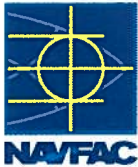


FINAL ANNUAL GROUNDWATER MONITORING REPORT 2009

AS-843

NCDENR Incident Number: 21272
Marine Corps Air Station New River
Jacksonville, North Carolina

Prepared for:



Mr. David Borton
Naval Facilities Engineering Command Mid-Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278



Mr. Thomas Burton, P.E.
I&E/EMD/EQB
Building 12, Post Lane
MCB Camp Lejeune, NC 28542

And in cooperation with



Osage of Virginia
2618A Colley Avenue
Norfolk, Virginia 23517-1132

Contract No. N40085-06-D-7006
Contract Task Order 0015

June 2009

Prepared by:



P. O. Box 10279
Wilmington, North Carolina 28404-0279
(910) 452-5861

NC Engineering License No.: C-0585

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
TITLE PAGE	3
1.0 INTRODUCTION	4
2.0 SITE HISTORY	4
3.0 GAUGING AND SAMPLING RESULTS	5
3.1 WELL GAUGING	5
3.2 GROUNDWATER SAMPLING	6
4.0 RECEPTOR SURVEY	8
5.0 CONCLUSIONS AND RECOMMENDATIONS	8
6.0 REFERENCES	10

TABLES

TABLE 3-1	GROUNDWATER ELEVATION AND PRODUCT THICKNESS DATA
TABLE 3-2	MONITORING WELL CONSTRUCTION INFORMATION
TABLE 3-3	SUMMARY OF GROUNDWATER LABORATORY RESULTS – JULY 2008 – EPA METHOD 602, 625 AND MADEP EPH/VPH

FIGURES

FIGURE 2-1	SITE LOCATION MAP
FIGURE 3-1	SITE MAP WITH MONITORING WELL LOCATIONS
FIGURE 3-2	GROUNDWATER ELEVATIONS – JULY 2008
FIGURE 3-3	SITE MAP WITH JULY 2008 GROUNDWATER RESULTS

APPENDICES

APPENDIX A	HISTORICAL DATA
APPENDIX B	LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

LIST OF ACRONYMS

BLS	Below Land Surface
DO	Dissolved Oxygen
DTW	Depth to Water
EMD	Environmental Management Division
EPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
EQB	Environmental Quality Branch
FT	Feet
GCL	Gross Contaminant Level
I&E	Installations and Environment Department
MADEP	Massachusetts Department of Environmental Protection
MCAS	Marine Corps Air Station
MSCC	Maximum Soil Contaminant Concentration
NAVFAC	Naval Facilities Engineering Command Atlantic
NC	North Carolina
NCDENR	North Carolina Department of Environment and Natural Resources
2L GWQS	NCAC T15A:02L Groundwater Quality Standards
NFA	No Further Action
NTU	Nephelometric Turbidity Units
SVOC	Semi Volatile Organic Compound
TIC	Tentatively Identified Compound
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VPH	Volatile Petroleum Hydrocarbons

EXECUTIVE SUMMARY

The subject site AS-843, NCDENR Incident #21272, is located aboard Marine Corps Air Station (MCAS) New River in Jacksonville, North Carolina. The site is located in the central portion of the air station and functions as the airfield operations building. The site was identified in September 1992 as a result of tank removal actions. One 550-gallon diesel UST and one 1,000-gallon diesel UST were excavated and removed from the site. Various historical documents differ in reporting of the actual tank capacities. The removal report states that associated piping was either excavated or rendered unusable. The completed excavation measured approximately 14 feet by 14 feet and extended to a depth of approximately eight feet below land surface (BLS). Free product was observed during the removal action; therefore, soil samples were not submitted for laboratory analysis. It was uncertain from the report if the excavation was backfilled with clean soil or the native overburden.

A Three Well Site Check report was conducted at the site in June 1993. Three shallow, monitoring wells, MW-01, MW-02, and MW-03, were installed around the former USTs, outside the tank excavation. Analysis of vadose zone soil samples collected during installation of the wells indicated Total Petroleum Hydrocarbons (TPH) were not present at detectable concentrations. No measurable free product was observed in the wells. The only groundwater contaminants detected were Naphthalene and Bis(2-ethylhexyl)phthalate. The detections were above North Carolina 2L Groundwater Quality Standards (2L GWQSs). An additional well was installed in the former tank basin in 1995 to determine if product was still present in the excavation area and to analyze groundwater for the previously identified contaminants. Diesel contamination was identified in soils and groundwater contaminants were identified above 2L GWQSs in the immediate vicinity of the tanks. The report recommended quarterly monitoring of the wells.

Additional site assessments were done at the site to include soil sampling and risk characterization. LAW Engineering and Environmental Services, Inc. completed a Site Closure Report for the site and concluded AS-843 met criteria to be a low risk site with an industrial/commercial land use classification.

The site has been gauged and monitored by various environmental contractors since the site investigations. Monitoring well MW05 (deep well) was installed in August 2000 as part of the monitoring programs. Free product was identified at the site in January 1998, October 2000, November 2004, and most recently as July 2008.

Engineering and Environment, Inc. (EEI) and Sovereign Consulting Inc. (Sovereign) monitored the site prior to Osage of Virginia (Osage). The EEI October 19, 2005 annual report detailed gauging and sampling activities from November 2004 through August of 2005. The report indicated measurable free product only in November 2004. In addition, historical data showed soils were below Industrial/Commercial Maximum Soil Contaminant Concentrations (MSCCs), and groundwater contaminants were observed to be above the 2L GWQS as implemented in 15A NCAC 2L .0202, but below gross contaminant levels (GCLs).

Sovereign began monitoring the site beginning in October 2005. The first monitoring period, 2005-2006, included quarterly gauging of site wells. Sovereign did not detect measurable free product at the AS-843 site during the 2005-2006 monitoring period. The 2005-2006 monitoring report indicated that there had been six consecutive quarters without the presence of free product. The report also stated, however, that a sheen was observed at the site (in MW04) during the October and April gauging events. Sovereign recommended the continued gauging and sampling of site wells.

During the July 2006 - May 2007 monitoring period, Sovereign gauged five site monitoring wells and conducted one annual sampling event. Groundwater samples were analyzed for volatiles and semi-volatile compounds via EPA Methods 6210D and 625 in accordance with the program scope of work, as well as volatile and extractable hydrocarbons using the Massachusetts Department of Environmental Protection (MADEP) Methods. An oily sheen was noted in MW03 and MW04 during the July 2006 gauging event. In addition, groundwater contaminants were detected in monitoring wells MW02, MW03, and MW04 above 2L GWQSs. As a result of the sheen and contaminant concentrations exceeding the 2L GWQSs, Sovereign again recommended continued gauging and sampling of monitoring wells MW01 through MW05. NCDENR, however, classified the site as being a candidate for closure with the implementation of a Notice of Residual Petroleum (NRP) via an email to the Base Environmental Management Division (EMD) dated July 10, 2007.

Osage was tasked to monitor the site beginning in July 2008. The monitoring included gauging and sampling site monitoring wells once in July 2008. Osage detected measurable free product in well MW04 during the July 2008 monitoring period. Consequently, monthly well gauging and free product recovery was initiated beginning February 2009.

Groundwater samples collected during the 2008-2009 monitoring period were analyzed for EPA 602, EPA 625, and MADEP EPH/VPH. Monitoring well MW03 contained noncompliant concentrations of Bis(2-ethylhexyl)phthalate and C₉-C₂₂ Aromatics. Well MW05 contained noncompliant concentrations of Naphthalene and C₉-C₂₂ Aromatics. All other detections were either less than the applicable 2L GWQSs or Below Method Detection Limits (BMDL), and none of the concentrations were above the GCLs, where established.

This site was classified by NCDENR as a low risk site; however, due to the presence of free product in monitoring well MW04 (July 2008), an intermediate risk classification, at a minimum, should be assigned. Since free product has been observed and groundwater contaminant concentrations above the 2L GWQSs remain at the site, Osage recommends continued monthly gauging (and product recovery as applicable) along with annual groundwater sampling of all site monitoring wells.

TITLE PAGE

DATE OF REPORT: June 2009

Facility I.D.: N/A

NCDENR Incident Number: 21272

Site Name: AS-843

Site Location: Marine Corps Air Station New River, Jacksonville, North Carolina

Nearest City/Town: Jacksonville

County: Onslow

Risk Classification: Intermediate Risk

Land Use Classification: Industrial/Commercial

Property Owner: Commanding Officer – MCB Camp Lejeune
I&E/EMD/EQB
PSC Box 20004

Address: MCB Camp Lejeune, NC 28542-0004

Phone: (910) 451-5068

Tank Owner: Same as above

Address: Same as above

Phone: Same as above

Property Occupant: Same as above

Address: MCB Camp Lejeune, NC

Phone: None

Consultant/Contractor: CATLIN Engineers and Scientists

Address: 220 Old Dairy Rd.
Wilmington, NC 28405
Phone: (910) 452-5861

Osage of Virginia
2618A Colley Ave
Norfolk, VA 23517
Phone: (757) 440-0400

Release Information

Date Discovered: 1992

Northing:
3843587.14m

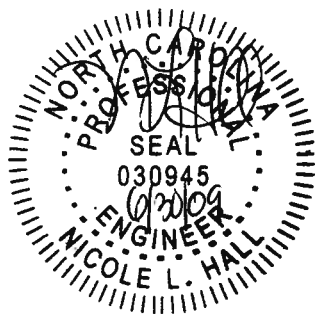
Easting:
277157.54m

Estimated Quantity of Release: Unknown

Cause of Release: Leaking underground storage tank system

Source of Release (Piping/UST): UST and associated system

Sizes and contents of UST system(s) from which the release occurred: The former UST was a 1000-gallon and 550-gallon diesel tank.



I, Nicole L. Hall, a Professional Engineer for CATLIN Engineers and Scientists do certify that the information contained in this report is correct and accurate to the best of my knowledge.

1.0 INTRODUCTION

The purpose of this report is to summarize data from recent monitoring at the AS-843 site aboard MCAS New River in Jacksonville, North Carolina. This data was collected in July 2008. The project's scope of work entailed gauging and sampling of five site monitoring wells (each are preceded by the prefix USTAS843) – MW01-MW05 during the monitoring event. Analyses run included EPA Methods 602 + Xylenes, 625 + 10 largest non-target peaks, and the MADEP EPH/VPH methods. Results of Osage's 2008 gauging and sampling event are presented in this report.

