FINAL SOIL CONTAMINATION REPORT

BUILDINGS M232-236

NCDENR Incident Number: 9593
Marine Corps Base
Camp Lejeune, North Carolina

August 29, 2008

Prepared for:

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Contract Number: N62470-04-D-0205
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LIST OF ACRONYMS

2000 Guidelines	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater
2001 Guidelines	Guidelines for Assessment and Corrective Action, North Carolina Underground Storage Tank Section (Effective July 1, 2001) 2L GWQS NCAC T15A:02L Groundwater Quality Standards
AS	Air Sparge
AST	Aboveground Storage Tank
BDL	Below Detection Limit
BN	Base/Neutral (extractables)
BNA	Base/Neutral/Acid (extractables)
BQL	Below Quantitation Limit
BLS	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
Cr	Chromium
CSA	Comprehensive Site Assessment
DIPE	Di-isopropyl Ether
DO	Dissolved Oxygen
DOD	Department of Defense
DPT	Direct Push Technology
DWQ	Division of Water Quality
DWM	Division of Waste Management
DTW	Depth to Water
EDB	Ethylene di-bromide
EMD	Environmental Management Division
EPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
EQB	Environmental Quality Branch
Fe	Iron
FID	Flame Ionization Detector
FT	Feet
GCL	Gross Contaminant Level
GIS	Geographic Information System
GPS	Global Positioning System
Guidelines Vol. II	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume II, Petroleum Underground Storage Tanks (January 2, 1998)
HDPE	High Density Polyethylene
I/C	Industrial/Commercial
ID	Identification
I&E	Installations and Environment Department
IGWQS	Interim Groundwater Quality Standards
IPE	Isopropyl Ether
LSA	Limited Site Assessment
LUST	Leaking Underground Storage Tank
m	Meter
MADEP	Massachusetts Department of Environmental Protection
MCAS	Marine Corps Air Station
MCB	Marine Corps Base

MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MSCC	Maximum Soil Contaminant Concentration
MSL	Mean Sea Level
MTBE	Methyl tertiary butyl ether
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
NA	Not Analyzed
N/A	Not Applicable
NAVFAC	Naval Facilities Engineering Command Atlantic
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
ND	Not Detected
NE	None Established
NM	Not Measured
NMT	No Measurable Thickness
NS	Not Sampled
OVA	Organic Vapor Analyzer
PAH	Polynuclear Aromatic Hydrocarbons
Pb	Lead
PPB	Parts Per Billion
PPM	Parts Per Million
PID	Photo Ionization Detector
PQL	Practical Quantitation Limit
PVC	Polyvinyl chloride
RBCA	Risk-Based Corrective Action
RCRA	Resource Conservation and Recovery Act
Res	Residential
SOW	Scope of Work
STGW	Soil-to-Groundwater
SVE	Soil Vapor Extraction
SVOC	Semi Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
US	United States
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
WiRO	NCDENR Wilmington Regional Office

EXECUTIVE SUMMARY

Buildings M232 through 236 are located in the Camp Johnson area of Marine Corps Base (MCB) Camp Lejeune along Hayes Street. The buildings are currently utilized as bachelor housing quarters. An updated risk classification and land use form indicates the site is residential with intermediate risk, which is due to the presence of free product at the site.

Five heating oil underground storage tanks (UST; one UST located at each of the associated Buildings M232 through 236) were excavated and removed from the site in May 1990. Upon excavation, soil samples exhibited petroleum hydrocarbon contamination above the State standards in effect at that time. A 1991 site assessment of the area indicated petroleum constituents were not present at significant concentrations in areas surrounding the former USTs, and no free product was observed in site monitoring wells.

Further site investigation was conducted in 1992. Free product was detected at the site; however, groundwater samples from the site did not show significant contamination. The investigation recommended the excavation of petroleum-impacted soils in the immediate vicinity of the former USTs, free product removal from the site, and groundwater quality monitoring on a biannual basis.

Site groundwater monitoring was conducted by various contractors from 1993 through 2007. Data showed the persistence of free product at the site, specifically in monitoring well MW19; however, a downward trend was observed in groundwater contaminant levels. In an effort to address the free product, MCB Camp Lejeune conducted a soil excavation event from April 30 – May 2, 2007 in the MW19 area, which is adjacent to UST basin M235. Confirmation soil samples from the MW19 soil excavation indicate that contaminants are present above the soil to groundwater (STGW) maximum soil contaminant concentrations (MSCCs), but below the residential and industrial/commercial MSCCs. The compound 4-isopropyltoluene was also detected in the soil samples, for which there are no established MSCCs. Sovereign could find no evidence that further soil investigation or assessment of the UST basins was conducted.

In August of 2007, Sovereign was onsite with a direct push rig to conduct a soil investigation of the former UST basins located at building M232-236 (excluding M235 because of the Spring 2007 soil removal action conducted by Osage of VA). Sovereign advanced 5 soil borings to approximately 8 feet bgs in each former tank basin. Soil contaminant concentrations were detected above State action limits in each former tank basin location M232, M233, M234 and M236 for both TPH DRO and TPH GRO. In addition, a temporary piezometer was placed in each floor boring location in order to collect a groundwater sample and monitor for free product. One hundredth (0.01) of a foot of product was detected using an oil water interface probe in the location of building M233. Specifically though, only naphthalene in the basin for M232 and M234 and the MADEP parameter C9-C22 Aromatics (in each piezometer location sampled for M232, M234 and M236) were detected above 2L NCGWQSs. The piezometers were abandoned immediately after monitoring occurred in each location.

A hot spot soil removal action is recommended in the vicinity of the former UST basin of building M233 where free product was measured in a temporary piezometer during an August 2007 soil investigation. After excavation a temporary well should be installed to monitor for the presence of free product.

1.0 TITLE PAGE

DATE OF REPORT: August 2008
Facility I.D.: M232-236 UST Incident Number: 9593
Site Name: M232-236
Site Location: Camp Johnson, Marine Corps Base Camp Lejeune, North Carolina
Nearest City/Town: Camp Lejeune County: Onslow
Risk Classification: Low Risk Land Use Classification: Residential

UST Owner: Commanding Officer– MCB Camp Lejeune
I&E/EMD/EQB
PSC Box 20004
Address: MCB Camp Lejeune, NC 28542-0004 Phone: (910) 451-5068

UST Operator: Same as above
Address: Same as above Phone: Same as above

Property Owner: Same as above
Address: Same as above Phone: Same as above

Property Occupant: Same as above
Address: Same as above Phone: Same as above

Consultant/Contractor: Sovereign Consulting Inc.
Address: 405 Oakmears Crescent, Suite 1
Virginia Beach, VA 23462 Phone: (757) 456-5093

Release Information

Date Discovered: May 1990
Latitude: **Longitude:**
34° 43' 13" N 77° 24' 52" W
Estimated Quantity of Release: Unknown
Cause of Release: Unknown
Source of Release (Piping/UST): USTs and piping
Sizes and contents of UST system(s) from which the release occurred: The former system consisted of five heating oil USTs ranging in capacity from 530 gallons to 550 gallons and associated piping.

*I, **Kevin P. Wheeler,** a Professional Geologist for Sovereign Consulting Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.*

2.0 INTRODUCTION

The purpose of this report is to summarize data from a soil sampling investigation conducted in the fall of 2007 in order to investigate the basins of the former underground storage tanks associated with Buildings M232 through M236. Data for Sovereign's August 2007 soil investigation are presented in this report.

3.0 SITE HISTORY

Buildings M232 through M236 are located along Hayes Street within Camp Johnson, which is aboard MCB Camp Lejeune in Onslow County, North Carolina. The buildings are currently used as bachelors' quarters for military personnel.

A shallow drainage ditch is present between the eastern wall of Buildings M232 through M236 and Hayes Street. The nearest mapped surface water bodies are the New River, located approximately 650 feet west of the site, and Northeast Creek, located approximately 850 feet southeast of the site. There are no potable water supply wells located within 1,500 feet of the site.

Five heating oil USTs (one UST located at each of the associated Buildings M232 through 236) were excavated and removed from the site in May 1990. The USTs ranged in capacity from 530-gallons to 550-gallons and were in service from 1942 to the late 1980s. Upon UST removal, petroleum hydrocarbons were detected in the site soils. To define the extent of soil and groundwater contamination, site assessments were performed in 1991 and 1992.

The 1991 site assessment included soil borings and the installation of 7 shallow aquifer monitoring wells with total depths of approximately 15 feet below ground surface [bgs], and seven intermediate wells with total depths of approximately 30 feet bgs. The wells were installed in pairs. Analysis of soil and groundwater indicated petroleum constituents were not present at significant concentrations in areas surrounding the former USTs, and no free product was observed in site monitoring wells. The report recommended, however, that the UST excavations be remediated to eliminate the potential for future risk. This recommendation was made since previous sampling data indicated the presence of petroleum hydrocarbons in the tank basins.

As a result, additional investigation activities were conducted in 1992. The investigation included the installation of three surficial aquifer monitoring wells, each to total depths of approximately 15 feet bgs. No constituents were detected in groundwater samples collected from the three newly installed wells. Free product, however, was observed in monitoring well MW03 at a thickness of 0.12 foot. No measurable free product was identified in any other site well. It was recommended to excavate petroleum-impacted soils in the immediate vicinity of the former USTs, conduct free product removal from well MW03 using manual bailing, and monitor groundwater quality on a biannual basis.

Upon review of the available reports, five monitoring wells were reportedly installed at locations adjacent to the former UST locations sometime between April 1998 and August 1999. In

addition, Law Engineering and Environmental Services, Inc. (Law) conducted a risk characterization of the site in November 1999. It appears from data review that the wells were most likely installed as part of the risk characterization effort (this report, however, is unavailable for review). A 2000 Law report states that the risk characterization assessment indicated the site warranted classification as an Intermediate Risk based on the presence of measurable free product in monitoring well MW19.

Law continued conducting groundwater monitoring activities in 2000 and 2001. Engineering and Environment, Inc. (EEI) assumed the responsibility of monitoring the site beginning in October 2002. Sovereign Consulting assumed monitoring activities for the site beginning with the 2006-2007 monitoring period. Measurable free product has only been detected in monitoring well MW19, and dissolved phase VOC and SVOC concentrations have been decreasing at the site.

In an effort to address the free product, MCB Camp Lejeune conducted a soil excavation event from April 30 – May 2, 2007 in the MW19 area. Confirmation soil samples from the MW19 soil excavation indicate that contaminants are present above the soil to groundwater (STGW) maximum soil contaminant concentrations (MSCCs), but below the residential and industrial/commercial MSCCs. The compound 4-isopropyltoluene was also detected in the soil samples, for which there are no established MSCCs.

4.0 SOIL INVESTIGATION

In August of 2007, Sovereign was onsite with a direct push rig to conduct a soil investigation of the former UST basins located at buildings M232-236 (excluding M235 because of the Spring 2007 soil removal action conducted by Osage of VA). Sovereign advanced 5 soil borings to approximately 8 feet bgs in each former tank basin. One boring was advanced in each former basin sidewall as well as the floor of the former basin in order to investigate soil contaminant concentrations. Soil samples were collected from each boring location and sent under chain of custody to SGS Paradigm of Wilmington, North Carolina and tested for TPH DRO and TPH GRO. These results are summarized in Table 1 of this report. Soil contaminant concentrations were detected above State action limits in each former tank basin location M232, M233, M234 and M236 for both TPH DRO and TPH GRO.

In addition, a temporary piezometer was placed in each floor boring location in order to collect a groundwater sample and monitor for free product. One hundredth (0.01) of a foot of product was detected using an oil water interface probe in the location of building M233. The groundwater sample results for M232, M234, and M236 are summarized in Tables 2-5. VOCs, SVOCs, and MADEP Parameters were detected in each former tank basin location. Specifically though, only naphthalene in the basin for M232 and M234 and the MADEP parameter C9-C22 Aromatics (in each piezometer location sampled for M232, M234 and M236) were detected above 2L NCGWQSs. The piezometers were abandoned immediately after monitoring occurred in each location.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on fieldwork and laboratory analytical data gathered during the August 2007 soil investigation activities, the following conclusions are presented.

1. Previous investigations indicate petroleum constituent concentrations in vadose zone soils are present at the site in the former tank basins above the STGW MSCCs and State Action Limits for TPH.

2. Well MW19, associated with the former UST located at M-235, was abandoned and the area was excavated from April 30 to May 2, 2007. No free product has been detected in the replacement monitoring well, MW23, since the removal action was completed.

3. Soil samples from the April-May 2007 soil excavation around MW19 indicate that contaminants are present above the STGW MSCCs, but below the residential and industrial/commercial MSCCs. The confirmation soil samples also exhibited 4-isopropyltoluene, which does not have established MSCCs.

4. Soil sample results from the August 2007 investigation indicate contaminant concentrations were detected above State action limits in each former tank basin location M232, M233, M234 and M236 for both TPH DRO and TPH GRO.

5. Piezometer monitoring results indicate one hundredth (0.01) of a foot of product was detected using an oil water interface probe in the location of building M233s. Further, naphthalene in the basin for M232 and M234 and the MADEP parameter C9-C22 Aromatics (in each piezometer location sampled for M232, M234 and M236) were detected above 2L NCGWQSs.

In order to move toward the eventual goal of No Further Action status at the site, MCB Camp Lejeune will have to demonstrate that soils in the former UST basins do not contain contamination above applicable state action limits for TPH DRO and TPH GRO or STGW MSCCs. Since the site is currently ranked as an intermediate site, all former tank basin soils must meet the lower of the residential or STGW MSCCs. A hot spot soil removal action is recommended in the vicinity of the former UST basin of building M233, where free product was observed in the temporary piezometers during the August 2007 soil investigation. After excavation a temporary well should be installed to monitor for the presence of free product.

To monitor free product and groundwater conditions, Sovereign also recommends continuing gauging and sampling of existing monitoring program wells on a semi-annual basis. Recurrence of free product should be monitored in MW23 (replacement for monitoring well MW19), and product recovery should be conducted as indicated by the gauging data.

6.0 REFERENCES

AH Environmental Consultants, *Final Report, Wellhead Protection Plan – 2002 Update, Marine Corps Base, Camp Lejeune,* August 2002.

