arsenic	ND U	3.2		P
Barium	53.1 J	1.7	B	P
Beryllium	ND U	0.30		P
Cadmium	ND U	0.40		P
Calcium	131000 J-T/D	42.5		P
Chromium	~~7.5~~ 1.6U-BL	1.6	~~B~~	P
Cobalt	~~2.1~~ 1.7U-BL	1.7	~~B~~	P
Copper	~~2.3~~ 3.7U-BL	3.7	~~B~~	P
Iron	261	39.2		P
Lead	ND U	2.7		P
Magnesium	24300	41.6		P
Manganese	1510	1.2		P
Mercury	ND U	0.10		CV
Nickel	26.5 J	2.4	B	P
Potassium	1650 J	315	B	P
Selenium	ND U	4.2		P
Silver	ND U	1.4		P
Sodium	19200 J-T/D	396		P
Thallium	ND U	4.7		P
Vanadium	ND U	4.7		P
Zinc	18.2 J-T/D	5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: MW9121306R-D
Site: Hancock

Lab Sample No: 794415
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l		Instrument Detection Limit	Qual	M
Aluminum	791		62.6		P
Antimony	ND	U	5.8		P
Arsenic	ND	U	3.2		P
Barium	34.6	J	1.7	B	P
Beryllium	ND	U	0.30		P
Cadmium	ND	U	0.40		P
Calcium	163000		42.5		P
Chromium	~~10.2~~ 1.6 U-BL		1.6		P
Cobalt	ND	U	1.7		P
Copper	ND	U	3.7		P
Iron	1090		39.2		P
Lead	ND	U	2.7		P
Magnesium	28700		41.6		P
Manganese	260		1.2		P
Mercury	ND	U	0.10		CV
Nickel	4.3	J	2.4	B	P
Potassium	470	J	315	B	P
Selenium	ND	U	4.2		P
Silver	ND	U	1.4		P
Sodium	5550		396		P
Thallium	ND	U	4.7		P
Vanadium	ND	U	4.7		P
Zinc	14.5	J-TID	5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: MW13121306R-D
Site: Hancock

Lab Sample No: 794416
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	ND U	62.6		P
Antimony	ND U	5.8		P
Arsenic	ND U	3.2		P
Barium	29.9 J	1.7	B	P
Beryllium	ND U	0.30		P
Cadmium	ND U	0.40		P
Calcium	115000	42.5		P
Chromium	~~4.1~~ 1.64-BL	1.6	B	P
Cobalt	~~6.2~~ 1.74-BL	1.7	B	P
Copper	~~4.3~~ 3.74-BL	3.7	B	P
Iron	159	39.2		P
Lead	ND U	2.7		P
Magnesium	27200	41.6		P
Manganese	51.2	1.2		P
Mercury	ND U	0.10		CV
Nickel	251	2.4		P
Potassium	1360 J	315	B	P
Selenium	ND U	4.2		P
Silver	ND U	1.4		P
Sodium	76600 J-T/D	396		P
Thallium	ND U	4.7		P
Vanadium	ND U	4.7		P
Zinc	18.9 J	5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: DUP121306-D
Site: Hancock

Lab Sample No: 794417
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l		Instrument Detection Limit	Qual	M
Aluminum	ND U		62.6		P
Antimony	ND U		5.8		P
Arsenic	ND U		3.2		P
Barium	28.3 J		1.7	B	P
Beryllium	ND U		0.30		P
Cadmium	ND U		0.40		P
Calcium	110000		42.5		P
Chromium	3.3	1.6U-BL	1.6	B	P
Cobalt	6.5	1.7U-BL	1.7	B	P
Copper	4.5	3.7U-BL	3.7	B	P
Iron	183		39.2		P
Lead	ND U		2.7		P
Magnesium	26100		41.6		P
Manganese	51.5		1.2		P
Mercury	ND U		0.10		CV
Nickel	256		2.4		P
Potassium	1310 J		315	B	P
Selenium	5.8	J-T/D	4.2		P
Silver	ND U		1.4		P
Sodium	73900		396		P
Thallium	ND U		4.7		P
Vanadium	ND U		4.7		P
Zinc	10.6 J		5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: MW12121306R-D
Site: Hancock

Lab Sample No: 794418
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	ND	62.6		P
Antimony	ND	5.8		P
Arsenic	ND	3.2		P
Barium	38.6 J	1.7	B	P
Beryllium	ND	0.30		P
Cadmium	ND	0.40		P
Calcium	147000	42.5		P
Chromium	ND	1.6		P
Cobalt	ND	1.7		P
Copper	ND	3.7		P
Iron	68.2 J	39.2	B	P
Lead	ND	2.7		P
Magnesium	30200	41.6		P
Manganese	400	1.2		P
Mercury	ND	0.10		CV
Nickel	ND	2.4		P
Potassium	1740 J	315	B	P
Selenium	ND	4.2		P
Silver	ND	1.4		P
Sodium	53000 J- T/D	396		P
Thallium	ND	4.7		P
Vanadium	ND	4.7		P
Zinc	ND	5.8		P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