2.0 SITE HISTORY

The subject site, NCDENR Incident #21272, is located aboard MCAS New River in Jacksonville, North Carolina. The site is located in the central portion of the air station and functions as the airfield operations building (Figure 2-1). The site was identified in September 1992 as a result of tank removal actions. One 550-gallon diesel UST and one 1,000-gallon diesel UST were excavated and removed from the site. Various historical documents differ in reporting of the actual tank capacities. The removal report states that associated piping was either excavated or rendered unusable. The completed excavation measured approximately 14 feet by 14 feet and extended to a depth of approximately eight feet BLS. Free product was observed during the removal action; therefore, soil samples were not submitted for laboratory analysis. It was uncertain from the report if the excavation was backfilled with clean soil or the native overburden.

A Three Well Site Check report was conducted at the site in June 1993. Three shallow, monitoring wells, MW-01, MW-02, and MW-03, were installed around the former USTs, outside the tank excavation. Analysis of vadose zone soil samples collected during installation of the wells indicated TPH were not present at detectable concentrations. No measurable free product was observed in the wells. The only groundwater contaminants detected were Naphthalene and Bis(2-ethylhexyl)phthalate. The detections were above 2L GWQSs. An additional well was installed in the former tank basin in 1995 to determine if product was still present in the excavation area and to analyze groundwater for the previously identified contaminants. Diesel contamination was identified in soils and groundwater contaminants were identified above 2L standards in the immediate vicinity of the tanks. The report recommended quarterly monitoring of the wells.

Additional site assessments were done at the site to include soil sampling and risk characterization. LAW Engineering and Environmental Services, Inc. completed a Site Closure Report for the site and concluded AS-843 meets criteria to be a low risk site with an industrial/commercial land use classification. Supporting historical information is attached.

The site has been gauged and monitored by various environmental contractors since the site investigations. Monitoring well MW05 (deep well) was installed in August 2000 as part of the monitoring programs. Free product was identified at the site in January 1998, October 2000, and November 2004.

EEI then monitored the site. Their October 19, 2005 annual report detailed gauging and sampling activities from November 2004 through August of 2005. The report indicated measurable free product only in November 2004. In addition, historical data showed soils were below Industrial/Commercial MSCCs, and groundwater contaminants were observed to be above the 2L GWQSs, but below GCLs.

Sovereign began monitoring the site beginning in October 2005. The first monitoring period, 2005-2006, included quarterly gauging of site wells. Sovereign did not detect measurable free product at the AS-843 site during the 2005-2006 monitoring period. The 2005-2006 monitoring report indicated that there had been six consecutive quarters without the presence of free product. The report also stated that a sheen was observed at the site (in MW04) during the October and April gauging events. Sovereign recommended the continued of gauging and sampling of site wells on a semi-annual and biennial basis, respectively.

During the July 2006 - May 2007 monitoring period, Sovereign gauged five site monitoring wells and conducted one annual sampling event. Gauging events were conducted in July 2006, October 2006, and January 2007. The sampling event was conducted in July 2006. Groundwater samples were analyzed for volatiles and semi-volatile compounds via EPA Methods 6210D and 625 in accordance with the program scope of work, as well as volatile and extractable hydrocarbons using the MADEP Methods. An oily sheen was noted in MW03 and MW04 during the July 2006 gauging event. In addition, groundwater contaminants were detected in monitoring wells MW02, MW03, and MW04 above 2L GWQSs. As a result of the sheen and contaminant concentrations exceeding the 2L GWQSs, Sovereign recommended continued gauging and sampling of wells MW01 through MW05 at the site. NCDENR, however, classified the site as being a candidate for closure with the implementation of a NRP via an email to the Base EMD dated July 10, 2007.

Osage assumed monitoring at the site beginning in July 2008. The scope of work included gauging and sampling site monitoring wells once in July 2008. Groundwater samples collected during the event were analyzed for EPA 602, EPA 625, and MADEP EPH/VPH. This report outlines and describes site activities as performed by Osage during the 2008-2009 monitoring period.

3.0 GAUGING AND SAMPLING RESULTS

The 2008 - 2009 field program for the AS-843 site consisted of one monitoring event in July 2008 and monthly gauging of monitoring wells starting in February 2009. Activities were conducted in accordance with NCDENR guidance.

3.1 WELL GAUGING

Monitoring wells MW01 through MW05 were gauged on July 16, 2008 and then monthly starting in February 2009. Monitoring well locations are shown on Figure 3-1. Gauging data is summarized in Table 3-1. Wells were gauged using an interface probe to measure the depth to water and depth to product (if present). Depth to water values ranged from 4.30 feet to 7.21 feet below TOC. Free product, in the amount of 0.05 feet, was detected in monitoring

well MW04 during the July 16, 2008 monitoring event. Consequently the free product was removed from the well via peristaltic pump and disposed of at Camp Lejeune's Environmental Management Division, Resource Conservation and Recovery Section (RCRS), Building 977. No measurable free product was encountered during the remainder of the gauging events. A product sheen was visible in monitoring well MW04 during the February, March, April, and May 2009 gauging events.

Top of casing elevations and DTW values were used to obtain groundwater elevations at the site, well construction details are summarized in Table 3-2. Figure 3-2 shows shallow groundwater elevations in July 2008. From the map, groundwater generally flows toward the Northwest, which differs with the (Northeast) direction observed from previous investigations. Monitoring well MW04 was not used in the groundwater elevation calculation due to the presence of free product, so this explains the reason for the difference. Calculation of groundwater elevations from February through May 2009 indicates the typical Northeast groundwater flow direction.

3.2 GROUNDWATER SAMPLING

Groundwater sampling was also conducted at the site. The sampling was conducted in July 2008 and involved the sampling of wells MW01, MW02, MW03, and MW05. Free product was encountered in monitoring well MW04 during the July 2008 monitoring event; therefore, a groundwater sample was not collected from this well.

One duplicate sample was collected from well MW05 and a laboratory supplied trip blank was submitted for analysis. Prior to sampling, wells were purged of one well casing volume of water using a peristaltic pump with connected polyethylene discharge tubing and a low flow purging and sampling procedure. Purging of the wells was completed using the techniques described in the NCDENR UST Section *Guidelines for Sampling, Version 1.2*, dated September 1, 2003. Specifically, Osage field personnel followed purging completion criteria detailed in Appendix F of the *Guidelines for Sampling*. One option of these criteria state that adequate purging is achieved when three consecutive measurements in which the three parameters listed below are within the stated limits, dissolved oxygen is no greater than 20 percent of saturation at the field measured temperature, and turbidity is no greater than 20 Nephelometric Turbidity Units (NTUs):

1. Temperature: +/- 0.2° C
2. pH: +/- 0.2 Standard Units
3. Specific Conductance: +/- 5.0% of reading

This method is used in order to make the most efficient use of time when sampling. As in any scenario, professional judgment is also relied upon in the field during gauging and sampling events. Water quality indicator parameters (pH, temperature, conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity) were measured and recorded. If a well purged to dryness, the well was allowed to recharge before sampling.

Samples were collected after purging using the laboratory-prepared sample bottles, placed on ice, and shipped under proper chain of custody to SGS Environmental Services Inc. (SGS) in Wilmington, North Carolina (NC Certification Number 481). The lab tested the groundwater samples for volatiles via EPA Method 602, semivolatiles using EPA Method 625, and volatile and extractable petroleum hydrocarbons with the MADEP methods. Laboratory reports and chain of custody documentation are included in Appendix B.

Groundwater monitoring well MW01 did not exhibit target analytes above the laboratory reporting limits. The wells that contained detectable contaminant concentrations were MW02, MW03, and MW05.

No volatile compounds (EPA Method 602) were detected in groundwater collected from the wells. Volatile organic compound results are summarized in Table 3-3 and shown on Figure 3-3.

Seven semi-volatile compounds (Acenaphthene, Bis(2-ethylhexyl)phthalate, Diethylphthalate, Flouanthene, Flourene, Naphthalene, and Phenanthrene) were detected at the site during the July 2008 groundwater sampling event. Acenaphthene, Diethylphthalate, Flouanthene, Flourene, and Phenanthrene were detected at concentrations well below the applicable 2L GWQSs. Naphthalene, however, was detected in MW05 at a concentration of 139 µg/L, which is above 2L GWQS of 21 µg/L. Bis(2-ethylhexyl)phthalate was also detected in site groundwater above groundwater standards at an estimated concentration of 2.97 µg/L in MW03. This concentration is slightly above the 2L GWQS of 2.5 µg/L.

Monitoring well MW01 did not contain any tentatively identified compounds (TICs). Monitoring wells MW02, MW03, and MW05 exhibited one or more tentatively identified compounds (TICs). TICs are substances not on the target compound list, and not all TICs are identified and quantified using individual standards. All TIC quantifications are estimated. Monitoring well MW02 contained 1 known TIC with a total concentration of 53.15 µg/L. Monitoring well MW03 contained 2 known TICs with a total concentration of 174.9 µg/L. Monitoring well MW05 contained 5 known TICs with a total concentration of 551 µg/L. Semi-volatile compound results are summarized in Table 3-3 and shown on Figure 3-3.

MADEP constituents were detected in only monitoring wells MW03 and MW05. There were no detections of either C₅-C₈ Aliphatics or C₁₉-C₃₆ Aliphatics. C₉-C₁₈ Aliphatics were only detected in monitoring well MW03 at a concentration of <329 µg/L, which is below the 2L GWQS of 4,200 µg/L. Also, C₉-C₂₂ Aromatics were detected in monitoring wells MW03 (<233 µg/L) and MW05 (306 µg/L), exceeding the 2L GWQS of 210 µg/L. MADEP compound results are summarized in Table 3-3 and shown on Figure 3-3.

The duplicate sample was obtained from monitoring well MW05. The duplicate results closely mirrored the named groundwater sample results. The laboratory supplied trip blank was also free of target analytes.

Overall, the site continues to display a downward trend in contaminant concentrations. The number of volatiles detected at the site has decreased from thirteen in July 2006 to zero in July 2008. Semi-volatile contamination in groundwater at the site remains, with seven compounds being detected during this monitoring period versus only four compounds in 2006. MADEP constituents at the site were relatively unchanged; however, monitoring wells MW03 and MW05 contained noncompliant concentrations of C₉-C₂₂ Aromatics. Refer to Appendix A for historical data.