Engineering and Environment, Inc., *Quarterly Groundwater Monitoring Report, Site M-232-236, Marine Corps Base Camp Lejeune, North Carolina, Revision 1,* September 22, 2004.

Engineering and Environment, Inc., *Quarterly Groundwater Monitoring Report, Site M-232-236, Marine Corps Base, Camp Lejeune, North Carolina, Revision 0,* November 14, 2004.

Engineering and Environment, Inc., *Quarterly Groundwater Monitoring Report, Site M-232-236, Marine Corps Base, Camp Lejeune, North Carolina, Revision 0,* February 4, 2005.

Engineering and Environment, Inc., *Annual Groundwater Monitoring Report, Site M232-236 Marine Corps Base Camp Lejeune, North Carolina, Revision 0,* May 6, 2005.

Engineering and Environment, Inc., *Annual Groundwater Monitoring Report, Site M232-236 Marine Corps Base Camp Lejeune, North Carolina, Revision 0,* January 6, 2006.

Law Engineering and Environmental Services, Inc., *Leaking Underground Storage Tank Natural Attenuation Sites, "No Further Action" Data Evaluation, MCB Camp Lejeune, North Carolina, MCAS New River, North Carolina*. April 13, 1999.

Law Engineering and Environmental Services, Inc., F*irst Semi-annual Groundwater Monitoring Report, Buildings M-232-1 to M-236-1, Marine Corps Base Camp Lejeune, North Carolina.* December 13, 2000.

Law Engineering and Environmental Services, Inc., *Second Semiannual Groundwater Monitoring Report, Buildings M-232-1 to M-236-1, Marine Corps Base Camp Lejeune, North Carolina*. June 7, 2001.

North Carolina Department of Environment and Natural Resources, Division of Waste Management, Underground Storage Tank Section, *Guidelines for Assessment and Corrective Action,* April 2001.

O'Brien and Gere Engineers, Inc., *Site Assessment, Tanks M-232-M-236, Camp Johnson, Marine Corps Base Camp Lejeune, North Carolina*. January 1992.

O'Brien and Gere Engineers, Inc., *Addendum Site Assessment, Tanks M-232-M-236, Camp Johnson, Marine Corps Base Camp Lejeune, North Carolina,* July 1993.

Shaw Environmental and Infrastructure, Inc., *Free Product Recovery Field Data Sheets*, 2006-2007.

TABLES

TABLE 1
SUMMARY OF SOIL SAMPLING RESULTS
Incident Number and Name: 9593, Buildings M-232-236
Analytical Method: Methods TPH DRO/GRO

Comment	Sample ID	Contaminant of Concern →		TPH-DRO	TPH-GRO
		Date Collected (mm/dd/yy)	**Sample Depth** (ft BGS)		
USTM232TB	SB01	8/21/2007	5-7	BQL	BQL
USTM232TB	SB02	8/21/2007	5-7	**1950**	BQL
USTM232TB	SB05	8/21/2007	5-7	BQL	BQL
USTM232TB	SB06	8/21/2007	5-7	BQL	BQL
USTM232TB	SB07	8/21/2007	5-7	**2980**	**16.80**
USTM233TB	SB01	8/22/2007	5-7	BQL	BQL
USTM233TB	SB02	8/22/2007	5-7	**5460**	**51.7**
USTM233TB	SB03	8/22/2007	5-7	BQL	BQL
USTM233TB	SB04	8/22/2007	5-7	BQL	BQL
USTM233TB	SB05	8/22/2007	5-7	BQL	BQL
USTM234TB	SB01	8/21/2007	5-7	BQL	BQL
USTM234TB	SB02	8/21/2007	5-7	**1960**	**63.8**
USTM234TB	SB03	8/21/2007	5-7	BQL	BQL
USTM234TB	SB04	8/21/2007	5-7	**1480**	**22.7**
USTM234TB	SB05	8/21/2007	5-7	**33.3**	BQL
USTM236TB	SB01	8/21/2007	5-7	**4010**	**28.8**
USTM236TB	SB02	8/21/2007	5-7	**9430**	**98.7**
USTM236TB	SB03	8/21/2007	5-7	BQL	BQL
USTM236TB	SB04	8/21/2007	5-7	**223**	BQL
USTM236TB	SB05	8/21/2007	5-7	BQL	BQL
NCDENR Action Level (mg/kg)				10	10

- All results in mg/kg
- mg/kg = milligrams per kilogram
- MSCC = Maximum Soil Contaminant Concentration
- ND = Not Detected
- NE = Not Established
- J = indicates an estimated value
- **BOLD** = detected concentration

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING RESULTS

Incident Number and Name: 9593, Buildings M-232-236
Analytical Method: EPA Method 602

Contaminant of Concern			Benzene	Diisopropyl ether (DIPE)	Ethylbenzene	Methyl-tert butyl ether (MTBE)	Toluene	Total Xylenes
Well ID	**Sample ID**	**Date Collected**						
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<1.00	<1.00	**0.556**	<2.00	<1.00	<2.00
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	<1.00	<1.00	**17.5**	<2.00	**0.259**	**0.536**
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	<1.00	<1.00	**10.3**	<2.00	<1.00	**1.36**
2L Standard (µg/l)			1	70	550	200	1,000	530
GCL (µg/l)			5,000	70,000	84,500	200,000	257,500	87,500

- All results reported in µg/l
- µg/L =micrograms per liter
- GCL = gross contamination level
- BQL = Below Quantitation Limit
- J = Estimated concentration.
- **BOLD** = detected concentration.

TABLE 3
SUMMARY OF GROUNDWATER SAMPLING RESULTS

Incident Number and Name: 9593, Buildings M-232-236
Analytical Method: EPA Method 625 Plus 10 TICs

Contaminant of Concern			Acenaphthene	Diphenylamine	Anthracene	Fluorene	Naphthalene	Phenanthrene	Tentatively Identified Compounds (TICs)
Well ID	**Sample ID**	**Date Collected**							
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	BQL
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	**6.60**	<10.0	<10.0	**11.3**	**31.6**	**13.7**	BQL
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	**3.70J**	<10.0	**5.60J**	**5.60J**	**56.9**	5.60J	BQL
2L Standard (µg/l)			80	NE	2100	280	21	210	NA
GCL (µg/l)			2,120	NE	2100	950	15,500	410	NA

- All results reported in µg/L.
- µg/L = microgram per liter
- GCL = Gross contaminant level
- BQL = Below quantitation limit
- J = Estimated concentration
- NA = Not Applicable
- **BOLD =** Detected concentration.
- **BOLD** and shaded = Detected concentration exceeds 2L standard.

TABLE 4
SUMMARY OF GROUNDWATER SAMPLING RESULTS

Incident Number and Name: 9593, Buildings M-232-236
Analytical Method: Method VPH/EPH

Contaminant of Concern			C_5-C_8 Aliphatics	C_9-C_{12} Aliphatics	C_9-C_{10} Aromatics	C_9-C_{18} Aliphatics	C_{19}-C_{36} Aliphatics	C_{11}-C_{22} Aromatics
Well ID	**Sample ID**	**Date Collected**						
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<100	<100	<100	**660**	<100	**480**
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	<100	**230**	**203**	<100	<100	**490**
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	<100	**110**	<100	**150**	<100	**480**

- All results reported in µg/l
- µg/L =micrograms per liter
- GCL = gross contamination level; Not Established for MADEP constituents.
- **BOLD =** Detected concentration.

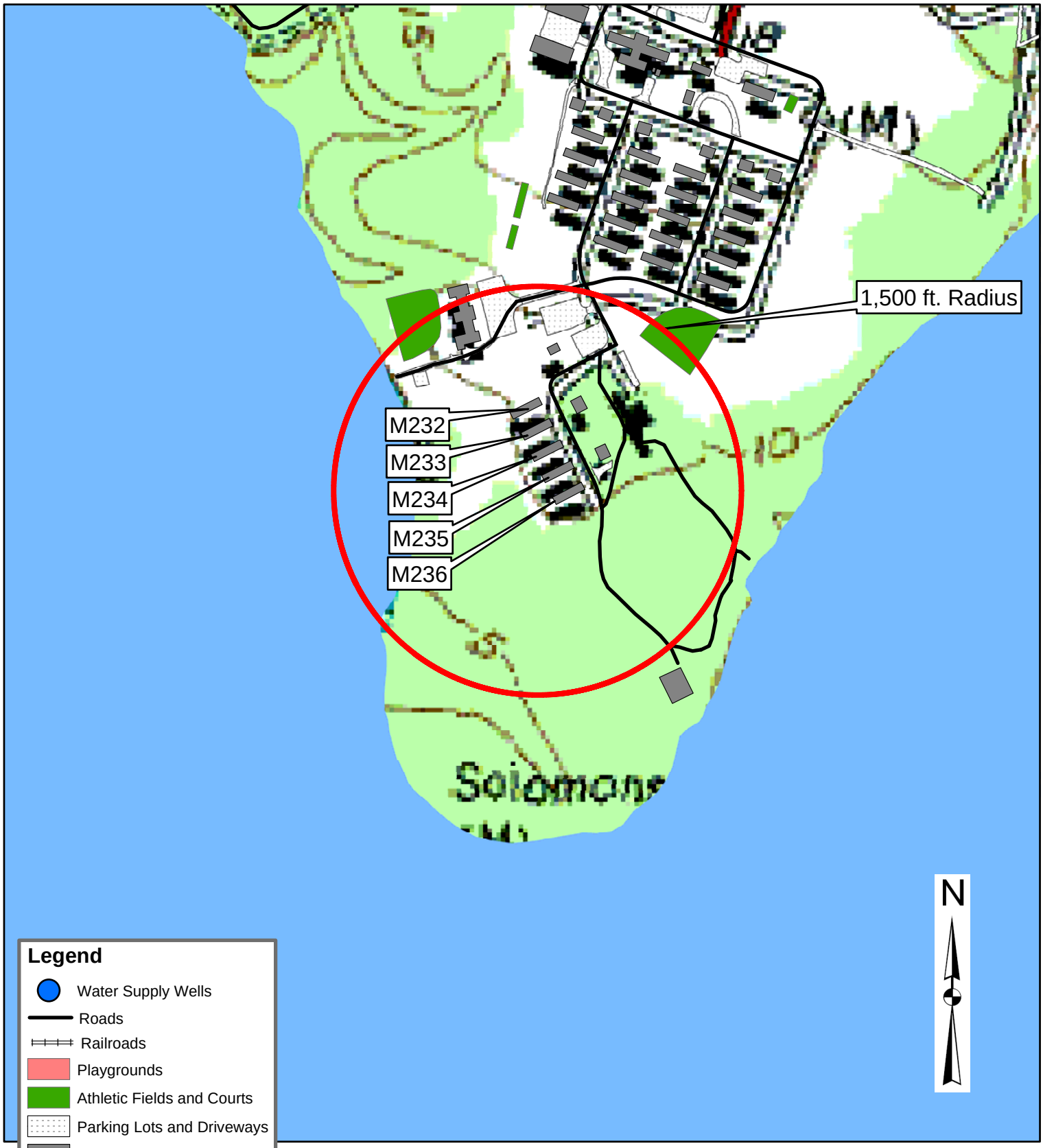
TABLE 5
SUMMARY OF GROUNDWATER SAMPLING RESULTS

Incident Number and Name: 9593, Buildings M-232-236
Analytical Method: Method VPH/EPH

Contaminant of Concern →			C_5-C_8 Aliphatics	C_9-C_{18} Aliphatics	C_9-C_{22} Aromatics	C_{19}-C_{36} Aliphatics
Well ID	**Sample ID**	**Date Collected**				
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<100	**<760**	**<580**	<100
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	<100	**<330**	**693**	<100
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	<100	**260**	**<580**	<100
2L Standard (µg/l)			420	4,200	210	42,000

- All results reported in µg/l
- µg/L =micrograms per liter
- GCL = gross contamination level; Not Established for MADEP constituents.
- **BOLD =** Detected concentration
- **BOLD** and shaded = Detected concentration exceeds 2L Standard

FIGURES



Data Sources: Data Layers provided by MCB Camp Lejeune GIS Office.