Client ID: **MW11121306R-D**
Site: **Hancock**

Lab Sample No: 794419
Lab Job No: A988

Date Sampled: 12/13/06
Date Received: 12/16/06

Matrix: WATER
Level: LOW

METALS ANALYSIS

Analyte	Analytical Result Units: ug/l	Instrument Detection Limit	Qual	M
Aluminum	ND U	62.6		P
Antimony	ND	5.8		P
Arsenic	ND	3.2		P
Barium	36.3 J	1.7	B	P
Beryllium	ND U	0.30		P
Cadmium	ND	0.40		P
Calcium	122000	42.5		P
Chromium	ND U	1.6		P
Cobalt	ND	1.7		P
Copper	ND	3.7		P
Iron	ND	39.2		P
Lead	ND	2.7		P
Magnesium	17500	41.6		P
Manganese	2.7 1.24-BL	1.2	B	P
Mercury	ND U	0.10		CV
Nickel	ND	2.4		P
Potassium	2200 J	315	B	P
Selenium	ND U	4.2		P
Silver	ND	1.4		P
Sodium	3120 J	396	B	P
Thallium	ND U	4.7		P
Vanadium	ND	4.7		P
Zinc	6.7 J	5.8	B	P

Qual Column - Data Reporting Qualifiers (See Sec 2 of Report)
M Column - Method Code (See Section 2 of Report)

A988

STL Edison

4.

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE 1 OF 2

Name (for report and invoice): Brian Wied	Sampler's Name (Printed): Jon Zmuda	Site/Project Identification: Air National Guard - Hancock Field
Company: CH2M Hill	P.O. #: 345202.PM.FI	State (Location of Site): NJ: ☐ NY: ☒ Other:
Address: 1717 Arch St. Suite 4400	Analysis Turnaround Time: Standard ☒	Regulatory Program:
City: Philadelphia State: PA Zip: 19103	Rush Charges Authorized For: 1 Week ☐ 3 Day ☐ Other ☐	
Phone: 215-640-9080 Fax: 215-563-3828		

Sample Identification	Date	Time	Matrix	No. of Cont.	VOCs	SVOCs	Total Metals	Dissolved Metals	LAB USE ONLY Sample Numbers
MW4B1Z1106R	12/1/06	1545	GW	4	X	X			794400
MW4A1Z1106R	12/1/06	1635	GW	4	X	X			401
MW17121206R	12/12/06	1020	GW	4	X	X			402
MW18121206R	12/12/06	1240	GW	4	X	X			403
MW1A1Z1206R	12/12/06	1620	GW	2			X	X	404, 414
MW91Z1306R	12/13/06	920	GW	2			X	X	405, 415
MW131Z1306R	12/13/06	1015	GW	2			X	X	406, 416
DUP1Z1306	12/13/06	—	GW	2			X	X	407, 417
EB1Z1106	12/1/06	1650	GW	3	X				408
* MW121Z1306R	12/13/06	1150	GW	2			X	X	409, 418

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH, 6 = Other _____, 7 = Other _____ Soil: Water:

Special Instructions * MS/MSD at MW-12 (Total & Dissolved Metals) Cooler Temp: 3/4° Water Metals Filtered (Yes/No)? _____

	Relinquished by	Company	Date/Time	Received by	Company
1.		CH2M Hill	12/15/06 1145	FEDEX	
2.	PETE Y		12/16/06 12:05		
3.					
4.					

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

A988

STL EDISON

777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

Name (for report and invoice): Brian Wiedl	Sampler's Name (Printed): Ian Zmudzin	Site/Project Identification: Air National Guard - Hancock Field
Company: CHZM Hill	P.O. #: 345202.PM.FI	State (Location of Site): NJ: ☐ NY: ☒ Other:
Address: 1717 Arch St. Suite 4400	Analysis Turnaround Time: Standard ☒	Regulatory Program:
City: Philadelphia State: PA Zip: 19103	Rush Charges Authorized For: 1 Week ☐ 3 Day ☐ Other ☐	
Phone: 215-640-9085 Fax: 215-563-3828		

Sample Identification	Date	Time	Matrix	No. of Cont.	VOCs	SVOCs	Total Metals	Dissolved Metals	LAB USE ONLY Sample Numbers
MW1S121306MR	12/13/06	1320	GW	2			X	X	794410 ; 419
MW12121306MS *	12/13/06	1150	GW	2			X	X	
MW12121306MSD *	12/13/06	1150	GW	2			X	X	
MW4C(0.5)121406R	12/14/06	1315	Soil	4	X	X			794411
MW4C121506R	12/15/06	955	GW	4	X	X			794412
MW4C121506MS	12/15/06	955	GW	4	X	X			
MW4C121506MSD	12/15/06	955	GW	4	X	X			
EB121506	12/15/06	850	GW	2	X	X			794413

Job No.: A988

Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH 6 = Other _____, 7 = Other _____ Soil: Water:

Special Instructions: * MS/MSD At MW-4C (VOCs, SVOCs)

Cooler Temp: 3/4° Water Metals Filtered (Yes) No)?

	Company	Date/Time		Company
Relinquished by 1.	CHZM Hill	12/15/06 1145	Received by FEDEX	
Relinquished by 2. FEDEX		12/16/06 8205	Received by	
Relinquished by 3.		Date/Time	Received by	
Relinquished by 4.		Date/Time	Received by	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

STL-6003

STL Edison

File on eDOCs? ____ Yes ____ No
Site Name _____
Site # _____
County _____
Town _____
Foilable _____ Yes _____ No
Please Write The eDOC File
Name Description _____