Current monitoring data from the July 2008 event shows that groundwater contaminant concentrations remain well below GCLs.

4.0 RECEPTOR SURVEY

Osage reassessed site conditions. There has been no change in receptor impact during the current monitoring period, and there have been no changes to land use of the site or the immediate surrounding areas. Free product was detected in July 2008 in monitoring well MW04; therefore, the risk ranking should be elevated to intermediate, at a minimum.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on historical data and data gathered during the 2008-2009 monitoring period, the following conclusions and recommendations are presented:

1. Groundwater elevations from the July 2008 gauging and sampling event indicate that groundwater generally flows toward the Northwest, which differs with the (Northeast) direction observed from previous investigations. Monitoring well MW04 was not used in the groundwater elevation calculation due to the presence of free product. Groundwater elevation calculations from February through May 2009 indicate the typical Northeast groundwater flow direction. Depth to water values ranged from 4.30 feet to 7.21 feet below TOC during the monitoring period.
2. Free product was only detected in monitoring well MW04 during the July 2008 sampling event. The free product was removed via peristaltic pump.
3. Two monitoring wells at the site, MW03 and MW05, exhibited contaminant concentrations above 2L GWQSs. Both monitoring wells MW03 and MW05 contained noncompliant concentrations of C₉-C₂₂ Aromatics. Well MW03 contained Bis(2-ethylhexyl)phthalate at an estimated concentration of 2.97 µg/L, above the 2L GWQS of 2.5 µg/L, and monitoring well MW05 contained Naphthalene at a concentration exceeding the 2L GWQS of 21 µg/L. None of the detected contaminant concentrations, however, were above the GCLs, where established.

Osage recommends that MCB Camp Lejeune continue annual groundwater sampling of wells USTAS843-MW01 through USTAS843-MW05 and monthly gauging (with free product recovery as needed) of all site monitoring wells. Monitoring wells should be sampled for EPA Method 602, EPA Method 610, and volatile and extractable petroleum hydrocarbons with the MADEP methods.

6.0 REFERENCES

Engineering and Environment, Inc., *Annual Groundwater Monitoring Report, 2004-2005, Site AS-843, Marine Corps Air Station New River, North Carolina, Revision 0*, October 19, 2005.

Groundwater Technology Government Services, Inc., *Three Well Site Check Report Building AS-843, Marine Corps Air Station, New River*, October 14, 1993.

Law Engineering and Environmental Services, Inc., *Leaking Underground Storage Tank Natural Attenuation Sites "No Further Action" Data Evaluation*, April 13, 1999.

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

North Carolina Department of Environment and Natural Resources, Division of Waste Management, Underground Storage Tank Section, *Guidelines for Sampling, Version 1.2*, September 1, 2003.

Sovereign Consulting, Inc., *FINAL - Annual Monitoring Report, AS-843, Marine Corps Air Station New River, Jacksonville, North Carolina*, June 19, 2006.

Sovereign Consulting, Inc., *FINAL - Annual Monitoring Report, AS-843, Marine Corps Air Station New River, Jacksonville, North Carolina*, June 14, 2007.

TABLES

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Table 3-1
Groundwater Elevation and Product Thickness Data
AS-843
MCAS New River
Jacksonville, North Carolina

Monitoring Well	Top Of Casing Elevation (ft msl)	Well Type	Depth to Product	Depth to Water	Groundwater Elevation	Depth to Product	Depth to Water	Groundwater Elevation	Depth to Product	Depth to Water	Groundwater Elevation	Depth to Product	Depth to Water	Groundwater Elevation	Depth to Product	Depth to Water	Groundwater Elevation
			7/16/2008			2/11/2009			3/2/2009			4/17/2009			5/1/2009		
USTAS843-MW01	12.72	II	NA	6.81	5.91	NA	5.28	7.44	NA	5.54	7.18	NA	4.38	8.34	NA	5.7	7.02
USTAS843-MW02	13.2	II	NA	6.50	6.70	NA	4.38	8.82	NA	5.07	8.13	NA	4.08	9.12	NA	5.33	7.87
USTAS843-MW03	13.22	II	NA	6.22	7.00	NA	4.78	8.44	NA	5.25	7.97	NA	4.52	8.7	NA	5.5	7.72
USTAS843-MW04	13.03	II	4.25*	4.30	8.73	NA	2.60	10.43	NA	2.79	10.24	NA	1.68	11.35	NA	2.59	10.44
USTAS843-MW05	12.95	III	NA	7.21	5.74	NA	5.52	7.43	NA	5.89	7.06	NA	5.01	7.94	NA	5.85	7.1

TOC = Top of Casing

msl = mean sea level

NA = Not Applicable

NM = Not Measured

* Free product was removed via peristaltic pump

Table 3-2
Monitoring Well Construction Summary
AS-843
MCAS New River
Jacksonville, North Carolina

Monitoring Well	Installation Date	Well Depth* (feet below TOC)	Top of Casing Elevation (ft msl)	Well Type
USTAS843-MW01	6/24/1993	16.65	12.72	II
USTAS843-MW02	6/25/1993	18.42	13.2	II
USTAS843-MW03	6/24/1993	16.52	13.22	II
USTAS843-MW04	7/20/1995	12.20	13.03	II
USTAS843-MW05	10/1/2000	26.80	12.95	III

* Total well depth measured 7/16/2008

TABLE 3-3
SUMMARY OF GROUNDWATER LABORATORY RESULTS - July 2008
EPA METHOD 602, 625, and MADEP EPH/VPH

Incident Name and No.: 21272 AS-843

Well ID	Contaminant of Concern →		EPA 602	EPA 625									MADEP EPH/VPH			
			All 602 Method Analytes	Acenaphthene	Bis(2-ethylhexyl)phthalate	Diethylphthalate	Flouranthene	Flourene	Naphthalene	Phenanthrene	All Other 625 Method Analytes	TICs Total	C5-C8 Aliphatics	C19-C36 Aliphatics	C9-C18 Aliphatics	C9-C22 Aromatics
	Sample ID	Date Collected														
GCL (µg/L)			Varies	2,120	2,500	NE	280	950	15,500	410	Varies	NE	NE	NE	NE	NE
2L GWQS (µg/L)			Varies	80	2.5	5,000	280	280	21	210	Varies	NE	420	42,000	4,200	210
USTAS843-MW01	USTAS843-MW01	7/16/2008	BMDL	<0.810	0.707J	<0.804	<0.766	<0.788	<0.989	<0.484	BMDL	0.00	<100	<100	<200	<200
USTAS843-MW02	USTAS843-MW02	7/16/2008	BMDL	1.89J	0.547J	0.973J	<0.858	<0.882	<1.11	<0.541	BMDL	53.15	<100	<100	<200	<200
USTAS843-MW03	USTAS843-MW03	7/16/2008	BMDL	3.33J	2.97J	0.859J	1.06J	2.87J	1.56J	0.806J	BMDL	174.9	<100	<100	<329	<233
USTAS843-MW05	USTAS843-MW05	7/16/2008	BMDL	7.43	1.86J	1.32J	<0.884	2.75J	139	0.898J	BMDL	551	<100	<100	<200	306
DUPLICATE	DUPLICATE	7/16/2008	BMDL	7.26	<0.448	0.873J	<0.770	2.57J	137	<0.486	BMDL	578.9	<100	<100	<200	<309
TRIP BLANK	TRIP BLANK	7/16/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

All results in micrograms per liter (µg/L).

Bold results indicate concentrations above 2L GWQS

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A.02L Groundwater Quality Standards

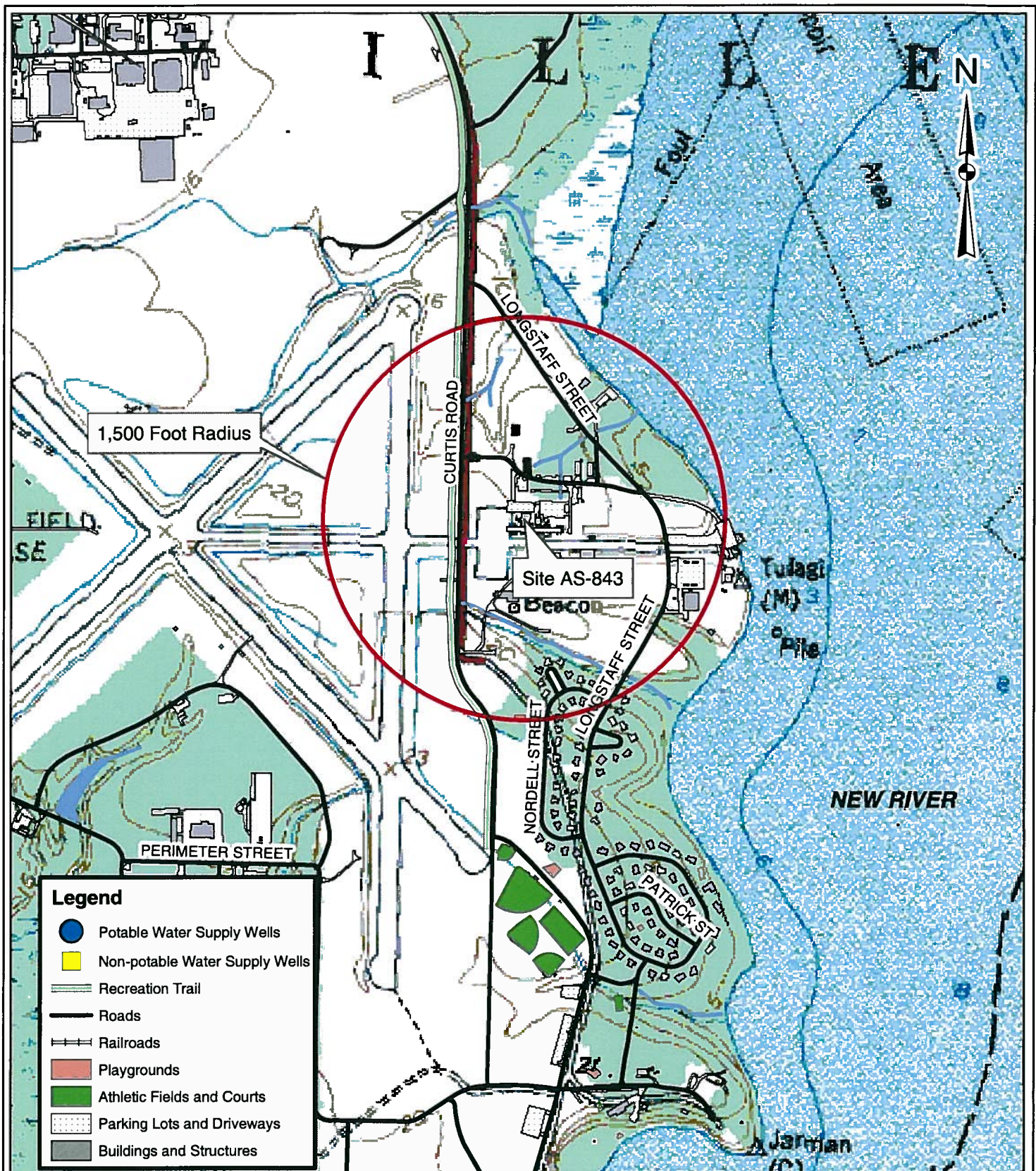
BMDL = Below Method Detection Limits

NA = Not Analyzed

NE = Not Established

J = Estimated concentration, below the calibration range and above the method detection limit