SOVEREIGN CONSULTING INC.
VIRGINIA BEACH, VIRGINIA

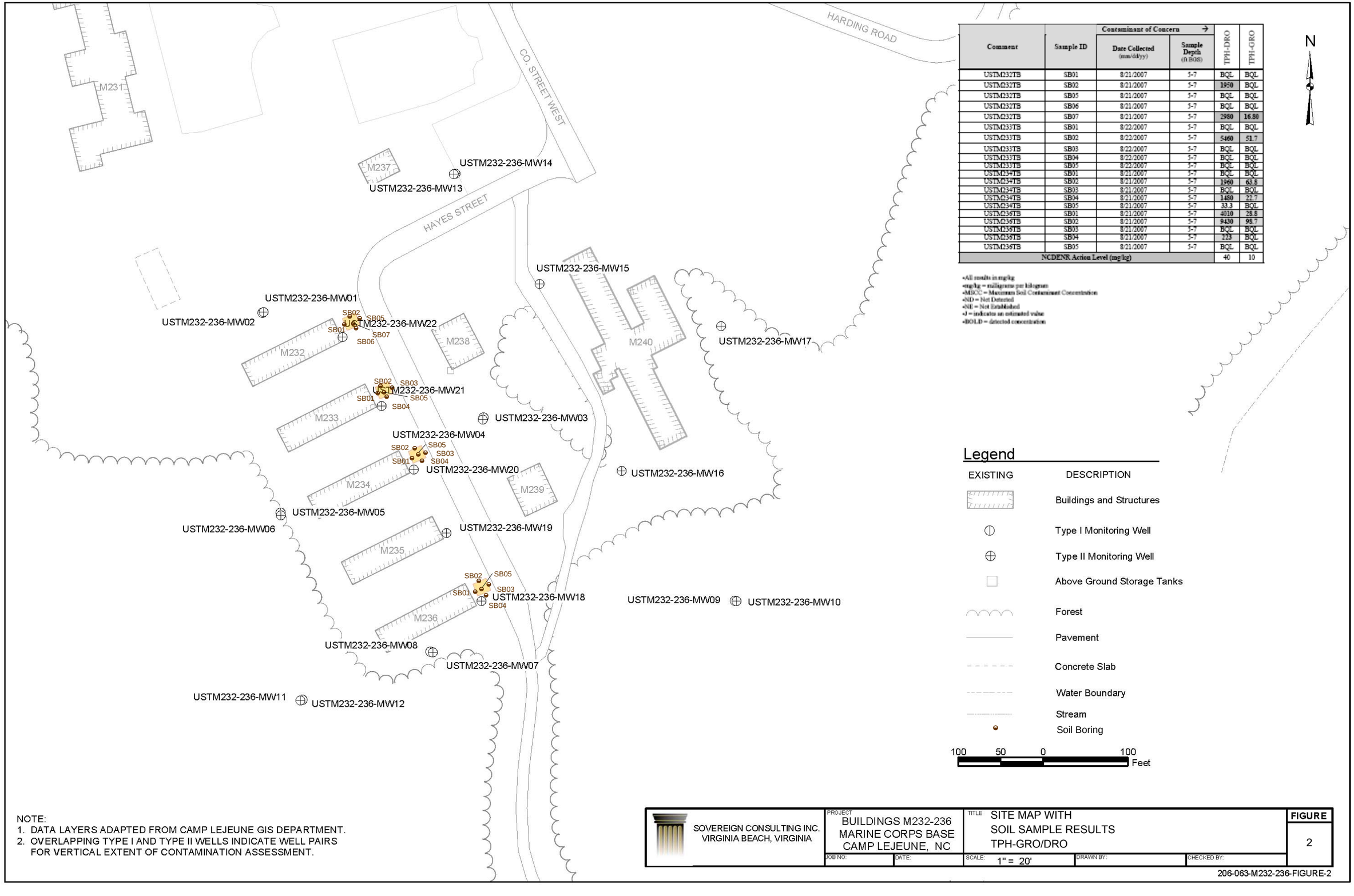
PROJECT
BUILDINGS M232-236
MARINE CORPS BASE
CAMP LEJEUNE, NC

TITLE
GENERAL VICINITY TOPOGRAPHIC SITE MAP

FIGURE 1

JOB NO.	DATE	SCALE	DRAWN BY	CHECKED BY
206-063	MAY 2007	AS SHOWN	KAWS	JAC

206-063-CAD-DWG-M232-236-FIGURE-1



Comment	Sample ID	Contaminant of Concern → Date Collected (mm/dd/yy)	Sample Depth (ft BGS)	TPH-DRO	TPH-GRO
USTM232TB	SB01	8/21/2007	5-7	BQL	BQL
USTM232TB	SB02	8/21/2007	5-7	1950	BQL
USTM232TB	SB05	8/21/2007	5-7	BQL	BQL
USTM232TB	SB06	8/21/2007	5-7	BQL	BQL
USTM232TB	SB07	8/21/2007	5-7	2980	16.80
USTM233TB	SB01	8/22/2007	5-7	BQL	BQL
USTM233TB	SB02	8/22/2007	5-7	5460	51.7
USTM233TB	SB03	8/22/2007	5-7	BQL	BQL
USTM233TB	SB04	8/22/2007	5-7	BQL	BQL
USTM233TB	SB05	8/22/2007	5-7	BQL	BQL
USTM234TB	SB01	8/21/2007	5-7	BQL	BQL
USTM234TB	SB02	8/21/2007	5-7	1960	63.8
USTM234TB	SB03	8/21/2007	5-7	BQL	BQL
USTM234TB	SB04	8/21/2007	5-7	1480	22.7
USTM234TB	SB05	8/21/2007	5-7	33.3	BQL
USTM236TB	SB01	8/21/2007	5-7	4010	28.8
USTM236TB	SB02	8/21/2007	5-7	9430	98.7
USTM236TB	SB03	8/21/2007	5-7	BQL	BQL
USTM236TB	SB04	8/21/2007	5-7	223	BQL
USTM236TB	SB05	8/21/2007	5-7	BQL	BQL
NCDENR Action Level (mg/kg)				40	10

•All results in mg/kg
•mg/kg = milligrams per kilogram
•MSCC = Maximum Soil Contaminant Concentration
•ND = Not Detected
•NE = Not Established
•J = indicates an estimated value
•BOLD = detected concentration

NOTE:
1. DATA LAYERS ADAPTED FROM CAMP LEJEUNE GIS DEPARTMENT.
2. OVERLAPPING TYPE I AND TYPE II WELLS INDICATE WELL PAIRS FOR VERTICAL EXTENT OF CONTAMINATION ASSESSMENT.

SOVEREIGN CONSULTING INC.
VIRGINIA BEACH, VIRGINIA

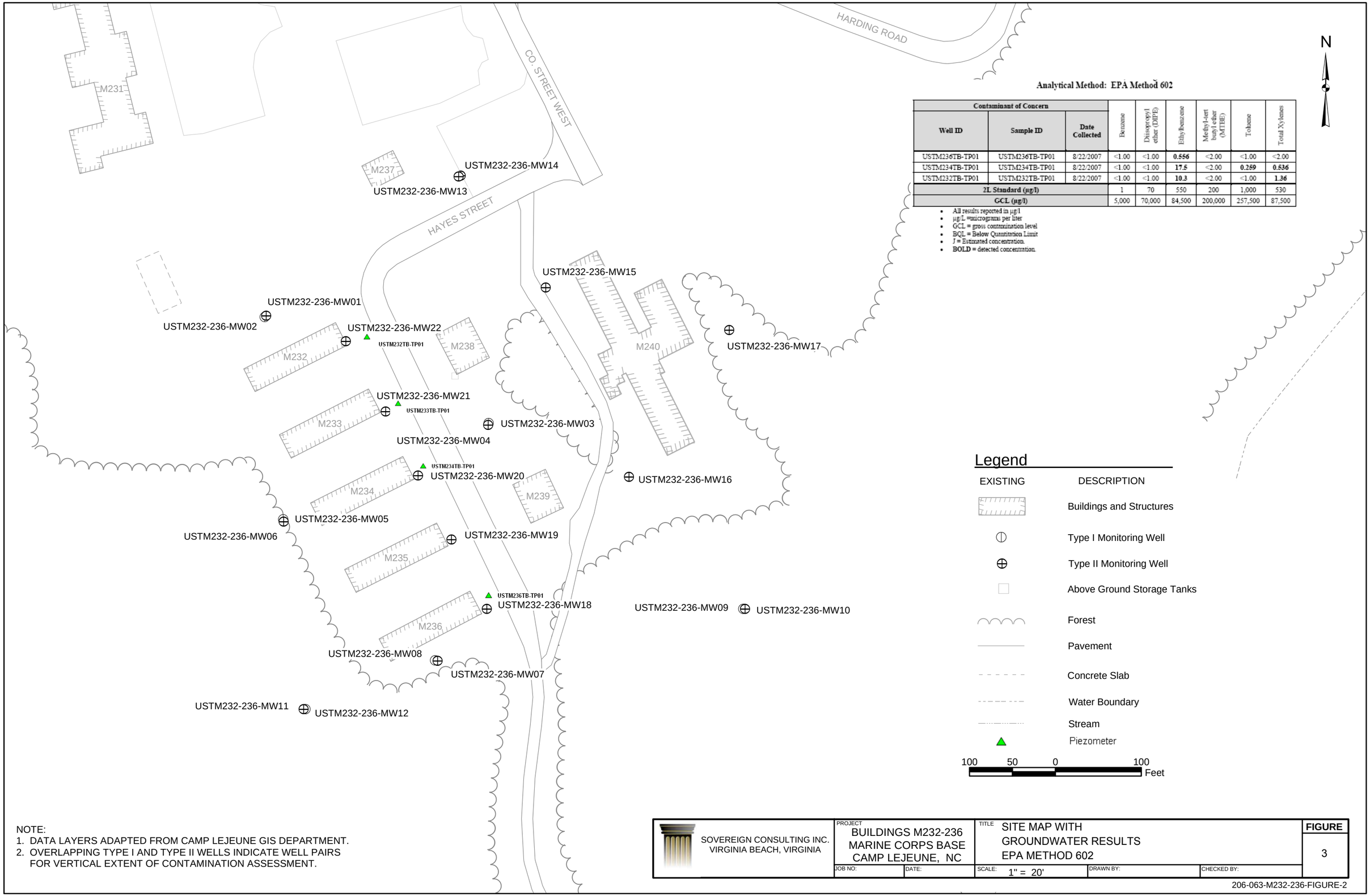
PROJECT: BUILDINGS M232-236 MARINE CORPS BASE CAMP LEJEUNE, NC

TITLE: SITE MAP WITH SOIL SAMPLE RESULTS TPH-GRO/DRO

FIGURE 2

JOB NO: | DATE: | SCALE: 1" = 20' | DRAWN BY: | CHECKED BY:

206-063-M232-236-FIGURE-2



Analytical Method: EPA Method 602

Contaminant of Concern								
Well ID	Sample ID	Date Collected	Benzene	Diisopropyl ether (DIPE)	Ethylbenzene	Methyl-tert butyl ether (MTBE)	Toluene	Total Xylenes
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<1.00	<1.00	**0.556**	<2.00	<1.00	<2.00
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	<1.00	<1.00	**17.5**	<2.00	**0.259**	**0.536**
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	<1.00	<1.00	**10.3**	<2.00	<1.00	**1.36**
2L Standard (µg/l)			1	70	550	200	1,000	530
GCL (µg/l)			5,000	70,000	84,500	200,000	257,500	87,500

- All results reported in µg/l
- µg/L =micrograms per liter
- GCL = gross contamination level
- BQL = Below Quantitation Limit
- *J* = Estimated concentration.
- **BOLD** = detected concentration.

NOTE:
1. DATA LAYERS ADAPTED FROM CAMP LEJEUNE GIS DEPARTMENT.
2. OVERLAPPING TYPE I AND TYPE II WELLS INDICATE WELL PAIRS FOR VERTICAL EXTENT OF CONTAMINATION ASSESSMENT.

SOVEREIGN CONSULTING INC.
VIRGINIA BEACH, VIRGINIA

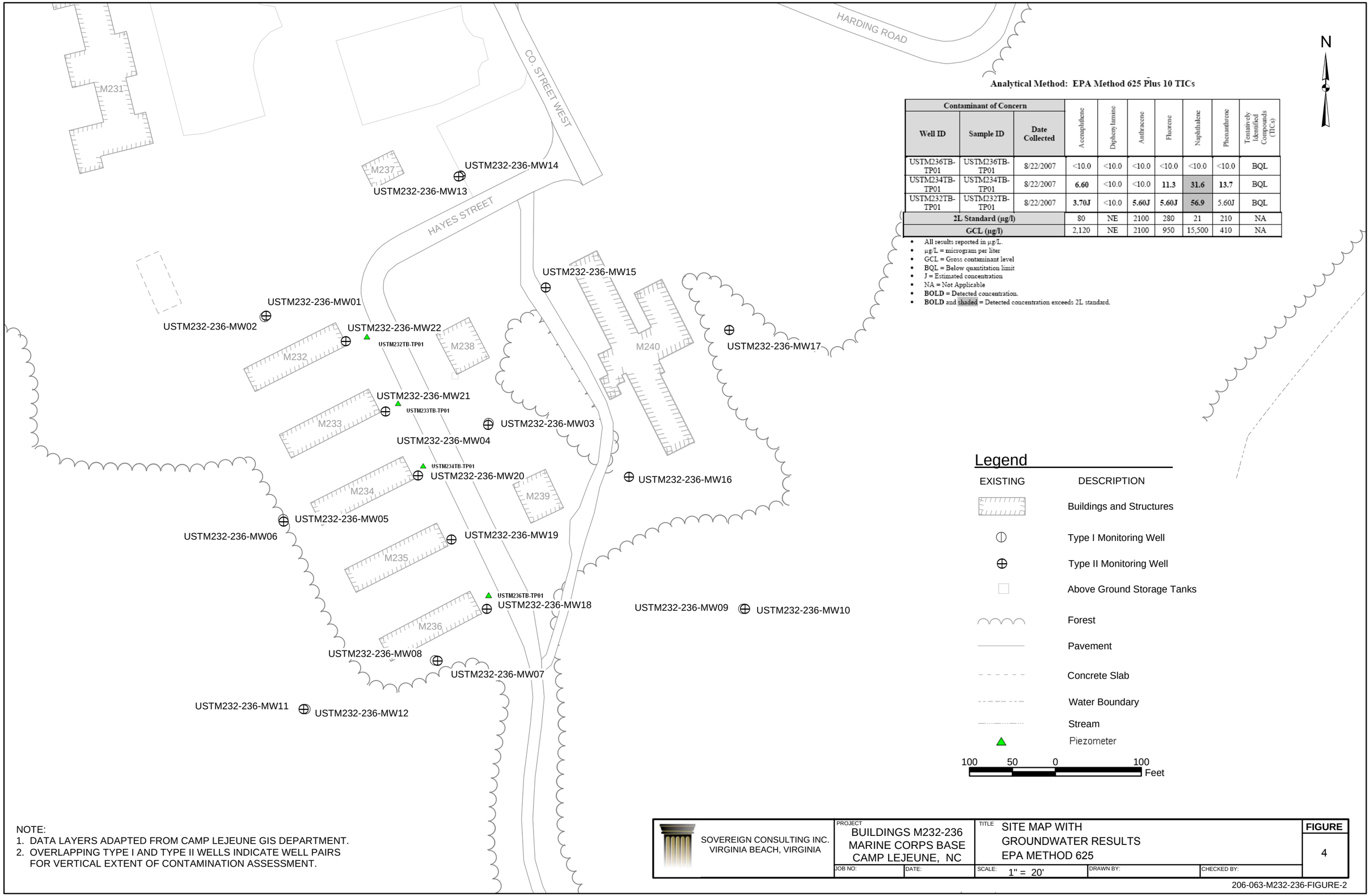
PROJECT: BUILDINGS M232-236 MARINE CORPS BASE CAMP LEJEUNE, NC

TITLE: SITE MAP WITH GROUNDWATER RESULTS EPA METHOD 602

FIGURE 3

JOB NO: | DATE: | SCALE: 1" = 20' | DRAWN BY: | CHECKED BY:

206-063-M232-236-FIGURE-2



Analytical Method: EPA Method 625 Plus 10 TICs

Contaminant of Concern								
Well ID	Sample ID	Date Collected	Acenaphthene	Diphenylamine	Anthracene	Fluorene	Naphthalene	Phenanthrene	Tentatively Identified Compounds (TICs)
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	BQL
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	**6.60**	<10.0	<10.0	**11.3**	**31.6**	**13.7**	BQL
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	**3.70J**	<10.0	**5.60J**	**5.60J**	**56.9**	5.60J	BQL
2L Standard (µg/l)			80	NE	2100	280	21	210	NA
GCL (µg/l)			2,120	NE	2100	950	15,500	410	NA

- All results reported in µg/L.
- µg/L = microgram per liter
- GCL = Gross contaminant level
- BQL = Below quantitation limit
- J = Estimated concentration
- NA = Not Applicable
- **BOLD** = Detected concentration.
- **BOLD** and shaded = Detected concentration exceeds 2L standard.