FIGURES



Prepared in cooperation with:

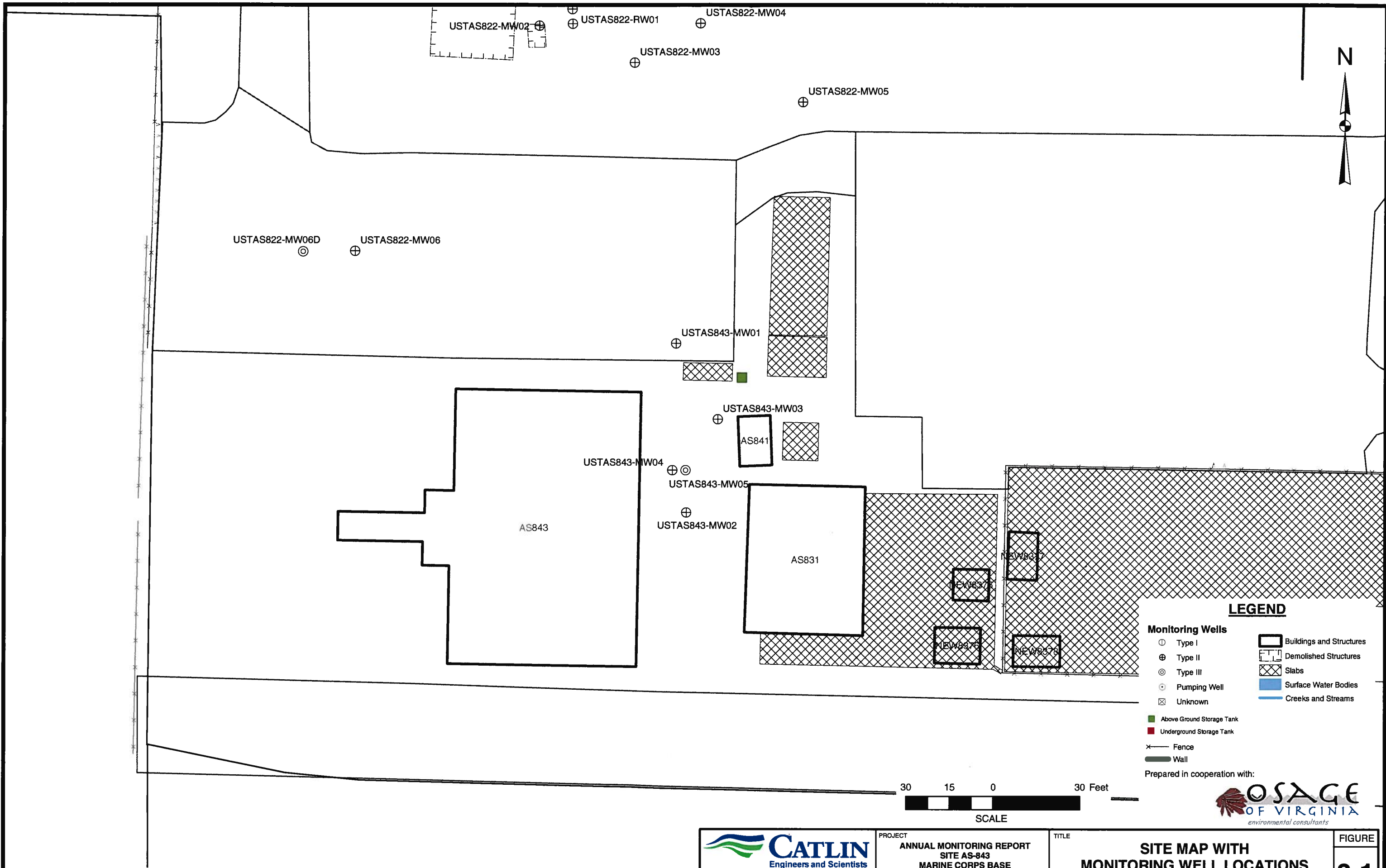


1,000 500 0 1,000 Feet

SCALE

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

 CATLIN Engineers and Scientists P.O. Box 10279 Wilmington, NC 28404-0279 (910) 452-5861 NC Engineering License No.: C-0585	PROJECT ANNUAL MONITORING REPORT SITE AS-843 MARINE CORPS BASE CAMP LEJEUNE, NC		TITLE SITE LOCATION MAP		FIGURE 2-1
	JOB NO. 209-035	DATE JUNE 2009	SCALE AS SHOWN	DRAWN BY SAC	CHECKED BY SCW

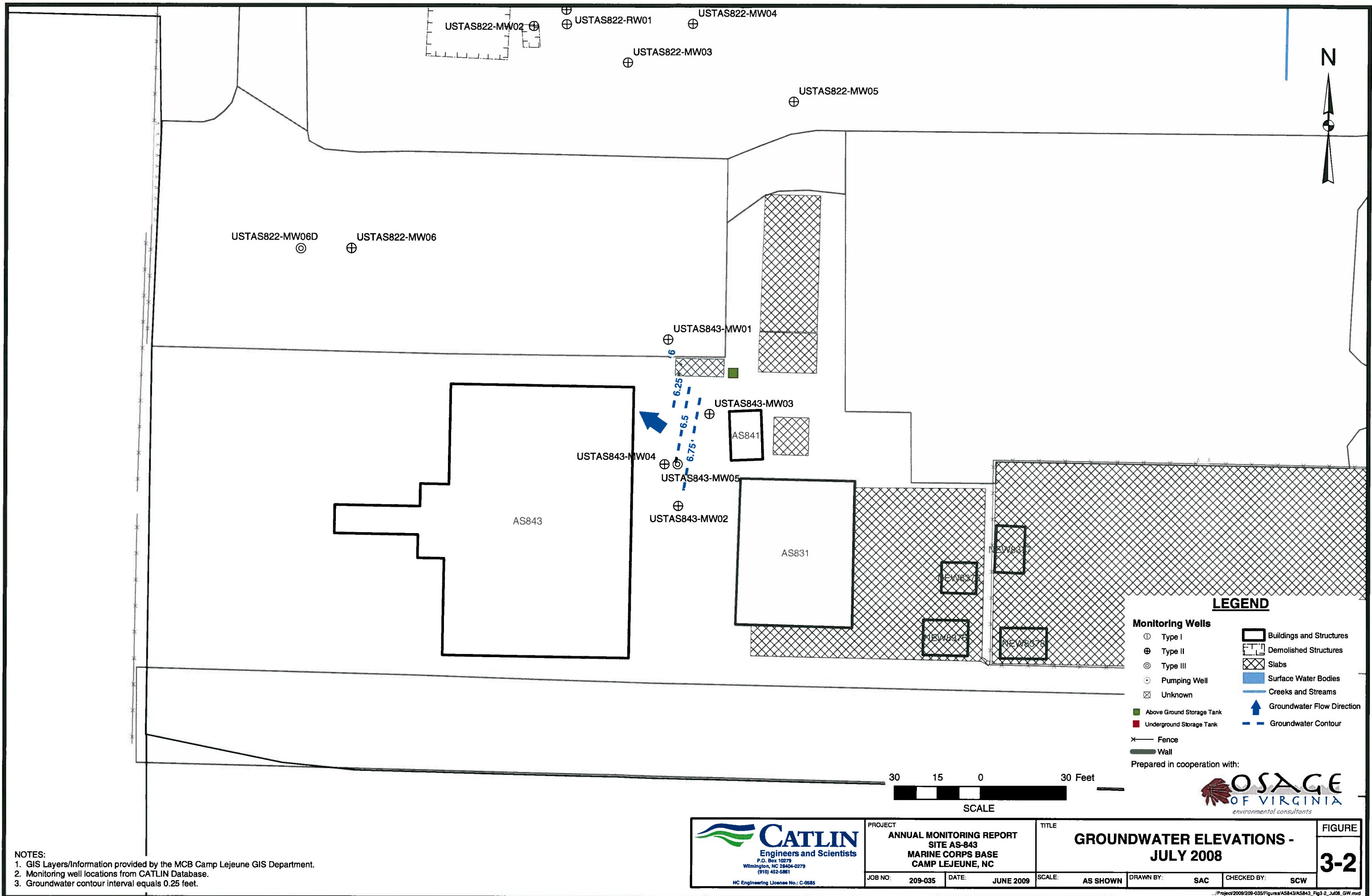


NOTES:

1. GIS Layers/Information provided by the MCB Camp Lejeune GIS Department.
2. Monitoring well locations from CATLIN Database.

 CATLIN Engineers and Scientists P.O. Box 10279 Wilmington, NC 28404-0279 (910) 452-5561 NC Engineering License No.: C-0565	PROJECT ANNUAL MONITORING REPORT SITE AS-843 MARINE CORPS BASE CAMP LEJEUNE, NC		TITLE SITE MAP WITH MONITORING WELL LOCATIONS				FIGURE 3-1
	JOB NO: 209-035	DATE: JUNE 2009	SCALE: AS SHOWN	DRAWN BY: SAC	CHECKED BY: SCW		

J:\Project\2009\209-035\Figures\AS843\AS843_Fig-3-1_SiteMap.mxd



NOTES:
1. GIS Layers/Information provided by the MCB Camp Lejeune GIS Department.
2. Monitoring well locations from CATLIN Database.
3. Groundwater contour interval equals 0.25 feet.

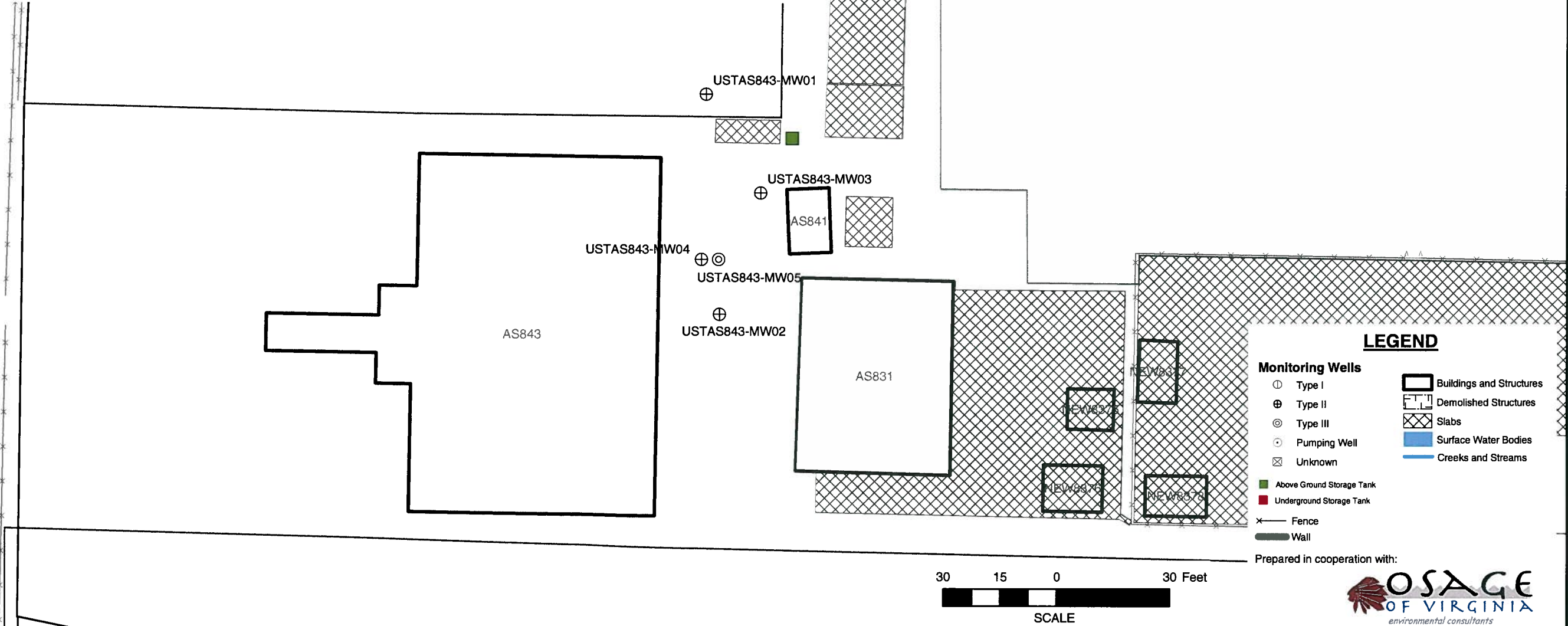
CATLIN
Engineers and Scientists
P.O. Box 10279
Wilmington, NC 28404-0279
(910) 452-5861
NC Engineering License No.: C-0585

PROJECT	
ANNUAL MONITORING REPORT	
SITE AS-843	
MARINE CORPS BASE	
CAMP LEJEUNE, NC	
JOB NO.	209-035
DATE:	JUNE 2009

TITLE	
GROUNDWATER ELEVATIONS -	
JULY 2008	
SCALE:	AS SHOWN
DRAWN BY:	SAC
CHECKED BY:	SCW
FIGURE	
3-2	

Well ID	Contaminant of Concern →		EPA 602	EPA 625									MADEP EPH/VPH			
	Sample ID	Date Collected	All 602 Method Analytes	Acenaphthene	Bis(2-ethylhexyl)phthalate	Diethylphthalate	Flouranthene	Flourene	Naphthalene	Phenanthrene	All Other 625 Method Analytes	TICs Total	C5-C8 Aliphatics	C19-C36 Aliphatics	C9-C18 Aliphatics	C9-C22 Aromatics
GCL (µg/L)			Varies	2,120	2,500	NE	280	950	15,500	410	Varies	NE	NE	NE	NE	NE
2L GWQS (µg/L)			Varies	80	2.5	5,000	280	280	21	210	Varies	NE	420	42,000	4,200	210
USTAS843-MW01	USTAS843-MW01	7/16/2008	BMDL	<0.810	0.707J	<0.804	<0.766	<0.788	<0.989	<0.484	BMDL	0.00	<100	<100	<200	<200
USTAS843-MW02	USTAS843-MW02	7/16/2008	BMDL	1.89J	0.547J	0.973J	<0.858	<0.882	<1.11	<0.541	BMDL	53.15	<100	<100	<200	<200
USTAS843-MW03	USTAS843-MW03	7/16/2008	BMDL	3.33J	2.97J	0.859J	1.06J	2.87J	1.56J	0.806J	BMDL	174.9	<100	<100	<329	<233
USTAS843-MW05	USTAS843-MW05	7/16/2008	BMDL	7.43	1.86J	1.32J	<0.884	2.75J	139	0.898J	BMDL	551	<100	<100	<200	306
DUPLICATE	DUPLICATE	7/16/2008	BMDL	7.26	<0.448	0.873J	<0.770	2.57J	137	<0.486	BMDL	578.9	<100	<100	<200	<309
TRIP BLANK	TRIP BLANK	7/16/2008	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

All results in micrograms per liter (µg/L).
 Bold results indicate concentrations above 2L GWQS
 GCL = Gross Contaminant Level
 2L GWQS = NCAC T15A.02L Groundwater Quality Standards
 BMDL = Below Method Detection Limits
 NA = Not Analyzed
 NE = Not Established
 J = Estimated concentration, below the calibration range and above the method detection limit



NOTES:
 1. GIS Layers/Information provided by the MCB Camp Lejeune GIS Department.
 2. Monitoring well locations from CATLIN Database.

CATLIN
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PROJECT
**ANNUAL MONITORING REPORT
 SITE AS-843
 MARINE CORPS BASE
 CAMP LEJEUNE, NC**

JOB NO: 209-035 DATE: JUNE 2009

TITLE
**SITE MAP WITH JULY 2008
 GROUNDWATER RESULTS**

SCALE: AS SHOWN DRAWN BY: SAC CHECKED BY: SCW

FIGURE
3-3

APPENDIX A
HISTORICAL DATA

TABLE 1
SITE AS-843
GROUNDWATER LABORATORY ANALYTICAL RESULTS - JULY 2005 TO APRIL 2009
EPA METHOD 602

Contaminant of Concern →					
<u>Well ID</u>	<u>Date</u>	<u>Benzene</u>	<u>Ethylbenzene</u>	<u>m/p-Xylene</u>	<u>Toluene</u>
2L GWQS		1	550	530	1000
GCL		5000	550000	87500	257500
USTAS843-MW01	8/31/2005	BQL	BQL	BQL	BQL
USTAS843-MW01	7/16/2008	BQL	BQL	BQL	BQL
USTAS843-MW02	8/31/2005	BQL	BQL	BQL	0.63
USTAS843-MW02	7/16/2008	BQL	BQL	BQL	BQL
USTAS843-MW03	8/31/2005	1.09	3.69	0.64	0.72
USTAS843-MW03	7/16/2008	BQL	BQL	BQL	BQL
USTAS843-MW04	8/31/2005	BQL	BQL	BQL	0.49
USTAS843-MW05	8/31/2005	BQL	0.32	0.92	0.67
USTAS843-MW05	7/16/2008	BQL	BQL	BQL	BQL

- Notes:
1. 2L GWQS = North Carolina groundwater quality standard 15A NCAC 2L .0202
 2. GCL = Gross Contamination Levels for ground water as defined in "Guidelines for Assessment and Corrective Action" North Carolina Underground Storage Tank Section, effective July 15, 2008
 3. All units are in ug/L (Micrograms per Liter)
 4. BQL = Below Quantitation Limits
 5. A zero in the 2L GWQS row indicates the 2L Standard is equal to the laboratory detection limit
 6. A zero in the GCL row indicates a GCL has not been established
 7. Shaded concentrations indicate exceedance of the 2L GWQS
 8. Only compounds which were detected are shown on table. All other compounds were BQL
 9. Please note, compounds reported in duplicate columns are the result of multiple laboratories submitting EDD data with different nomenclature. Unless BQL appears in both duplicate columns, a detection is present and that concentration is reported numerically.

TABLE 2
SITE AS-843
GROUNDWATER LABORATORY ANALYTICAL RESULTS - JULY 2005 TO APRIL 2009
EPA METHOD 6210D

Contaminant of Concern →														
Well ID	Date	1,2,4-Trimethylbenzene	4-Isopropyltoluene	Benzene	cis-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-Propyl benzene	sec-Butylbenzene	tert-Butylbenzene	Toluene	Total Xylenes
2L GWQS		350	0	1	70	550	70	21	70	70	70	70	1000	530
GCL		28500	0	5000	70000	550000	25000	15500	6900	30000	8500	15000	257500	87500
USTAS843-MW01	7/5/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
USTAS843-MW02	7/5/2006	BQL	0.44	0.16	1.88	BQL	BQL	0.83	0.55	BQL	0.34	BQL	BQL	BQL
USTAS843-MW03	7/6/2006	0.84	0.39	1.17	1.46	5.68	3.50	23.00	1.08	2.90	2.98	0.49	BQL	0.18
USTAS843-MW04	7/6/2006	BQL	0.40	BQL	BQL	BQL	1.39	1.15	0.87	1.73	1.36	BQL	BQL	BQL
USTAS843-MW05	7/5/2006	0.21	BQL	BQL	BQL	BQL	BQL	12.90	BQL	BQL	BQL	BQL	0.22	BQL

- Notes:
1. 2L GWQS = North Carolina groundwater quality standard 15A NCAC 2L .0202
 2. GCL = Gross Contamination Levels for ground water as defined in "Guidelines for Assessment and Corrective Action" North Carolina Underground Storage Tank Section, effective July 15, 2008
 3. All units are in ug/L (Micrograms per Liter)
 4. BQL = Below Quantitation Limits
 5. A zero in the 2L GWQS row indicates the 2L Standard is equal to the laboratory detection limit
 6. A zero in the GCL row indicates a GCL has not been established
 7. Shaded concentrations indicate exceedance of the 2L GWQS
 8. Only compounds which were detected are shown on table. All other compounds were BQL
 9. Please note, compounds reported in duplicate columns are the result of multiple laboratories submitting EDD data with different nomenclature. Unless BQL appears in both duplicate columns, a detection is present and that concentration is reported numerically.