NOTE:
1. DATA LAYERS ADAPTED FROM CAMP LEJEUNE GIS DEPARTMENT.
2. OVERLAPPING TYPE I AND TYPE II WELLS INDICATE WELL PAIRS FOR VERTICAL EXTENT OF CONTAMINATION ASSESSMENT.

SOVEREIGN CONSULTING INC.
VIRGINIA BEACH, VIRGINIA

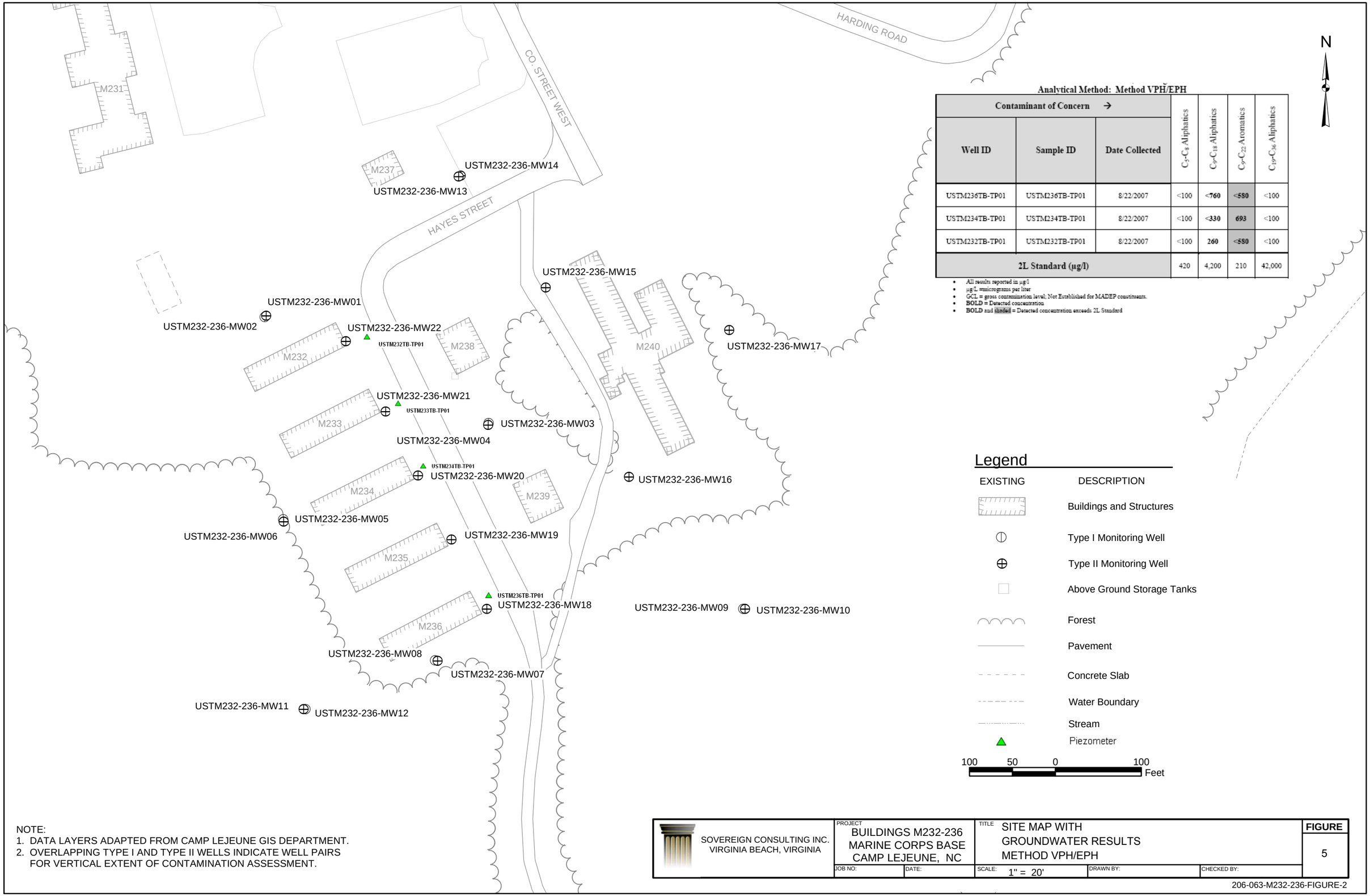
PROJECT: BUILDINGS M232-236 MARINE CORPS BASE CAMP LEJEUNE, NC

TITLE: SITE MAP WITH GROUNDWATER RESULTS EPA METHOD 625

FIGURE 4

JOB NO: | DATE: | SCALE: 1" = 20' | DRAWN BY: | CHECKED BY:

206-063-M232-236-FIGURE-2



Analytical Method: Method VPH/EPH

Contaminant of Concern →			C_5-C_8 Aliphatics	C_9-C_{18} Aliphatics	C_9-C_{22} Aromatics	C_{19}-C_{36} Aliphatics
Well ID	**Sample ID**	**Date Collected**				
USTM236TB-TP01	USTM236TB-TP01	8/22/2007	<100	**<760**	**<580**	<100
USTM234TB-TP01	USTM234TB-TP01	8/22/2007	<100	**<330**	**693**	<100
USTM232TB-TP01	USTM232TB-TP01	8/22/2007	<100	**260**	**<580**	<100
2L Standard (µg/l)			420	4,200	210	42,000

- All results reported in µg/l
- µg/L =micrograms per liter
- GCL = gross contamination level; Not Established for MADEP constituents.
- **BOLD** = Detected concentration
- **BOLD** and shaded = Detected concentration exceeds 2L Standard

NOTE:
1. DATA LAYERS ADAPTED FROM CAMP LEJEUNE GIS DEPARTMENT.
2. OVERLAPPING TYPE I AND TYPE II WELLS INDICATE WELL PAIRS FOR VERTICAL EXTENT OF CONTAMINATION ASSESSMENT.

SOVEREIGN CONSULTING INC.
VIRGINIA BEACH, VIRGINIA

PROJECT	TITLE	FIGURE
BUILDINGS M232-236 MARINE CORPS BASE CAMP LEJEUNE, NC	SITE MAP WITH GROUNDWATER RESULTS METHOD VPH/EPH	5

JOB NO:	DATE:	SCALE: 1" = 20'	DRAWN BY:	CHECKED BY:

206-063-M232-236-FIGURE-2

APPENDIX A

BORING LOGS

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM232TB-SB01** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM232TB-SB02** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM232TB-SB05** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM232TB-SB06** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM232TB-SB07** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SP	0	3.5		Gray Sandy Soil	
	1				
	2				
	3				
	4				
		3.5			
	5				
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM236TB-SB01** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM236TB-SB02** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM236TB-SB03** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0 – 4	3.5		Gray, Medium to Fine Sandy Soil, Dry	
ML	5 – 8	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM236TB-SB04** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM236TB-SB05** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SP	0	3.5		Gray Sandy Soil	
	1				
	2				
	3				
	4				
		3.5			
	5				
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM234TB-SB01** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM234TB-SB02** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM234TB-SB03** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM234TB-SB04** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM234TB-SB05** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **22 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SP	0	3.5		Gray Sandy Soil	
	1				
	2				
	3				
	4				
		3.5			
	5				
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM233TB-SB01** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **23 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM233TB-SB02** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **23 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0 – 4	3.5		Gray, Medium to Fine Sandy Soil, Dry	
ML	5 – 8	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM233TB-SB03** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **23 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML	5	3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM233TB-SB04** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **23 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SM	0	3.5		Gray, Medium to Fine Sandy Soil, Dry	
	1				
	2				
	3				
	4				
ML		3.5		Brown, Sandy Silt Soil, some Clay, Moist	
	5				
	6				
	7				
	8				
				End of Soil Boring	

Notes:

SOVEREIGN CONSULTING INC. **405 Oakmears Crescent, Suite 1** **Virginia Beach, Virginia 23462**	**SOIL BORING LOG: USTM233TB-SB05** Client: **NAVFAC Mid-Atlantic** Project: **Bldg M232-236** Location: **MCB Camp LeJeune** Date Drilled: **23 August 2007** Total Depth: **8 feet** Logged By: **Kurt Merkle**	
	Drilling Co.: **IMS Environmental** Driller: **Keith** Drill Rig: **Truck Mounted Geo-Probe** Drill Method: **Direct Push**	Sample Method: DRO,GRO Borehole Diameter: 2" Weather: 95 F Sunny, Humid

USCS CODE/	DEPTH (FT)	Recovery (Feet)	PID (ppm)	Lithologic Description	Remarks
SP	0	3.5		Gray Sandy Soil	
	1				
	2				
	3				
	4				
		3.5			
	5				
	6				
	7				
	8				
				End of Soil Boring	

Notes:

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

Mr. Chris Murray
Sovereign Consulting
405 Oakmears Crescent
Suite 1
Virginia Beach VA 23462
Report Number: G650-122

Client Project: NV018

Dear Mr. Murray:

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

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

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

Sincerely,
SGS/Paradigm Analytical Laboratories, Inc.

9/11/2002
Laboratory Director Date
J. Patrick Weaver

List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL = Reporting Limit

RPD = Relative Percent Difference

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% soilds = Percent Solids

Special Notes:

1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.

2) Uncertainty for all reported data is less than or equal to 30 percent.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM232TB-SB01
Client Project ID: NV018
Lab Sample ID: G650-122-1
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 8:30
Date Received: 8/23/2007
Matrix: Soil
Solids 87.30

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.66	5035	1	08/25/07
Diesel Range Organics	BQL	7.15	3541	1	08/27/07

Comments:

Flags:

Reviewed By: _____
Tph.xls

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM232TB-SB02
Client Project ID: NV018
Lab Sample ID: G650-122-2
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 8:53
Date Received: 8/23/2007
Matrix: Soil
Solids 79.06

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.25	5035	1	08/25/07
Diesel Range Organics	**1950**	77.3	3541	10	08/28/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM232TB-SB05
Client Project ID: NV018
Lab Sample ID: G650-122-3
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 10:20
Date Received: 8/23/2007
Matrix: Soil
Solids 93.30

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.76	5035	1	08/24/07
Diesel Range Organics	BQL	6.56	3541	1	08/28/07

Comments:

Flags:

Reviewed By: _____
Tph.xls

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM232TB-SB06
Client Project ID: NV018
Lab Sample ID: G650-122-4
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 12:00
Date Received: 8/23/2007
Matrix: Soil
Solids 74.35

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.58	5035	1	08/24/07
Diesel Range Organics	BQL	7.92	3541	1	08/27/07

Comments:

Flags:

Reviewed By: RMP
Tphdls

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM232TB-SB07
Client Project ID: NV018
Lab Sample ID: G650-122-5
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 12:15
Date Received: 8/23/2007
Matrix: Soil
Solids 77.78

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**16.80**	6.13	5035	1	08/24/07
Diesel Range Organics	**2980**	159	3541	20	08/28/07

Comments:

Flags:

Reviewed By: _____
Tph-ds

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM236TB-SB01
Client Project ID: NV018
Lab Sample ID: G650-122-6
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 12:50
Date Received: 8/23/2007
Matrix: Soil
Solids 72.97

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**28.8**	6.87	5035	1	08/24/07
Diesel Range Organics	**4010**	168	3541	20	08/28/07

Comments:

Flags:

Reviewed By: _____
Tph.xls

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM236TB-SB02
Client Project ID: NV018
Lab Sample ID: G650-122-7
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 13:05
Date Received: 8/23/2007
Matrix: Soil
Solids 82.41

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**98.7**	7.92	5035	2	08/27/07
Diesel Range Organics	**9430**	367	3541	50	08/29/07

Comments:

Flags:

Reviewed By: _____
Tphwls

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM236TB-SB03
Client Project ID: NV018
Lab Sample ID: G650-122-8
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 13:25
Date Received: 8/23/2007
Matrix: Soil
Solids 76.62

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.08	5035	1	08/24/07
Diesel Range Organics	BQL	7.78	3541	1	08/29/07

Comments:

Flags:

Reviewed By: _____
Tph.xls

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Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM236TB-SB05
Client Project ID: NV018
Lab Sample ID: G650-122-9
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 14:18
Date Received: 8/23/2007
Matrix: Soil
Solids 78.20

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.54	5035	1	08/25/07
Diesel Range Organics	BQL	7.91	3541	1	08/28/07

Comments:

Flags:

Reviewed By: _____
Tph-xls

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Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM236TB-SB04
Client Project ID: NV018
Lab Sample ID: G650-122-10
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 13:45
Date Received: 8/23/2007
Matrix: Soil
Solids 75.51

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.72	5035	1	08/25/07
Diesel Range Organics	**223**	7.82	3541	1	08/28/07

Comments:

Flags:

Reviewed By: _____
Tph.xls

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM234TB-SB01
Client Project ID: NV018
Lab Sample ID: G650-122-11
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 14:57
Date Received: 8/23/2007
Matrix: Soil
Solids 73.43

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.65	5035	1	08/25/07
Diesel Range Organics	BQL	8.14	3541	1	08/28/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM234TB-SB02
Client Project ID: NV018
Lab Sample ID: G650-122-12
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 15:30
Date Received: 8/23/2007
Matrix: Soil
Solids 76.47

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**63.8**	6.35	5035	1	08/27/07
Diesel Range Organics	**1960**	77.6	3541	10	08/29/07

Comments:

Flags:

Reviewed By: _____
Tph.xls

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID:	USTM234TB-SB03	Analyzed By:	DVG
Client Project ID:	NV018	Date Collected:	8/21/2007 15:50
Lab Sample ID:	G650-122-13	Date Received:	8/23/2007
Lab Project ID:	G650-122	Matrix:	Soil
Report Basis:	Dry Weight	Solids	79.11

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.90	5035	1	08/27/07
Diesel Range Organics	BQL	7.48	3541	1	08/28/07

Comments:

Flags:

Reviewed By: _____

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Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM234TB-SB04
Client Project ID: NV018
Lab Sample ID: G650-122-14
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 16:10
Date Received: 8/23/2007
Matrix: Soil
Solids 81.99

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**22.7**	7.67	5035	1	08/27/07
Diesel Range Organics	**1480**	73.5	3541	10	08/29/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM234TB-SB05
Client Project ID: NV018
Lab Sample ID: G650-122-15
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/21/2007 16:40
Date Received: 8/23/2007
Matrix: Soil
Solids 83.03

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.93	5035	1	08/27/07
Diesel Range Organics	**33.3**	7.27	3541	1	08/29/07

Comments:

Flags:

Reviewed By: RV

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM233TB-SB01
Client Project ID: NV018
Lab Sample ID: G650-122-20
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/22/2007 8:45
Date Received: 8/23/2007
Matrix: Soil
Solids 85.15

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.14	5035	1	08/27/07
Diesel Range Organics	BQL	6.99	3541	1	08/29/07

Comments:

Flags:

Reviewed By: _____
Tph-gs

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: USTM233TB-SB02
Client Project ID: NV018
Lab Sample ID: G650-122-21
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/22/2007 9:15
Date Received: 8/23/2007
Matrix: Soil
Solids 81.54

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	**51.7**	5.67	5035	1	08/27/07
Diesel Range Organics	**5460**	376	3541	50	08/30/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM233TB-SB03
Client Project ID: NV018
Lab Sample ID: G650-122-22
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/22/2007 9:25
Date Received: 8/23/2007
Matrix: Soil
Solids 76.58

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.20	5035	1	08/27/07
Diesel Range Organics	BQL	8.00	3541	1	08/29/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM233TB-SB04
Client Project ID: NV018
Lab Sample ID: G650-122-23
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/22/2007 9:45
Date Received: 8/23/2007
Matrix: Soil
Solids 82.68

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.44	5035	1	08/27/07
Diesel Range Organics	BQL	7.47	3541	1	08/29/07

Comments:

Flags:

Reviewed By: DW

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: USTM233TB-SB05
Client Project ID: NV018
Lab Sample ID: G650-122-24
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/22/2007 10:10
Date Received: 8/23/2007
Matrix: Soil
Solids 80.41

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.24	5035	1	08/27/07
Diesel Range Organics	BQL	7.47	3541	1	08/29/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: TRIP BLANK
Client Project ID: NV018
Lab Sample ID: G650-122-25
Lab Project ID: G650-122
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 8/22/2007 0:00
Date Received: 8/23/2007
Matrix: Soil
Solids 80.41

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.46	5035	1	08/27/07

Comments:

Flags:

Reviewed By: _____

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB8969
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: BWS
Date Collected:
Date Received:
Matrix: SOIL
Solids 100.00

Analyte	Result mg/KG	RL mg/KG	Prep Method	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.25	3541	1	08/28/07

Comments:

Flags:

Reviewed By: _____
TPH.XLS

QC Results for Total Petroleum Hydrocarbons
by **GC/FID**

Client Sample ID: Batch QC
Lab Sample ID: G650-122-1D
Batch ID: 8969

Analyzed By: BWS
Matrix: Soil
Solids 87.30

MS/MSD

Analyte units	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC %		Spiked MG/KG	MSD MG/KG	REC %		RPD %
DRO	BQL	71	66.5	93.7		69.6	57.3	82.3		13

LCS

Analyte units		Spiked MG/KG	Result MG/KG	REC %		LIMITS Lower	Upper	
DRO		62.5	51.2	81.9		40	140	

Comments:

Reviewed By: RW

SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB8978
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: BWS
Date Collected:
Date Received:
Matrix: SOIL
Solids 100.00

Analyte	Result mg/KG	RL mg/KG	Prep Method	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.25	3541	1	08/29/07

Comments:

Flags:

Reviewed By: _____

QC Results for Total Petroleum Hydrocarbons
by **GC/FID**

Client Sample ID: Batch QC
Lab Sample ID: G520-236-7C
Batch ID: 8978

Analyzed By: BWS
Matrix: Soil
Solids 92.63

MS/MSD

Analyte units	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC %		Spiked MG/KG	MSD MG/KG	REC %		RPD %
DRO	9.89	67.3	64.2	80.7		66.4	61.2	77.3		4.3

LCS

Analyte units		Spiked MG/KG	Result MG/KG	REC %		LIMITS Lower	 Upper	
DRO		62.5	56.6	90.6		40	140	

Comments:

Reviewed By: RLV

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB8988
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: BWS
Date Collected:
Date Received:
Matrix: SOIL
Solids 100.00

Analyte	Result mg/KG	RL mg/KG	Prep Method	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.25	3541	1	08/30/07

Comments:

Flags:

Reviewed By: _____

QC Results for Total Petroleum Hydrocarbons

by **GC/FID**

Client Sample ID: Batch QC
Lab Sample ID: G316-13-1L
Batch ID: 8988

Analyzed By: BWS
Matrix: Soil
Solids 91.53

MS/MSD

Analyte units	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC %		Spiked MG/KG	MSD MG/KG	REC %		RPD %
DRO	BQL	67.4	52.6	78		67.6	51.9	76.8		1.55

LCS

Analyte units		Spiked MG/KG	Result MG/KG	REC %		LIMITS Lower	 Upper	
DRO		62.5	51.3	82.1		40	140	

Comments:

Reviewed By: RP

Results for Volatiles

by GC 602

Client Sample ID: USTM236TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-16D
Lab Project ID: G650-122

Analyzed By: RSB
Date Collected: 8/22/2007 14:35
Date Received: 8/23/2007
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/29/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/29/2007	
Ethylbenzene	**0.556**	1.00	0.181	1	8/29/2007	J
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/29/2007	
Toluene	BQL	1.00	0.157	1	8/29/2007	
m/p-Xylene	BQL	2.00	0.481	1	8/29/2007	
o-Xylene	BQL	2.00	0.584	1	8/29/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	35.8	89.5

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

Reviewed By: _____
GC-VOA_WA

Results for Volatiles
by GC 602

Client Sample ID: USTM234TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-17D
Lab Project ID: G650-122

Analyzed By: RSB
Date Collected: 8/22/2007 13:25
Date Received: 8/23/2007
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/29/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/29/2007	
Ethylbenzene	**17.5**	1.00	0.181	1	8/29/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/29/2007	
Toluene	**0.259**	1.00	0.157	1	8/29/2007	J
m/p-Xylene	**0.536**	2.00	0.481	1	8/29/2007	J
o-Xylene	BQL	2.00	0.584	1	8/29/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	36.0	90.1

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

Reviewed By: _____
GC-VOA_WA

Results for Volatiles

by GC 602

Client Sample ID: USTM232TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-18D
Lab Project ID: G650-122

Analyzed By: DVG
Date Collected: 8/22/2007 12:20
Date Received: 8/23/2007
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/30/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/30/2007	
Ethylbenzene	**10.3**	1.00	0.181	1	8/30/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/30/2007	
Toluene	BQL	1.00	0.157	1	8/30/2007	
m/p-Xylene	**1.36**	2.00	0.481	1	8/30/2007	J
o-Xylene	BQL	2.00	0.584	1	8/30/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.4	101

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

Reviewed By: _____
GC-VOA_WA

Results for Volatiles

by GC 602

Client Sample ID: TRIP BLANK
Client Project ID: NV018
Lab Sample ID: G650-122-19B
Lab Project ID: G650-122

Analyzed By: DVG
Date Collected: 8/22/2007 0:00
Date Received: 8/23/2007
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/30/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/30/2007	
Ethylbenzene	BQL	1.00	0.181	1	8/30/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/30/2007	
Toluene	BQL	1.00	0.157	1	8/30/2007	
m/p-Xylene	BQL	2.00	0.481	1	8/30/2007	
o-Xylene	BQL	2.00	0.584	1	8/30/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.1	100

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

Reviewed By: _____
GC-VOA_WA

Results for Volatiles

by GC 602

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK1083107A
Lab Project ID:

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

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/30/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/30/2007	
Ethylbenzene	BQL	1.00	0.181	1	8/30/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/30/2007	
Toluene	BQL	1.00	0.157	1	8/30/2007	
m/p-Xylene	BQL	2.00	0.481	1	8/30/2007	
o-Xylene	BQL	2.00	0.584	1	8/30/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.1	100

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

Reviewed By:

Summary Results for QC Check

Method : 601

Filename : 1083107/002F

		SA	Result	Rec		QC Limits	
	Compound	ug/L	ug/L	(%)	F	Lower	Upper
	Bromodichloromethane	20.0	17.3	86.4		76.0	124.0
	Bromoform	20.0	18.5	92.5		73.5	126.5
	Bromomethane	20.0	7.8	39.1	+	58.5	141.5
	Carbon tetrachloride	40.0	34.9	87.4		68.5	131.5
	Chlorobenzene	20.0	19.0	95.0		72.0	128.0
	Chloroethane	20.0	16.2	80.9		77.0	123.0
	Chloroform	20.0	18.1	90.4		75.0	125.0
	Chloromethane	20.0	16.3	81.7		59.5	140.5
	Dibromochloromethane	20.0	19.0	94.8		65.5	134.5
•	1,2-Dibromoethane	20.0	21.0	105.2		13.6	186.4
	1,2-Dichlorobenzene	20.0	21.0	105.0		70.0	130.0
	1,3-Dichlorobenzene	20.0	19.5	97.6		49.5	150.5
	1,4-Dichlorobenzene	20.0	19.9	99.3		69.5	130.5
	1,1-Dichloroethane	20.0	18.4	92.0		84.0	116.0
	1,2-Dichloroethane	20.0	19.6	98.2		71.5	128.5
	1,1-Dichloroethene	20.0	17.7	88.4		63.0	137.0
•	cis-1,2-Dichloroethene	40.0	41.3	103.2		34.4	180.6
	trans-1,2-Dichloroethene	20.0	18.8	94.0		64.0	136.0
	1,2-Dichloropropane	20.0	18.9	94.3		74.0	126.0
	cis-1,3-Dichloropropene	20.0	18.5	92.7		64.0	136.0
	trans-1,3-Dichloropropene	20.0	18.6	93.0		64.0	136.0
	Methylene Chloride	20.0	15.7	78.7		77.5	122.5
	1,1,2,2-Tertrachloroethane	60.0	65.6	109.4		49.0	151.0
	Tetrachloroethene	40.0	40.4	101.0		70.0	130.0
	1,1,1-Trichloroethane	20.0	18.1	90.6		71.0	129.0
	1,1,2-Trichloroethane	20.0	20.0	100.0		78.5	121.5
	Trichloroethene	20.0	19.2	96.2		77.0	123.0
	Trichlorofluromethane	20.0	16.7	83.6		66.5	133.5
	Vinyl Chloride	20.0	16.7	83.5		68.5	131.5

Method: 602

Filename : 1083107/002R

		SA	Result	Rec		QC Limits	
	Compound	ug/L	ug/L	(%)		Lower	Upper
	Benzene	20.0	19.3	96.5		77.0	123.0
	Chlorobenzene	20.0	19.3	96.4		80.5	119.5
	1,2-Dichlorobenzene	40.0	40.9	102.2		68.0	132.0
	1,3-Dichlorobenzene	20.0	19.6	98.1		72.5	127.5
	1,4-Dichlorobenzene	40.0	38.9	97.2		69.5	130.5
•	Diisopropyl ether	20.0	19.7	98.3		43.1	156.9
	Ethylbenzene	20.0	19.9	99.6		63.0	137.0
•	MTBE	40.0	39.1	97.7		46.8	153.2
	Toluene	20.0	19.6	97.9		77.5	127.0
•	m,p-Xylene	40.0	40.1	100.2		11.2	188.8
•	o-Xylene	40.0	39.4	98.4		47.6	152.4

Flags :

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

Summary Results for Labortory Control Spike

Method : 601

Filename : 1083107/003F

	Compound	SA ug/L	Result ug/L	Rec (%)	F	LCS Limits Lower	Upper
	Bromodichloromethane	10.0	8.7	87.4		42	172
	Bromoform	10.0	8.8	87.9		13	159
	Bromomethane	10.0	4.7	46.6		0	144
	Carbon tetrachloride	20.0	17.5	87.5		43	143
	Chlorobenzene	10.0	8.8	87.8		38	150
	Chloroethane	10.0	8.3	82.8		46	137
	Chloroform	10.0	8.9	89.4		49	133
	Chloromethane	10.0	8.5	85.1		0	193
	Dibromochloromethane	10.0	9.3	93.2		24	191
•	1,2-Dibromoethane	10.0	10.1	101.3		0	206
	1,2-Dichlorobenzene	10.0	9.5	94.8		0	208
	1,3-Dichlorobenzene	10.0	9.3	93.3		7	187
	1,4-Dichlorobenzene	10.0	9.6	96.4		42	143
	1,1-Dichloroethane	10.0	8.3	82.5		47	132
	1,2-Dichloroethane	10.0	9.6	96.3		51	147
	1,1-Dichloroethene	10.0	8.1	80.7		28	167
•	cis-1,2-Dichloroethene	20.0	20.1	100.7		19	181
	trans-1,2-Dichloroethene	10.0	8.5	85.4		38	155
	1,2-Dichloropropane	10.0	9.6	96.4		44	156
	cis-1,3-Dichloropropene	10.0	8.8	87.5		22	178
	trans-1,3-Dichloropropene	10.0	8.7	86.8		22	178
	Methylene Chloride	10.0	6.8	68.5		25	162
	1,1,2,2-Tertrachloroethane	30.0	32.8	109.2		8	184
	Tetrachloroethane	10.0	9.2	91.9		26	162
	1,1,1-Trichloroethane	10.0	8.8	87.5		41	138
	1,1,2-Trichloroethane	10.0	9.9	99.0		39	136
	Trichloroethene	10.0	9.1	90.8		35	146
	Trichlorofluromethane	10.0	8.7	86.5		21	156
	Vinyl Chloride	10.0	8.7	87.3		28	163