TABLE 3
SITE AS-843
GROUNDWATER LABORATORY ANALYTICAL RESULTS - JULY 2005 TO APRIL 2009
EPA METHOD 625

Contaminant of Concern →								
Well ID	Date	Acenaphthene	Bis(2-ethylhexyl)phthalate	Diethylphthalate	Fluoranthene	Fluorene	Naphthalene	Phenanthrene
2L GWQS		80	2.5	5000	280	280	21	210
GCL		2120	2500	0	280	950	15500	410
USTAS843-MW01	8/31/2005	BQL	BQL	BQL	BQL	BQL	BQL	BQL
USTAS843-MW01	7/5/2006	BQL	BQL	BQL	BQL	BQL	BQL	BQL
USTAS843-MW01	7/16/2008	BQL	0.71	BQL	BQL	BQL	BQL	BQL
USTAS843-MW02	8/31/2005	2.20	BQL	BQL	BQL	BQL	BQL	BQL
USTAS843-MW02	7/5/2006	2.00	BQL	BQL	BQL	BQL	BQL	BQL
USTAS843-MW02	7/16/2008	1.89	0.55	0.97	BQL	BQL	BQL	BQL
USTAS843-MW03	8/31/2005	5.60	BQL	BQL	BQL	5.30	12.70	BQL
USTAS843-MW03	7/6/2006	4.10	BQL	BQL	BQL	4.40	12.30	BQL
USTAS843-MW03	7/16/2008	3.33	2.97	0.86	1.06	2.87	1.56	0.81

- Notes:
1. 2L GWQS = North Carolina groundwater quality standard 15A NCAC 2L .0202
 2. GCL = Gross Contamination Levels for ground water as defined in "Guidelines for Assessment and Corrective Action" North Carolina Underground Storage Tank Section, effective July 15, 2008
 3. All units are in ug/L (Micrograms per Liter)
 4. BQL = Below Quantitation Limits
 5. A zero in the 2L GWQS row indicates the 2L Standard is equal to the laboratory detection limit
 6. A zero in the GCL row indicates a GCL has not been established
 7. Shaded concentrations indicate exceedance of the 2L GWQS
 8. Only compounds which were detected are shown on table. All other compounds were BQL
 9. Please note, compounds reported in duplicate columns are the result of multiple laboratories submitting EDD data with different nomenclature. Unless BQL appears in both duplicate columns, a detection is present and that concentration is reported numerically.

TABLE 3
SITE AS-843
GROUNDWATER LABORATORY ANALYTICAL RESULTS - JULY 2005 TO APRIL 2009
EPA METHOD 625

Contaminant of Concern →								
Well ID	Date	Acenaphthene	Bis(2-ethylhexyl)phthalate	Diethylphthalate	Fluoranthene	Fluorene	Naphthalene	Phenanthrene
2L GWQS		80	2.5	5000	280	280	21	210
GCL		2120	2500	0	280	950	15500	410
USTAS843-MW04	8/31/2005	4.80	BQL	BQL	BQL	5.10	1.30	4.30
USTAS843-MW04	7/6/2006	BQL	BQL	BQL	BQL	1.90	BQL	2.10
USTAS843-MW05	8/31/2005	1.90	BQL	BQL	BQL	BQL	23.80	BQL
USTAS843-MW05	7/5/2006	BQL	BQL	BQL	BQL	BQL	9.50	BQL
USTAS843-MW05	7/16/2008	7.43	1.86	1.32	BQL	2.75	138.00	0.90

- Notes:
1. 2L GWQS = North Carolina groundwater quality standard 15A NCAC 2L .0202
 2. GCL = Gross Contamination Levels for ground water as defined in "Guidelines for Assessment and Corrective Action" North Carolina Underground Storage Tank Section, effective July 15, 2008
 3. All units are in ug/L (Micrograms per Liter)
 4. BQL = Below Quantitation Limits
 5. A zero in the 2L GWQS row indicates the 2L Standard is equal to the laboratory detection limit
 6. A zero in the GCL row indicates a GCL has not been established
 7. Shaded concentrations indicate exceedance of the 2L GWQS
 8. Only compounds which were detected are shown on table. All other compounds were BQL
 9. Please note, compounds reported in duplicate columns are the result of multiple laboratories submitting EDD data with different nomenclature. Unless BQL appears in both duplicate columns, a detection is present and that concentration is reported numerically.

TABLE 4
SITE AS-843
GROUNDWATER LABORATORY ANALYTICAL RESULTS - JULY 2005 TO APRIL 2009
MADEP VPH/EPH

Contaminant of Concern →				
Well ID	Date	C19-C36 Aliphatics	C9-C18 Aliphatics	C9-C22 Aromatics
2L GWQS		42000	4200	210
GCL		0	0	0
USTAS843-MW01	8/31/2005	BQL	BQL	BQL
USTAS843-MW01	7/5/2006	BQL	BQL	BQL
USTAS843-MW01	7/16/2008	BQL	BQL	BQL
USTAS843-MW02	8/31/2005	BQL	BQL	BQL
USTAS843-MW02	7/5/2006	BQL	BQL	BQL
USTAS843-MW02	7/16/2008	BQL	BQL	BQL
USTAS843-MW03	8/31/2005	130.00	920.00	190.00
USTAS843-MW03	7/6/2006	BQL	380.00	320.00
USTAS843-MW03	7/16/2008	BQL	229.00	133.00

- Notes:
1. 2L GWQS = North Carolina groundwater quality standard 15A NCAC 2L .0202
 2. GCL = Gross Contamination Levels for ground water as defined in "Guidelines for Assessment and Corrective Action" North Carolina Underground Storage Tank Section, effective July 15, 2008
 3. All units are in ug/L (Micrograms per Liter)
 4. BQL = Below Quantitation Limits
 5. A zero in the 2L GWQS row indicates the 2L Standard is equal to the laboratory detection limit
 6. A zero in the GCL row indicates a GCL has not been established
 7. Shaded concentrations indicate exceedance of the 2L GWQS
 8. Only compounds which were detected are shown on table. All other compounds were BQL
 9. Please note, compounds reported in duplicate columns are the result of multiple laboratories submitting EDD data with different nomenclature. Unless BQL appears in both duplicate columns, a detection is present and that concentration is reported numerically.

TABLE 4
SITE AS-843
GROUNDWATER LABORATORY ANALYTICAL RESULTS - JULY 2005 TO APRIL 2009
MADEP VPH/EPH

Contaminant of Concern →				
Well ID	Date	C19-C36 Aliphatics	C9-C18 Aliphatics	C9-C22 Aromatics
2L GWQS		42000	4200	210
GCL		0	0	0
USTAS843-MW04	8/31/2005	210.00	1150.00	300.00
USTAS843-MW04	7/6/2006	BQL	610.00	330.00
USTAS843-MW05	8/31/2005	BQL	BQL	BQL
USTAS843-MW05	7/5/2006	BQL	BQL	BQL
USTAS843-MW05	7/16/2008	BQL	BQL	306.00

- Notes:
1. 2L GWQS = North Carolina groundwater quality standard 15A NCAC 2L .0202
 2. GCL = Gross Contamination Levels for ground water as defined in "Guidelines for Assessment and Corrective Action" North Carolina Underground Storage Tank Section, effective July 15, 2008
 3. All units are in ug/L (Micrograms per Liter)
 4. BQL = Below Quantitation Limits
 5. A zero in the 2L GWQS row indicates the 2L Standard is equal to the laboratory detection limit
 6. A zero in the GCL row indicates a GCL has not been established
 7. Shaded concentrations indicate exceedance of the 2L GWQS
 8. Only compounds which were detected are shown on table. All other compounds were BQL
 9. Please note, compounds reported in duplicate columns are the result of multiple laboratories submitting EDD data with different nomenclature. Unless BQL appears in both duplicate columns, a detection is present and that concentration is reported numerically.

APPENDIX B

LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

SGS Environmental Services, Inc.

Shawn Whitworth
Osage of Virginia
2618 A Colley Ave
Norfolk, VA 23517

Report Number: G649-48

Client Project: CTO 015

Dear Shawn Whitworth,

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 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 Environmental Services at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS Environmental Services for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,
SGS Environmental Services, Inc.

 Revised 5/4/09
Project Manager _____ Date _____
Ashley Nifong

Five water sample and a trip blank were received at the laboratory on July 17, 2008 at 1435 for analyses as indicated on the chain of custody. The samples arrived in good condition, with a temperature range of 3.6 to 4.2°.

8270 and 625 Analysis

EPH Analysis

The aliphatic range C19-C36 produced an RPD exceedance in the associated LCS/LCSD, while passing specified control limits. However, this range was not detected in any of the associated samples and the data is not affected.

Data Review

Date_____

7/29/22

**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/CL = Reporting Limit / Control 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

% solids = 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.

SGS Environmental Services, Inc.

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW01

Analyzed By: RSB

Client Project ID: CTO 015

Date Collected: 7/16/2008 13:20

Lab Sample ID: G649-48-1A

Date Received: 7/17/2008

Lab Project ID: G649-48

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.177	1	7/22/2008	
Diisopropyl ether (DIPE)	BQL	1.00	0.253	1	7/22/2008	
Ethylbenzene	BQL	1.00	0.19	1	7/22/2008	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.306	1	7/22/2008	
Toluene	BQL	1.00	0.313	1	7/22/2008	
m/p-Xylene	BQL	2.00	0.481	1	7/22/2008	
o-Xylene	BQL	2.00	0.405	1	7/22/2008	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	37.9	94.8

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

SGS Environmental Services, Inc.