Method: 602

Filename : 1083107/003R

	Compound	SA ug/L	Result ug/L	Rec (%)	LCS Limits Lower	Upper
	Benzene	10.0	9.2	91.9	39	150
	Chlorobenzene	10.0	9.2	91.8	55	135
	1,2-Dichlorobenzene	20.0	19.6	98.1	37	154
	1,3-Dichlorobenzene	10.0	9.4	94.4	50	141
	1,4-Dichlorobenzene	20.0	18.9	94.3	42	143
•	Diisopropyl ether	10.0	9.4	93.6	30	170
	Ethylbenzene	10.0	9.5	94.7	32	160
•	MTBE	20.0	18.9	94.6	35	165
	Toluene	10.0	9.4	93.8	46	148
•	m,p-Xylene	20.0	19.0	95.0	0	239
•	o-Xylene	20.0	18.7	93.4	36	164

Flags :

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

Summary Results for MS-MSD

Method : 601

Sample : 1083107/016F::1083107/016R
MS : 1083107/018F::1083107/018R
MSD : 1083107/019F::1083107/019R

			µg/L			REC(%)		REC Limits	
	Compound	SA	Sam.	MS	MSD	MS	MSD	Lower	Upper
	Bromodichloromethane	10.0	ND	8.6	9.0	86	90	42	172
	Bromoform	10.0	ND	7.6	8.4	76	84	13	159
	Bromomethane	10.0	ND	2.6	4.1	26	41	D	144
	Carbon tetrachloride	20.0	ND	15.0	16.1	75	80	43	143
	Chlorobenzene	10.0	ND	9.6	10.6	96	106	38	150
	Chloroethane	10.0	ND	9.6	10.6	96	106	46	137
	Chloroform	10.0	ND	9.3	9.8	93	98	49	133
	Chloromethane	10.0	ND	9.7	11.5	93	111	D	193
	Dibromochloromethane	10.0	ND	8.4	9.6	84	96	24	191
•	1,2-Dibromoethane	10.0	ND	9.8	10.9	98	109	D	206
	1,2-Dichlorobenzene	10.0	ND	8.7	9.8	87	98	D	208
	1,3-Dichlorobenzene	10.0	ND	8.5	9.6	85	96	7	187
	1,4-Dichlorobenzene	10.0	ND	8.6	9.8	86	98	42	143
	1,1-Dichloroethane	10.0	ND	9.4	9.5	94	95	47	132
	1,2-Dichloroethane	10.0	ND	9.5	9.9	95	99	51	147
	1,1-Dichloroethene	10.0	ND	9.0	9.5	90	95	28	167
•	cis-1,2-Dichloroethene	20.0	ND	16.1	16.4	81	82	19	181
	trans-1,2-Dichloroethene	10.0	ND	9.5	9.9	96	100	38	155
	1,2-Dichloropropane	10.0	ND	10.0	10.3	90	93	44	156
	cis-1,3-Dichloropropene	10.0	ND	6.0	6.3	60	63	22	178
	trans-1,3-Dichloropropene	10.0	ND	6.2	6.6	62	66	22	178
	Methylene Chloride	10.0	ND	9.4	9.5	101	102	25	162
	1,1,2,2-Tertrachloroethane	30.0	ND	30.1	34.8	100	116	8	184
	Tetrachloroethane	20.0	ND	19.7	27.6	101	140	26	162
	1,1,1-Trichloroethane	10.0	ND	9.3	9.5	93	95	41	138
	1,1,2-Trichloroethane	10.0	ND	9.8	12.6	98	126	39	136
	Trichloroethene	10.0	ND	9.6	9.8	95	97	35	146
	Trichlorofluromethane	10.0	ND	10.2	11.0	102	110	21	156
	Vinyl Chloride	10.0	ND	10.3	11.4	102	113	28	163

Method: 602

			µg/L			P(%)		P Limits	
	Compound	SA	Sam.	MS	MSD	MS	MSD	Lower	Upper
	Benzene	10.0	ND	9.4	9.7	94	97	39	150
	Chlorobenzene	10.0	ND	9.3	9.6	93	96	55	135
	1,2-Dichlorobenzene	10.0	ND	14.9	15.8	142	151	37	154
	1,3-Dichlorobenzene	10.0	ND	8.3	8.8	83	88	50	141
	1,4-Dichlorobenzene	20.0	ND	16.6	17.8	83	89	42	143
•	Diisopropyl ether	10.0	ND	9.2	9.5	92	95	30	170
	Ethylbenzene	10.0	ND	9.8	10.1	96	100	32	160
•	MTBE	20.0	ND	18.6	19.3	93	97	35	165
	Toluene	10.0	ND	9.6	9.9	96	99	46	148
•	m,p-Xylene	20.0	ND	18.7	19.3	94	97	D	239
•	o-Xylene	20.0	ND	18.0	18.7	90	94	36	164

Flags :

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

Results for Volatiles
by GC 602

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK5082907A
Lab Project ID:

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

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/30/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/30/2007	
Ethylbenzene	BQL	1.00	0.181	1	8/30/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/30/2007	
Toluene	BQL	1.00	0.157	1	8/30/2007	
m/p-Xylene	BQL	2.00	0.481	1	8/30/2007	
o-Xylene	BQL	2.00	0.584	1	8/30/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	36.5	91.2

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

Reviewed By: _____
GC-VOA_WA

Summary Results for QC Check

Method : 601

Filename : 5082907/102b

	Compound	SA ug/L	Result ug/L	Rec (%)	F	QC Limits Lower	QC Limits Upper
	Bromodichloromethane	20.0	21.2	106.0		76.0	124.0
	Bromoform	20.0	21.0	105.0		73.5	126.5
	Bromomethane	20.0	18.2	90.9		58.5	141.5
	Carbon tetrachloride	40.0	43.1	107.7		68.5	131.5
	Chlorobenzene	20.0	20.6	103.0		72.0	128.0
	Chloroethane	20.0	20.6	102.8		77.0	123.0
	Chloroform	20.0	21.7	108.7		75.0	125.0
	Chloromethane	20.0	18.2	90.8		59.5	140.5
	Dibromochloromethane	20.0	20.8	103.8		65.5	134.5
◆	1,2-Dibromoethane	20.0	22.1	110.3		13.6	186.4
	1,2-Dichlorobenzene	20.0	20.7	103.5		70.0	130.0
	1,3-Dichlorobenzene	20.0	21.3	106.3		49.5	150.5
	1,4-Dichlorobenzene	20.0	21.0	105.1		69.5	130.5
	1,1-Dichloroethane	20.0	22.0	110.2		84.0	116.0
	1,2-Dichloroethane	20.0	21.5	107.4		71.5	128.5
	1,1-Dichloroethene	20.0	22.5	112.3		63.0	137.0
◆	cis-1,2-Dichloroethene	40.0	46.2	115.5		34.4	180.6
	trans-1,2-Dichloroethene	20.0	21.1	105.5		64.0	136.0
	1,2-Dichloropropane	20.0	21.6	107.9		74.0	126.0
	cis-1,3-Dichloropropene	20.0	21.2	105.8		64.0	136.0
	trans-1,3-Dichloropropene	20.0	21.0	104.8		64.0	136.0
	Methylene Chloride	20.0	18.7	93.6		77.5	122.5
	1,1,2,2-Tertrachloroethane	30.0	42.9	142.9		49.0	151.0
	Tetrachloroethene	40.0	42.9	107.1		70.0	130.0
	1,1,1-Trichloroethane	20.0	21.7	108.7		71.0	129.0
	1,1,2-Trichloroethane	20.0	20.3	101.3		78.5	121.5
	Trichloroethene	20.0	21.6	107.9		77.0	123.0
	Trichlorofluromethane	20.0	20.7	103.4		66.5	133.5
	Vinyl Chloride	20.0	17.8	88.9		68.5	131.5

Method: 602

Filename : 5082907/002f

	Compound	SA ug/L	Result ug/L	Rec (%)		QC Limits Lower	QC Limits Upper
	Benzene	20.0	18.4	92.0		77.0	123.0
	Chlorobenzene	20.0	18.1	90.4		80.5	119.5
	1,2-Dichlorobenzene	20.0	17.7	88.3		68.0	132.0
	1,3-Dichlorobenzene	40.0	9.6	24.1	+	72.5	127.5
	1,4-Dichlorobenzene	20.0	17.9	89.7		69.5	130.5
◆	Diisopropyl ether	20.0	17.4	87.0		43.1	156.9
	Ethylbenzene	20.0	18.7	93.7		63.0	137.0
◆	MTBE	40.0	36.4	91.0		46.8	153.2
	Toluene	20.0	18.5	92.5		77.5	127.0
◆	m,p-Xylene	40.0	37.5	93.7		11.2	188.8
◆	o-Xylene	40.0	36.6	91.6		47.6	152.4

Flags :

+ = out of QC limits.
◆ = lab generated limits.
D = Detected
SA = Spiked Amount

Summary Results for MS-MSD

Sample : 5082907/116b::5082907/016f
MS : 5082907/118b::5082907/018f
MSD : 5082907/119b::5082907/019f

			µg/L			REC(%)		REC Limits	
	Compound	SA	Sam.	MS	MSD	MS	MSD	Lower	Upper
	Bromodichloromethane	10.0	ND	10.2	9.5	102	95	42	172
	Bromoform	10.0	ND	9.9	9.0	99	90	13	159
	Bromomethane	10.0	ND	10.3	10.0	102	98	0	144
	Carbon tetrachloride	20.0	ND	21.7	19.9	109	100	43	143
	Chlorobenzene	10.0	ND	10.6	10.0	106	100	38	150
	Chloroethane	10.0	ND	12.7	11.7	127	117	46	137
	Chloroform	10.0	ND	10.7	10.1	107	101	49	133
	Chloromethane	10.0	ND	15.7	13.9	157	139	0	193
	Dibromochloromethane	10.0	ND	10.1	9.2	100	91	24	191
•	1,2-Dibromoethane	10.0	ND	10.8	9.4	108	94	D	206
	1,2-Dichlorobenzene	10.0	ND	10.9	9.9	109	99	D	208
	1,3-Dichlorobenzene	10.0	ND	10.8	9.9	108	99	7	187
	1,4-Dichlorobenzene	10.0	ND	10.8	10.0	108	100	42	143
	1,1-Dichloroethane	10.0	ND	11.2	10.2	112	102	47	132
	1,2-Dichloroethane	10.0	ND	11.0	10.3	110	103	51	147
	1,1-Dichloroethene	10.0	ND	12.5	11.3	125	113	28	167
•	cis-1,2-Dichloroethene	20.0	ND	23.2	21.4	116	107	19	181
	trans-1,2-Dichloroethene	10.0	ND	11.3	10.5	113	105	38	155
	1,2-Dichloropropane	10.0	ND	10.3	9.6	103	96	44	156
	cis-1,3-Dichloropropene	10.0	ND	9.9	9.3	99	93	22	178
	trans-1,3-Dichloropropene	10.0	ND	10.3	9.5	101	94	22	178
	Methylene Chloride	10.0	ND	10.3	9.0	103	90	25	162
	1,1,2,2-Tertrachloroethane	20.0	ND	20.8	19.6	104	98	8	184
	Tetrachloroethane	20.0	ND	22.4	20.9	112	105	26	162
	1,1,1-Trichloroethane	10.0	ND	10.7	10.2	107	102	41	138
	1,1,2-Trichloroethane	10.0	ND	10.3	9.6	103	96	39	136
	Trichloroethene	10.0	ND	11.1	10.3	111	103	35	146
	Trichlorofluromethane	10.0	ND	10.1	10.0	101	100	21	156
	Vinyl Chloride	10.0	ND	9.0	8.7	90	87	28	163

Method: 602

			µg/L			P(%)		P Limits	
	Compound	SA	Sam.	MS	MSD	MS	MSD	Lower	Upper
	Benzene	10.0	1.3	10.6	9.8	93	85	39	150
	Chlorobenzene	10.0	ND	9.2	8.2	92	82	55	135
	1,2-Dichlorobenzene	10.0	1.9	9.0	8.1	70	62	37	154
	1,3-Dichlorobenzene	10.0	ND	7.3	8.9	71	87	50	141
	1,4-Dichlorobenzene	20.0	1.5	9.9	9.1	42 +	38 +	42	143
•	Diisopropyl ether	10.0	ND	8.8	8.1	88	81	30	170
	Ethylbenzene	10.0	2.6	12.0	11.2	94	87	32	160
•	MTBE	20.0	ND	18.3	16.9	91	85	35	165
	Toluene	10.0	21.2	30.9	30.7	97	95	46	148
•	m,p-Xylene	20.0	9.8	28.7	27.4	94	88	0	239
•	o-Xylene	20.0	4.6	23.1	22.0	93	87	36	164

Flags :

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

Summary Results for Labortory Control Spike

Method : 601

Filename : 5082907/103b

		SA	Result	Rec		LCS Limits	
	Compound	ug/L	ug/L	(%)	F	Lower	Upper
	Bromodichloromethane	10.0	10.6	105.8		42	172
	Bromoform	10.0	10.3	102.7		13	159
	Bromomethane	10.0	8.5	85.4		0	144
	Carbon tetrachloride	20.0	22.0	110.0		43	143
	Chlorobenzene	10.0	10.6	105.8		38	150
	Chloroethane	10.0	9.3	92.9		46	137
	Chloroform	10.0	10.7	107.3		49	133
	Chloromethane	10.0	8.1	81.4		0	193
	Dibromochloromethane	10.0	10.3	102.8		24	191
◆	1,2-Dibromoethane	10.0	11.0	110.1		0	206
	1,2-Dichlorobenzene	10.0	11.0	110.0		0	208
	1,3-Dichlorobenzene	10.0	11.0	110.1		7	187
	1,4-Dichlorobenzene	10.0	10.9	109.1		42	143
	1,1-Dichloroethane	10.0	10.9	108.7		47	132
	1,2-Dichloroethane	10.0	10.7	106.5		51	147
	1,1-Dichloroethene	10.0	11.0	110.3		28	167
◆	cis-1,2-Dichloroethene	20.0	24.5	122.6		19	181
	trans-1,2-Dichloroethene	10.0	10.2	102.2		38	155
	1,2-Dichloropropane	10.0	10.6	105.6		44	156
	cis-1,3-Dichloropropene	10.0	10.1	100.6		22	178
	trans-1,3-Dichloropropene	10.0	10.5	105.0		22	178
	Methylene Chloride	10.0	8.0	79.8		25	162
	1,1,2,2-Tertrachloroethane	20.0	21.8	109.1		8	184
	Tetrachloroethane	20.0	22.2	110.8		26	162
	1,1,1-Trichloroethane	10.0	10.9	109.1		41	138
	1,1,2-Trichloroethane	10.0	10.6	105.9		39	136
	Trichloroethene	10.0	10.9	109.2		35	146
	Trichlorofluromethane	10.0	9.6	96.1		21	156
	Vinyl Chloride	10.0	8.2	82.3		28	163

Method: 602

Filename : 5082907/003f

		SA	Result	Rec	LCS Limits	
	Compound	ug/L	ug/L	(%)	Lower	Upper
	Benzene	10.0	9.3	93.4	39	150
	Chlorobenzene	10.0	9.3	92.5	55	135
	1,2-Dichlorobenzene	10.0	9.3	92.6	37	154
	1,3-Dichlorobenzene	10.0	10.1	101.5	50	141
	1,4-Dichlorobenzene	10.0	9.3	92.7	42	143
◆	Diisopropyl ether	10.0	8.8	88.4	30	170
	Ethylbenzene	10.0	9.5	95.4	32	160
◆	MTBE	20.0	18.4	92.2	35	165
	Toluene	10.0	9.4	94.3	46	148
◆	m,p-Xylene	20.0	19.2	96.2	0	239
◆	o-Xylene	20.0	18.9	94.7	36	164

Flags :

+ = out of QC limits.
◆ = lab generated limits.
D = Detected
SA = Spiked Amount

SGS

Results for Semivolatiles by GCMS 625

Client Sample ID: USTM236TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-16H
Lab Project ID: G650-122

Analyzed By: DCS
Date Collected: 8/22/2007 14:35
Date Received: 8/23/2007
Date Extracted: 8/24/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	9/11/2007
Acenaphthylene	BQL	10.0	1	9/11/2007
Anthracene	BQL	10.0	1	9/11/2007
Benzo[a]anthracene	BQL	10.0	1	9/11/2007
Benzo[a]pyrene	BQL	10.0	1	9/11/2007
Benzo[b]fluoranthene	BQL	10.0	1	9/11/2007
Benzo[g,h,i]perylene	BQL	10.0	1	9/11/2007
Benzo[k]fluoranthene	BQL	10.0	1	9/11/2007
Bis(2-chloroethoxy)methane	BQL	10.0	1	9/11/2007
Bis(2-chloroethyl)ether	BQL	10.0	1	9/11/2007
Bis(2-chloroisopropyl)ether	BQL	10.0	1	9/11/2007
Bis(2-ethylhexyl)phthalate	BQL	10.0	1	9/11/2007
4-bromophenyl phenyl ether	BQL	10.0	1	9/11/2007
Butylbenzylphthalate	BQL	10.0	1	9/11/2007
2-Chloronaphthalene	BQL	10.0	1	9/11/2007
2-Chlorophenol	BQL	10.0	1	9/11/2007
4-Chloro-3-methylphenol	BQL	10.0	1	9/11/2007
4-Chlorophenyl phenyl ether	BQL	10.0	1	9/11/2007
Chrysene	BQL	10.0	1	9/11/2007
Dibenzo[a,h]anthracene	BQL	10.0	1	9/11/2007
Di-n-Butylphthalate	BQL	10.0	1	9/11/2007
3,3'-Dichlorobenzidine	BQL	20.0	1	9/11/2007
2,4-Dichlorophenol	BQL	10.0	1	9/11/2007
Diethylphthalate	BQL	10.0	1	9/11/2007
Dimethylphthalate	BQL	10.0	1	9/11/2007
2,4-Dimethylphenol	BQL	10.0	1	9/11/2007
Di-n-octylphthalate	BQL	10.0	1	9/11/2007
4,6-Dinitro-2-methylphenol	BQL	50.0	1	9/11/2007
2,4-Dinitrophenol	BQL	50.0	1	9/11/2007
2,4-Dinitrotoluene	BQL	10.0	1	9/11/2007
2,6-Dinitrotoluene	BQL	10.0	1	9/11/2007
Diphenylamine *	BQL	10.0	1	9/11/2007
Fluoranthene	BQL	10.0	1	9/11/2007
Fluorene	BQL	10.0	1	9/11/2007
Hexachlorobenzene	BQL	10.0	1	9/11/2007
Hexachlorobutadiene	BQL	10.0	1	9/11/2007
Hexachlorocyclopentadiene	BQL	20.0	1	9/11/2007
Hexachloroethane	BQL	10.0	1	9/11/2007
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	9/11/2007
Isophorone	BQL	10.0	1	9/11/2007
Naphthalene	BQL	10.0	1	9/11/2007
Nitrobenzene	BQL	10.0	1	9/11/2007
2-Nitrophenol	BQL	10.0	1	9/11/2007
4-Nitrophenol	BQL	50.0	1	9/11/2007
N-Nitrosodi-n-propylamine	BQL	10.0	1	9/11/2007
Pentachlorophenol	BQL	50.0	1	9/11/2007
Phenanthrene	BQL	10.0	1	9/11/2007

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTM236TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-16H
Lab Project ID: G650-122

Analyzed By: DCS
Date Collected: 8/22/2007 14:35
Date Received: 8/23/2007
Date Extracted: 8/24/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Phenol	BQL	10.0	1	9/11/2007
Pyrene	BQL	10.0	1	9/11/2007
1,2,4-Trichlorobenzene	BQL	10.0	1	9/11/2007
2,4,6-Trichlorophenol	BQL	10.0	1	9/11/2007

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8	80
2-Fluorophenol	10	8.5	85
Nitrobenzene-d5	10	8	80
Phenol-d6	10	7	70
2,4,6-Tribromophenol	10	6.5	65
4-Terphenyl-d14	10	11	110

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

Flags:
BQL = Below Quantitation Limits.

Reviewed By: _____

Results of Library Search for Semivolatile Compounds

by GCMS

Client Sample ID: USTM236TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-16H
Lab Project ID: G650-122
Sample Wt/Vol: 500 ML
Dilution: 1

Analyzed By: EAW
Date Collected: 8/22/2007 14:35
Date Received: 8/23/2007
Date Extracted: 8/24/2007
Date Analyzed: 9/11/2007
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Naphthalene, 1,5-dimethyl-	10.71	000571-61-9	97	16.2
2	Unknown	5.73			13.6
3	Naphthalene, 1,4,6-trimethyl-	11.43	002131-42-2	92	12.4
4	Alkane, Unknown	12.85			12.1
5	Naphthalene, 1,6-dimethyl-	10.59	000575-43-9	97	11.6
6	Aromatic, Unknown	6.82			11.4
7	1H-Indene, 2,3-dihydro-5-methyl-	8.08	000874-35-1	90	9.81
8	Unknown	11.39			8.48
9	Naphthalene, 1,3-dimethyl-	10.88	000575-41-7	95	8.14
10	Unknown	12.20			7.92

Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: _____

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTM234TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-17H
Lab Project ID: G650-122

Analyzed By: DCS
Date Collected: 8/22/2007 13:25
Date Received: 8/23/2007
Date Extracted: 8/24/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	**6.60**	10.0	1.22	1	8/28/2007	J
Acenaphthylene	BQL	10.0	1.12	1	8/28/2007	
Anthracene	BQL	10.0	1.75	1	8/28/2007	
Benzo[a]anthracene	BQL	10.0	1.36	1	8/28/2007	
Benzo[a]pyrene	BQL	10.0	1.27	1	8/28/2007	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	8/28/2007	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	8/28/2007	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	8/28/2007	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	8/28/2007	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	8/28/2007	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	8/28/2007	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	8/28/2007	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	8/28/2007	
Butylbenzylphthalate	BQL	10.0	1.53	1	8/28/2007	
2-Chloronaphthalene	BQL	10.0	1.25	1	8/28/2007	
2-Chlorophenol	BQL	10.0	4.22	1	8/28/2007	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	8/28/2007	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	8/28/2007	
Chrysene	BQL	10.0	1.11	1	8/28/2007	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	8/28/2007	
Di-n-Butylphthalate	BQL	10.0	1.65	1	8/28/2007	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	8/28/2007	
2,4-Dichlorophenol	BQL	10.0	3.75	1	8/28/2007	
Diethylphthalate	BQL	10.0	1.48	1	8/28/2007	
Dimethylphthalate	BQL	10.0	1.04	1	8/28/2007	
2,4-Dimethylphenol	BQL	10.0	9.25	1	8/28/2007	
Di-n-octylphthalate	BQL	10.0	1.16	1	8/28/2007	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	8/28/2007	
2,4-Dinitrophenol	BQL	50.0	4.20	1	8/28/2007	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	8/28/2007	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	8/28/2007	
Diphenylamine *	BQL	10.0	1.53	1	8/28/2007	
Fluoranthene	BQL	10.0	1.41	1	8/28/2007	
Fluorene	**11.3**	10.0	1.22	1	8/28/2007	
Hexachlorobenzene	BQL	10.0	1.22	1	8/28/2007	
Hexachlorobutadiene	BQL	10.0	1.58	1	8/28/2007	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	8/28/2007	
Hexachloroethane	BQL	10.0	1.58	1	8/28/2007	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	8/28/2007	
Isophorone	BQL	10.0	1.27	1	8/28/2007	
Naphthalene	**31.6**	10.0	1.08	1	8/28/2007	
Nitrobenzene	BQL	10.0	1.32	1	8/28/2007	
2-Nitrophenol	BQL	10.0	3.52	1	8/28/2007	
4-Nitrophenol	BQL	50.0	3.17	1	8/28/2007	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	8/28/2007	
Pentachlorophenol	BQL	50.0	2.83	1	8/28/2007	
Phenanthrene	**13.7**	10.0	1.38	1	8/28/2007	

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTM234TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-17H
Lab Project ID: G650-122

Analyzed By: DCS
Date Collected: 8/22/2007 13:25
Date Received: 8/23/2007
Date Extracted: 8/24/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	10.0	3.38	1	8/28/2007	
Pyrene	BQL	10.0	2.08	1	8/28/2007	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	8/28/2007	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	8/28/2007	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.6	76
2-Fluorophenol	10	7.9	79
Nitrobenzene-d5	10	8.1	81
Phenol-d6	10	7.7	77
2,4,6-Tribromophenol	10	8.7	87
4-Terphenyl-d14	10	10.2	102

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

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

Reviewed By: _____

Results of Library Search for Semivolatile Compounds

by GCMS

Client Sample ID: USTM234TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-17H
Lab Project ID: G650-122
Sample Wt/Vol: 500 ML
Dilution: 1

Analyzed By: EAW
Date Collected: 8/22/2007 13:25
Date Received: 8/23/2007
Date Extracted: 8/24/2007
Date Analyzed: 8/28/2007
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Naphthalene, 1,3-dimethyl-	10.84	000575-41-7	97	68.5
2	Naphthalene, 2,7-dimethyl-	10.73	000582-16-1	97	56.2
3	Aromatic, Unknown	6.94			45.5
4	Pentadecane	11.07	000629-62-9	90	36.8
5	2,3-Dihydro-1-methylindene	8.21	027133-93-3	93	34.5
6	Pentadecane, 2,6,10,14-tetramethyl-	13.00	001921-70-6	98	33.2
7	Naphthalene, 1-ethyl-	10.62	001127-76-0	94	30.4
8	Naphthalene, 1,4,6-trimethyl-	11.57	002131-42-2	93	29.4
9	Naphthalene, 1,3-dimethyl-	11.02	000575-41-7	97	29.2
10	Naphthalene, 1,6,7-trimethyl-	11.91	002245-38-7	98	26.5

Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: _____

Results for Semivolatiles by GCMS 625

Client Sample ID: USTM232TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-18H
Lab Project ID: G650-122

Analyzed By: DCS
Date Collected: 8/22/2007 12:20
Date Received: 8/23/2007
Date Extracted: 8/27/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	**3.70**	10.0	1.22	1	8/28/2007	J
Acenaphthylene	BQL	10.0	1.12	1	8/28/2007	
Anthracene	**5.60**	10.0	1.75	1	8/28/2007	J
Benzo[a]anthracene	BQL	10.0	1.36	1	8/28/2007	
Benzo[a]pyrene	BQL	10.0	1.27	1	8/28/2007	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	8/28/2007	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	8/28/2007	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	8/28/2007	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	8/28/2007	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	8/28/2007	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	8/28/2007	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	8/28/2007	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	8/28/2007	
Butylbenzylphthalate	BQL	10.0	1.53	1	8/28/2007	
2-Chloronaphthalene	BQL	10.0	1.25	1	8/28/2007	
2-Chlorophenol	BQL	10.0	4.22	1	8/28/2007	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	8/28/2007	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	8/28/2007	
Chrysene	BQL	10.0	1.11	1	8/28/2007	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	8/28/2007	
Di-n-Butylphthalate	BQL	10.0	1.65	1	8/28/2007	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	8/28/2007	
2,4-Dichlorophenol	BQL	10.0	3.75	1	8/28/2007	
Diethylphthalate	**1.70**	10.0	1.48	1	8/28/2007	J
Dimethylphthalate	BQL	10.0	1.04	1	8/28/2007	
2,4-Dimethylphenol	BQL	10.0	9.25	1	8/28/2007	
Di-n-octylphthalate	BQL	10.0	1.16	1	8/28/2007	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	8/28/2007	
2,4-Dinitrophenol	BQL	50.0	4.20	1	8/28/2007	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	8/28/2007	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	8/28/2007	
Diphenylamine *	BQL	10.0	1.53	1	8/28/2007	
Fluoranthene	BQL	10.0	1.41	1	8/28/2007	
Fluorene	**5.60**	10.0	1.22	1	8/28/2007	J
Hexachlorobenzene	BQL	10.0	1.22	1	8/28/2007	
Hexachlorobutadiene	BQL	10.0	1.58	1	8/28/2007	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	8/28/2007	
Hexachloroethane	BQL	10.0	1.58	1	8/28/2007	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	8/28/2007	
Isophorone	BQL	10.0	1.27	1	8/28/2007	
Naphthalene	**56.9**	10.0	1.08	1	8/28/2007	
Nitrobenzene	BQL	10.0	1.32	1	8/28/2007	
2-Nitrophenol	BQL	10.0	3.52	1	8/28/2007	
4-Nitrophenol	BQL	50.0	3.17	1	8/28/2007	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	8/28/2007	
Pentachlorophenol	BQL	50.0	2.83	1	8/28/2007	
Phenanthrene	**5.60**	10.0	1.38	1	8/28/2007	J