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW02

Analyzed By: RSB

Client Project ID: CTO 015

Date Collected: 7/16/2008 14:15

Lab Sample ID: G649-48-2A

Date Received: 7/17/2008

Lab Project ID: G649-48

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.177	1	7/22/2008	
Diisopropyl ether (DIPE)	BQL	1.00	0.253	1	7/22/2008	
Ethylbenzene	BQL	1.00	0.19	1	7/22/2008	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.306	1	7/22/2008	
Toluene	BQL	1.00	0.313	1	7/22/2008	
m/p-Xylene	BQL	2.00	0.481	1	7/22/2008	
o-Xylene	BQL	2.00	0.405	1	7/22/2008	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	38.1	95.3

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

SGS Environmental Services, Inc.

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW03

Analyzed By: RSB

Client Project ID: CTO 015

Date Collected: 7/16/2008 16:30

Lab Sample ID: G649-48-3A

Date Received: 7/17/2008

Lab Project ID: G649-48

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.177	1	7/22/2008	
Diisopropyl ether (DIPE)	BQL	1.00	0.253	1	7/22/2008	
Ethylbenzene	BQL	1.00	0.19	1	7/22/2008	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.306	1	7/22/2008	
Toluene	BQL	1.00	0.313	1	7/22/2008	
m/p-Xylene	BQL	2.00	0.481	1	7/22/2008	
o-Xylene	BQL	2.00	0.405	1	7/22/2008	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	38.6	96.6

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

SGS Environmental Services, Inc.

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-MW05

Analyzed By: RSB

Client Project ID: CTO 015

Date Collected: 7/16/2008 13:10

Lab Sample ID: G649-48-4A

Date Received: 7/17/2008

Lab Project ID: G649-48

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.177	1	7/22/2008	
Diisopropyl ether (DIPE)	BQL	1.00	0.253	1	7/22/2008	
Ethylbenzene	BQL	1.00	0.19	1	7/22/2008	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.306	1	7/22/2008	
Toluene	BQL	1.00	0.313	1	7/22/2008	
m/p-Xylene	BQL	2.00	0.481	1	7/22/2008	
o-Xylene	BQL	2.00	0.405	1	7/22/2008	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	39.2	98

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

SGS Environmental Services, Inc.

Results for Volatiles

by GC 602

Client Sample ID: USTAS843-Duplicate

Analyzed By: RSB

Client Project ID: CTO 015

Date Collected: 7/16/2008 0:00

Lab Sample ID: G649-48-5A

Date Received: 7/17/2008

Lab Project ID: G649-48

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.177	1	7/21/2008	
Diisopropyl ether (DIPE)	BQL	1.00	0.253	1	7/21/2008	
Ethylbenzene	BQL	1.00	0.19	1	7/21/2008	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.306	1	7/21/2008	
Toluene	BQL	1.00	0.313	1	7/21/2008	
m/p-Xylene	BQL	2.00	0.481	1	7/21/2008	
o-Xylene	BQL	2.00	0.405	1	7/21/2008	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	38.8	96.9

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

SGS Environmental Services, Inc.

Results for Volatiles
by GC 602

Client Sample ID: Trip Blank
Client Project ID: CTO 015
Lab Sample ID: G649-48-6A
Lab Project ID: G649-48

Analyzed By: RSB
Date Collected: 7/16/2008 0:00
Date Received: 7/17/2008
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.177	1	7/21/2008	
Diisopropyl ether (DIPE)	BQL	1.00	0.253	1	7/21/2008	
Ethylbenzene	BQL	1.00	0.19	1	7/21/2008	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.306	1	7/21/2008	
Toluene	BQL	1.00	0.313	1	7/21/2008	
m/p-Xylene	BQL	2.00	0.481	1	7/21/2008	
o-Xylene	BQL	2.00	0.405	1	7/21/2008	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	38.0	95.1

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

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-MW01
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/28/08 02:24 - 07/28/08 02:24
Date Analyzed	07/28/08 02:24 - 07/28/08 02:24
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 Upper	
Surrogate % Recovery - PID	101		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: g649-48-1e	Lab Info: g649-48-1e
FID Info: VP072708/043F0101.D	PID Info: VP072708/043R0101.D

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-MW02
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/28/08 02:51 - 07/28/08 02:51
Date Analyzed	07/28/08 02:51 - 07/28/08 02:51
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 Upper	
Surrogate % Recovery - PID	96.5		70	130
Surrogate % Recovery - FID	100		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: g649-48-2e	Lab Info: g649-48-2e
FID Info: VP072708/044F0101.D	PID Info: VP072708/044R0101.D

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-MW03
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/28/08 03:18 - 07/28/08 03:18
Date Analyzed	07/28/08 03:18 - 07/28/08 03:18
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 Upper	
Surrogate % Recovery - PID	96.2		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: g649-48-3e	Lab Info: g649-48-3e
FID Info: VP072708/045F0101.D	PID Info: VP072708/045R0101.D

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

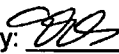
Sample Information	
Sample Identification	USTAS843-MW05
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/28/08 03:45 - 07/28/08 03:45
Date Analyzed	07/28/08 03:45 - 07/28/08 03:45
Dry Weight	NA
Dilution Factor	1 - 1

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**	147	100		
	Percent Recovery	Flags	Limits Lower Upper	
Surrogate % Recovery - PID	96.4		70	130
Surrogate % Recovery - FID	100		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: g649-48-4e	Lab Info: g649-48-4e
FID Info: VP072708/046F0101.D	PID Info: VP072708/046R0101.D

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting FormClient Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-Duplicate
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/28/08 04:11 - 07/28/08 04:11
Date Analyzed	07/28/08 04:11 - 07/28/08 04:11
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**	209	100		
	Percent Recovery	Flags	Limits Lower Upper	
Surrogate % Recovery - PID	97.3		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: g649-48-5e	Lab Info: g649-48-5e
FID Info: VP072708/047F0101.D	PID Info: VP072708/047R0101.D

Reviewed By: 

EPH (Aliphatics/Aromatics) Laboratory Reporting FormClient Name: Osage of VirginiaProject Name: CTO 015

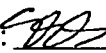
Sample Information	
Sample Identification	USTAS843-MW01
Sample Matrix	WATER
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/22/08
Date Analyzed	07/23/08 15:43 - 07/23/08 16:12
Dry Weight	NA
Dilution Factor	1 - 1
Initial Volume (mL)	901
Final Volume (mL)	5.0

Analytical Results			
Analytes**	Result µg/L	Report Limit µg/L	Flags
C9-C18 Aliphatics	BQL	100	
C19-C36 Aliphatics	BQL	100	
C11-C22 Aromatics	BQL	100	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (tricosane)	114		40	140
Aromatic (ortho-terphenyl)	115		40	140
Fractionation 1 (2-bromonaphthalene)	105		40	140
Fractionation 2 (2-fluorobiphenyl)	108		40	140

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

Lab Info: G649-48-1L	Lab Info: G649-48-1L
Aliphatic: EP072308/012F0301.D	Aromatic: EP072308/013F0401.D

Reviewed By: 

EPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

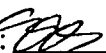
Sample Information	
Sample Identification	USTAS843-MW02
Sample Matrix	WATER
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/22/08
Date Analyzed	07/23/08 16:41 - 07/23/08 17:10
Dry Weight	NA
Dilution Factor	1 - 1
Initial Volume (mL)	945
Final Volume (mL)	5.0

Analytical Results			
Analytes**	Result µg/L	Report Limit µg/L	Flags
C9-C18 Aliphatics	BQL	100	
C19-C36 Aliphatics	BQL	100	
C11-C22 Aromatics	BQL	100	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (tricosane)	111		40	140
Aromatic (ortho-terphenyl)	114		40	140
Fractionation 1 (2-bromonaphthalene)	105		40	140
Fractionation 2 (2-fluorobiphenyl)	108		40	140

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

Lab Info: G649-48-2L	Lab Info: G649-48-2L
Aliphatic: EP072308/014F0501.D	Aromatic: EP072308/015F0601.D

Reviewed By: 

EPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-MW03
Sample Matrix	WATER
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/22/08
Date Analyzed	07/23/08 17:39 - 07/23/08 18:09
Dry Weight	NA
Dilution Factor	1 - 1
Initial Volume (mL)	881
Final Volume (mL)	5.0

Analytical Results			
Analytes**	Result µg/L	Report Limit µg/L	Flags
C9-C18 Aliphatics	229	100	
C19-C36 Aliphatics	BQL	100	
C11-C22 Aromatics	133	100	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (tricosane)	96.9		40	140
Aromatic (ortho-terphenyl)	112		40	140
Fractionation 1 (2-bromonaphthalene)	106		40	140
Fractionation 2 (2-fluorobiphenyl)	109		40	140

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

Lab Info: G649-48-3L	Lab Info: G649-48-3L
Aliphatic: EP072308/016F0701.D	Aromatic: EP072308/017F0801.D

Reviewed By: 

EPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-MW05
Sample Matrix	WATER
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/22/08
Date Analyzed	07/23/08 18:38 - 07/23/08 19:07
Dry Weight	NA
Dilution Factor	1 - 1
Initial Volume (mL)	852
Final Volume (mL)	5.0

Analytical Results			
Analytes**	Result µg/L	Report Limit µg/L	Flags
C9-C18 Aliphatics	BQL	100	
C19-C36 Aliphatics	BQL	100	
C11-C22 Aromatics	159	100	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (tricosane)	116		40	140
Aromatic (ortho-terphenyl)	119		40	140
Fractionation 1 (2-bromonaphthalene)	88.5		40	140
Fractionation 2 (2-fluorobiphenyl)	89.2		40	140

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

Lab Info: G649-48-4L	Lab Info: G649-48-4L
Aliphatic: EP072308/018F0901.D	Aromatic: EP072308/019F1001.D

Reviewed By: 

EPH (Aliphatics/Aromatics) Laboratory Reporting FormClient Name: Osage of VirginiaProject Name: CTO 015

Sample Information	
Sample Identification	USTAS843-Duplicate
Sample Matrix	WATER
Date Collected	07/16/08
Date Received	07/17/08
Date Extracted	07/22/08
Date Analyzed	07/23/08 19:35 - 07/23/08 20:04
Dry Weight	NA
Dilution Factor	1 - 1
Initial Volume (mL)	870
Final Volume (mL)	5.0

Analytical Results			
Analytes**	Result µg/L	Report Limit µg/L	Flags
C9-C18 Aliphatics	BQL	100	
C19-C36 Aliphatics	BQL	100	
C11-C22 Aromatics	BQL	100	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (tricosane)	115		40	140
Aromatic (ortho-terphenyl)	55.5		40	140
Fractionation 1 (2-bromonaphthalene)	45.0		40	140
Fractionation 2 (2-fluorobiphenyl)	43.1		40	140