Results for Semivolatiles by GCMS 625

Client Sample ID: USTM232TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-18H
Lab Project ID: G650-122

Analyzed By: DCS
Date Collected: 8/22/2007 12:20
Date Received: 8/23/2007
Date Extracted: 8/27/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	10.0	3.38	1	8/28/2007	
Pyrene	BQL	10.0	2.08	1	8/28/2007	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	8/28/2007	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	8/28/2007	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.4	74
2-Fluorophenol	10	9.1	91
Nitrobenzene-d5	10	8	80
Phenol-d6	10	7.7	77
2,4,6-Tribromophenol	10	8.8	88
4-Terphenyl-d14	10	10.4	104

Comments:

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

Flags:

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

Reviewed By: _____

Results of Library Search for Semivolatile Compounds

by GCMS

Client Sample ID: USTM232TB-TP01
Client Project ID: NV018
Lab Sample ID: G650-122-18H
Lab Project ID: G650-122
Sample Wt/Vol: 500 ML
Dilution: 1

Analyzed By: EAW
Date Collected: 8/22/2007 12:20
Date Received: 8/23/2007
Date Extracted: 8/27/2007
Date Analyzed: 8/28/2007
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Naphthalene, 2,3-dimethyl-	10.84	000581-40-8	97	38.9
2	Naphthalene, 1,6-dimethyl-	10.73	000575-43-9	97	32.1
3	Naphthalene, 1,5-dimethyl-	10.88	000571-61-9	96	28.1
4	Aromatic, Unknown	8.21			25.3
5	Aromatic, Unknown	11.90			24.1
6	Unknown	10.06			18.6
7	Naphthalene, 1-ethyl-	10.62	001127-76-0	94	17.4
8	Naphthalene, 2,3-dimethyl-	11.02	000581-40-8	97	17
9	Alkane, Unknown	13.00			17
10					

Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: _____

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information	
Sample Identification	USTM236TB-TP01
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/25/07 06:17 - 08/25/07 06:17
Date Analyzed	08/25/07 06:17 - 08/25/07 06:17
Dry Weight	NA
Dilution Factor	1 - 1

Analytical Results			
Analyte	Result µg/L	Report Limit µg/L	Flags
C_5-C_8 Aliphatics**	BQL	100	
C_9-C_{12} Aliphatics**	BQL	100	
C_9-C_{10} Aromatics**	BQL	100	

	Percent Recovery	Flags	Limits Lower	Limits Upper
Surrogate % Recovery - PID	103		70	130
Surrogate % Recovery - FID	104		70	130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g650-122-16g	Lab Info: g650-122-16g
FID Info: VP082407/043F0101.D	PID Info: VP082407/043R0101.D

Reviewed By: [signature]

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information	
Sample Identification	USTM234TB-TP01
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/25/07 06:44 - 08/25/07 06:44
Date Analyzed	08/25/07 06:44 - 08/25/07 06:44
Dry Weight	NA
Dilution Factor	1 - 1

Analytical Results			
Analyte	Result µg/L	Report Limit µg/L	Flags
C_5-C_8 Aliphatics**	BQL	100	
C_9-C_{12} Aliphatics**	230	100	
C_9-C_{10} Aromatics**	203	100	

	Percent Recovery	Flags	Limits Lower	Limits Upper
Surrogate % Recovery - PID	104		70	130
Surrogate % Recovery - FID	107		70	130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g650-122-17g	Lab Info: g650-122-17g
FID Info: VP082407/044F0101.D	PID Info: VP082407/044R0101.D

Reviewed By: [signature]

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information	
Sample Identification	USTM232TB-TP01
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/28/07 00:03 - 08/28/07 00:03
Date Analyzed	08/28/07 00:03 - 08/28/07 00:03
Dry Weight	NA
Dilution Factor	1 - 1

Analytical Results			
Analyte	Result µg/L	Report Limit µg/L	Flags
C_5-C_8 Aliphatics**	BQL	100	
C_9-C_{12} Aliphatics**	110	100	
C_9-C_{10} Aromatics**	BQL	100	

	Percent Recovery	Flags	Limits Lower	Limits Upper
Surrogate % Recovery - PID	90.0		70	130
Surrogate % Recovery - FID	91.2		70	130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g650-122-18e	Lab Info: g650-122-18e
FID Info: VP082707/034F0101.D	PID Info: VP082707/034R0101.D

Reviewed By: _____

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information	
Sample Identification	TRIP BLANK
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/27/07 12:33 - 08/27/07 12:33
Date Analyzed	08/27/07 12:33 - 08/27/07 12:33
Dry Weight	NA
Dilution Factor	1 - 1

Analytical Results			
Analyte	Result µg/L	Report Limit µg/L	Flags
C_5-C_8 Aliphatics**	BQL	100	
C_9-C_{12} Aliphatics**	BQL	100	
C_9-C_{10} Aromatics**	BQL	100	

	Percent Recovery	Flags	Limits Lower	Limits Upper
Surrogate % Recovery - PID	104		70	130
Surrogate % Recovery - FID	101		70	130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g650-122-19a	Lab Info: g650-122-19a
FID Info: VP082707/009F0101.D	PID Info: VP082707/009R0101.D

Reviewed By: BM

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information and Analytical Results	
Sample Identification	USTM236TB-TP01
Sample Matrix	Water
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/27/07
Date Analyzed	08/29/07
Dry Weight	
Dilution Factor	1:1
C_9-C_{18} Aliphatics*	660 (ug/L)
C_{19}-C_{36} Aliphatics*	< 100 (ug/L)
C_{11}-C_{22} Aromatics*	480 (ug/L)
Aliphatic Surrogate % Recovery	92
Aromatic Surrogate % Recovery	100
Fractionation Surrogate 1 % Recovery	87

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G650-122-16I

Reviewed By: [signature]

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information and Analytical Results	
Sample Identification	USTM234TB-TP01
Sample Matrix	Water
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/27/07
Date Analyzed	08/29/07
Dry Weight	
Dilution Factor	1:1
C_9-C_{18} Aliphatics*	< 100 (ug/L)
C_{19}-C_{36} Aliphatics*	< 100 (ug/L)
C_{11}-C_{22} Aromatics*	490 (ug/L)
Aliphatic Surrogate % Recovery	47
Aromatic Surrogate % Recovery	69
Fractionation Surrogate 1 % Recovery	90

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G650-122-17I

Reviewed By: [signature]

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Sovereign Consulting

Project Name: NV018

Sample Information and Analytical Results	
Sample Identification	USTM232TB-TP01
Sample Matrix	Water
Date Collected	08/22/07
Date Received	08/23/07
Date Extracted	08/27/07
Date Analyzed	08/29/07
Dry Weight	
Dilution Factor	1:1
C_9-C_{18} Aliphatics*	150 (ug/L)
C_{19}-C_{36} Aliphatics*	< 100 (ug/L)
C_{11}-C_{22} Aromatics*	480 (ug/L)
Aliphatic Surrogate % Recovery	87
Aromatic Surrogate % Recovery	87
Fractionation Surrogate 1 % Recovery	77

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G650-122-18K

Reviewed By: _____

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 08/22/07

Calibration Ranges and Limits

Range	MDL (10/2006) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C_9-C_{18} Aliphatics	28.10	89.4	100	10
C_{19}-C_{36} Aliphatics	36.50	116	100	10
C_{11}-C_{22} Aromatics	27.60	87.8	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C_9-C_{18} Aliphatics	6	20.50	Calibration Factor
	30		
	60		
	120		
	240		
C_{19}-C_{36} Aliphatics	8	19.7	Calibration Factor
	40		
	80		
	160		
	320		
C_{11}-C_{22} Aromatics	17	7.2	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 08/29/07

Calibration Check

Range	Levels (µg/mL)	RPD
C_9-C_{18} Aliphatics	120	9.8
C_{19}-C_{36} Aliphatics	160	9.4
C_{11}-C_{22} Aromatics	340	2.6

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

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SGS ENVIRONMENTAL SERVICES, INC.

(1)
CLIENT: Sovereign Consulting Inc.
CONTACT: Kurt Merkle PHONE NO: (910) 358-0555
PROJECT: NV018 SITE/PWSID#: Bldg M232-6
REPORTS TO: C. Murray, 435 Oakmears Crescent Suite 2, VA Beach, VA E-MAIL: cmurray@sovcon.com aweir@sovcon.com
FAX NO.:( )
INVOICE TO: Above Address QUOTE #
P.O. NUMBER NV018

SGS Reference: G650-122 PAGE 1 OF

(2) (3)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	GRO	DRO	% Solids								REMARKS
	USTM232TB-SB01	8/21/07	0830	Soil	3	G	X	X	X								
	USTM232TB-SB02		0853		3												
	USTM232TB-SB05		1020		3												
	USTM232TB-SB06		1200		2												
	USTM232TB-SB07		1215		2												
	USTM236TB-SB01		1250		2												
	USTM236TB-SB02		1305		2												
	USTM236TB-SB03		1325		2												
	UST M236TB-SB05		1418		2												
	UST M236TB-SB04		1345		2												

(5)

Collected/Relinquished By:	Date	Time	Received By:	Date	Time
(1) [signature]	8/23/07	1230			
(2)					
(3)					
(4)			[signature]	8/23/07	1230

(4)
Shipping Carrier:
Shipping Ticket No:
Samples Received Cold? (Circle) YES NO
Temperature °C: 4.6
Special Deliverable Requirements: EDD Format
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Special Instructions: Email Report to above email addresses
Requested Turnaround Time: ☐ RUSH ______ Date Needed ☒ STD

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(1)

CLIENT: Sovereign Consulting Inc.

CONTACT: Kurt Merkle PHONE NO:(910) 3580555

PROJECT: NV018 SITE/PWSID#: Bldg M232-6

REPORTS TO: C. Murray E-MAIL: cmurray@soucon.com
425 Oakmeans Crescent Suite 1 aweir@soucon.com
VA Beach, VA 2 FAX NO.:( )

INVOICE TO: Abac. Address QUOTE #

P.O. NUMBER NV018

SGS Reference:

PAGE 2 OF

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP G=GRAB)	Preservatives Used	Analysis Required (3) GRO	DRO	% Solids	8260 + 602 w/xylenes	625 + 10 TIC	VPH + EPH	REMARKS
	USTM234TB-SB01	8/21/07	1457	Soil	2	G		X	X	X				
	UST M234TB-SB02		1530		2									
	UST M234TB-SB03		1550		2									
	UST M234TB-SB04		1610		2									
	UST M234TB-SB05		1640		2									
	UST M236TB-TP01	8/22/07	1435	GW	7	G				X	X	X		
	UST M234TB-TP01		1325											
	UST M232TB-TP01		1220											
	~~UST M233TB-TP01~~													
	TRIP Blank			GW	2	G				X		X		

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
Kurt Merkle	8/23/07	1230		8/23/07	1230
Relinquished By: (2)	Date	Time	Received By:	Date	Time
Relinquished By: (3)	Date	Time	Received By:	Date	Time
Relinquished By: (4)	Date	Time	Received By:	Date	Time

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 4.6 °F:

Special Deliverable Requirements: EDD Format

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions: Email Report to abac email addresses

Requested Turnaround Time:

☐ RUSH _____ Date Needed ☒ STD

N.C. CERTIFICATION #481

SGS ENVIRONMENTAL SERVICES, INC.

☐ 200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
☐ 5500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1557
☐ 1270 Greenbrier Street **Charleston, WV 25311** Tel: (304) 346-0725 Fax: (304) 346-0761

White - Retained by Lab
Yellow - Returned with Report
Pink - Retained by Sampler

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CLIENT: Sovereign Consulting Inc

CONTACT: Kurt Merkle PHONE NO:(410) 3580555

PROJECT: NV018 SITE/PWSID#: Bldg M232-6

REPORTS TO: C. Murray E-MAIL: cmurray@soucon.com
425 Oak Leaves Crescent Suite 1 qweir@soucon.com
VA Beach, VA 2 FAX NO.:( )

INVOICE TO: Abov. Address QUOTE #

P.O. NUMBER NV018

SGS Reference:

PAGE 3 OF 3

2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used	Analysis Required (3) GRO	DRO	TCLP Solids	REMARKS
	USTM233TB-SB01	8/22/07	0845	Soil	2	G		X	X	X	
	USTM233TB-SB02		0915								
	USTM233TB-SB03		0925								
	USTM233TB-SB04		0945								
	USTM233TB-SB05		1010								
	TRIP Blank			Soil	1	G		X			

5

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
	8/23/07	123		8/23/07	1230
Relinquished By: (2)	Date	Time	Received By:	Date	Time
Relinquished By: (3)	Date	Time	Received By:	Date	Time
Relinquished By: (4)	Date	Time	Received By:	Date	Time

4

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 4.6 °F:

Special Deliverable Requirements: EDD Format

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions: Email Report to above address

Requested Turnaround Time:

☐ RUSH _____ Date Needed ☒ STD

N.C. CERTIFICATION #481

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61 of 61

White - Retained by Lab
Yellow - Returned with Report
Pink - Retained by Sampler