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

Lab Info: G649-48-5L	Lab Info: G649-48-5L
Aliphatic: EP072308/020F1101.D	Aromatic: EP072308/021F1201.D

Reviewed By: 

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 06/05/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(02/15/08) (µg/L)	(02/11/08) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	1.66	0.274	5.28	0.871	100	10
C19-C36 Aliphatics	2.79	0.201	8.87	0.639	100	10
C11-C22 Aromatics	2.64	0.110	8.40	0.350	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	200	33.3	1.89	Calibration Factor
	100	16.7		
	50	8.33		
	25	4.17		
	5	0.833		
C ₁₉ -C ₃₆ Aliphatics	200	33.3	0.86	Calibration Factor
	100	16.7		
	50	8.33		
	25	4.17		
	5	0.833		
C ₁₁ -C ₂₂ Aromatics	200	33.3	0.99	Linear Regression
	100	16.7		
	50	8.33		
	25	4.17		
	5	0.833		

Calibration Check Date: 07/23/08
07/23/08Filenames: ep072308/001f0101.d
ep072308/002f0201.d

Calibration Check

Range	Levels (µg/L) (mg/Kg)		%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	100	16.7	21.9	≤±25%
C19-C36 Aliphatics	100	16.7	15.4	≤±25%
C11-C22 Aromatics	100	16.7	2.0	≤±25%

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

SGS Environmental Services, Inc.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 06/05/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(02/15/08) (µg/L)	(02/11/08) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	1.66	0.274	5.28	0.871	100	10
C19-C36 Aliphatics	2.79	0.201	8.87	0.639	100	10
C11-C22 Aromatics	2.64	0.110	8.40	0.350	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	200	33.3	1.89	Calibration Factor
	100	16.7		
	50	8.33		
	25	4.17		
	5	0.833		
C ₁₉ -C ₃₆ Aliphatics	200	33.3	0.86	Calibration Factor
	100	16.7		
	50	8.33		
	25	4.17		
	5	0.833		
C ₁₁ -C ₂₂ Aromatics	200	33.3	0.99	Linear Regression
	100	16.7		
	50	8.33		
	25	4.17		
	5	0.833		

Calibration Check Date: 07/24/08 Filenames: ep072408/001f0101.d
07/24/08 ep072408/002f0201.d

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	100	16.7	8.8	≤±25%
C19-C36 Aliphatics	100	16.7	4.7	≤±25%
C11-C22 Aromatics	100	16.7	-7.6	≤±25%

MDL = Method Detection Limit
 ML = Minimum Limit
 RL = Reportable Limit

RPD = Relative Percent Difference
 %RSD = Percent Relative Standard Deviation
 CCC = Correlation Coefficient of Curve

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW01
Client Project ID: CTO 015
Lab Sample ID: G649-48-1J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 13:20
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 920 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	5.43	0.810	1	7/22/2008	
Acenaphthylene	BQL	5.43	0.810	1	7/22/2008	
Anthracene	BQL	5.43	0.951	1	7/22/2008	
Benzo[a]anthracene	BQL	5.43	0.739	1	7/22/2008	
Benzo[a]pyrene	BQL	5.43	0.690	1	7/22/2008	
Benzo[b]fluoranthene	BQL	5.43	0.777	1	7/22/2008	
Benzo[g,h,i]perylene	BQL	5.43	0.668	1	7/22/2008	
Benzo[k]fluoranthene	BQL	5.43	0.598	1	7/22/2008	
Bis(2-chloroethoxy)methane	BQL	5.43	1.12	1	7/22/2008	
Bis(2-chloroethyl)ether	BQL	5.43	1.13	1	7/22/2008	
Bis(2-chloroisopropyl)ether	BQL	5.43	1.06	1	7/22/2008	
Bis(2-ethylhexyl)phthalate	0.707	5.43	0.446	1	7/22/2008	J
4-bromophenyl phenyl ether	BQL	5.43	0.848	1	7/22/2008	
Butylbenzylphthalate	BQL	5.43	0.484	1	7/22/2008	
2-Chloronaphthalene	BQL	5.43	0.940	1	7/22/2008	
2-Chlorophenol	BQL	5.43	1.27	1	7/22/2008	
4-Chloro-3-methylphenol	BQL	5.43	0.864	1	7/22/2008	
4-Chlorophenyl phenyl ether	BQL	5.43	3.54	1	7/22/2008	
Chrysene	BQL	5.43	0.603	1	7/22/2008	
Dibenzo[a,h]anthracene	BQL	5.43	0.478	1	7/22/2008	
Di-n-Butylphthalate	BQL	5.43	0.897	1	7/22/2008	
3,3'-Dichlorobenzidine	BQL	10.9	1.33	1	7/22/2008	
2,4-Dichlorophenol	BQL	5.43	1.22	1	7/22/2008	
Diethylphthalate	BQL	5.43	0.804	1	7/22/2008	
Dimethylphthalate	BQL	5.43	0.603	1	7/22/2008	
2,4-Dimethylphenol	BQL	5.43	1.76	1	7/22/2008	
Di-n-octylphthalate	BQL	5.43	0.630	1	7/22/2008	
4,6-Dinitro-2-methylphenol	BQL	27.2	0.598	1	7/22/2008	
2,4-Dinitrophenol	BQL	27.2	0.696	1	7/22/2008	
2,4-Dinitrotoluene	BQL	5.43	0.582	1	7/22/2008	
2,6-Dinitrotoluene	BQL	5.43	0.707	1	7/22/2008	
Diphenylamine *	BQL	5.43	0.620	1	7/22/2008	
Fluoranthene	BQL	5.43	0.766	1	7/22/2008	
Fluorene	BQL	5.43	0.788	1	7/22/2008	
Hexachlorobenzene	BQL	5.43	0.549	1	7/22/2008	
Hexachlorobutadiene	BQL	5.43	0.826	1	7/22/2008	
Hexachlorocyclopentadiene	BQL	10.9	10.9	1	7/22/2008	
Hexachloroethane	BQL	5.43	0.810	1	7/22/2008	
Indeno(1,2,3-c,d)pyrene	BQL	5.43	2.48	1	7/22/2008	
Isophorone	BQL	5.43	0.962	1	7/22/2008	
Naphthalene	BQL	5.43	0.989	1	7/22/2008	
Nitrobenzene	BQL	5.43	1.14	1	7/22/2008	
2-Nitrophenol	BQL	5.43	1.34	1	7/22/2008	
4-Nitrophenol	BQL	27.2	1.17	1	7/22/2008	
N-Nitrosodi-n-propylamine	BQL	5.43	1.63	1	7/22/2008	
Pentachlorophenol	BQL	27.2	1.54	1	7/22/2008	
Phenanthrene	BQL	5.43	0.484	1	7/22/2008	

SGS Environmental Services, Inc.

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: USTAS843-MW01
Client Project ID: CTO 015
Lab Sample ID: G649-48-1J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 13:20
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 920 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	5.43	1.15	1	7/22/2008	
Pyrene	BQL	5.43	2.24	1	7/22/2008	
1,2,4-Trichlorobenzene	BQL	5.43	0.783	1	7/22/2008	
2,4,6-Trichlorophenol	BQL	5.43	1.01	1	7/22/2008	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	9.1	91		
2-Fluorophenol		10	8.4	84		
Nitrobenzene-d5		10	9.5	95		
Phenol-d6		10	8.8	88		
2,4,6-Tribromophenol		10	9.4	94		
4-Terphenyl-d14		10	9.5	95		

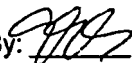
Comments:

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

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: USTAS843-MW01
Client Project ID: CTO 015
Lab Sample ID: G649-48-1J
Lab Project ID: G649-48
Sample Wt/Vol: 920 ML
Dilution: 1

Analyzed By: DES
Date Collected: 7/16/2008 13:20
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Date Analyzed: 7/22/2008
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	No library search compounds detected.				
2					
3					
4					
5					
6					
7					
8					
9					
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: 

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW02
 Client Project ID: CTO 015
 Lab Sample ID: G649-48-2J
 Lab Project ID: G649-48

Analyzed By: DES
 Date Collected: 7/16/2008 14:15
 Date Received: 7/17/2008
 Date Extracted: 7/21/2008
 Matrix: Water

Initial/Final Amt: 822 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	1.89	6.08	0.906	1	7/22/2008	J
Acenaphthylene	BQL	6.08	0.906	1	7/22/2008	
Anthracene	BQL	6.08	1.06	1	7/22/2008	
Benzo[a]anthracene	BQL	6.08	0.827	1	7/22/2008	
Benzo[a]pyrene	BQL	6.08	0.773	1	7/22/2008	
Benzo[b]fluoranthene	BQL	6.08	0.870	1	7/22/2008	
Benzo[g,h,i]perylene	BQL	6.08	0.748	1	7/22/2008	
Benzo[k]fluoranthene	BQL	6.08	0.669	1	7/22/2008	
Bis(2-chloroethoxy)methane	BQL	6.08	1.25	1	7/22/2008	
Bis(2-chloroethyl)ether	BQL	6.08	1.27	1	7/22/2008	
Bis(2-chloroisopropyl)ether	BQL	6.08	1.19	1	7/22/2008	
Bis(2-ethylhexyl)phthalate	0.547	6.08	0.499	1	7/22/2008	J
4-bromophenyl phenyl ether	BQL	6.08	0.949	1	7/22/2008	
Butylbenzylphthalate	BQL	6.08	0.541	1	7/22/2008	
2-Chloronaphthalene	BQL	6.08	1.05	1	7/22/2008	
2-Chlorophenol	BQL	6.08	1.42	1	7/22/2008	
4-Chloro-3-methylphenol	BQL	6.08	0.967	1	7/22/2008	
4-Chlorophenyl phenyl ether	BQL	6.08	3.96	1	7/22/2008	
Chrysene	BQL	6.08	0.675	1	7/22/2008	
Dibenzo[a,h]anthracene	BQL	6.08	0.535	1	7/22/2008	
Di-n-Butylphthalate	BQL	6.08	1.00	1	7/22/2008	
3,3'-Dichlorobenzidine	BQL	12.2	1.48	1	7/22/2008	
2,4-Dichlorophenol	BQL	6.08	1.36	1	7/22/2008	
Diethylphthalate	0.973	6.08	0.900	1	7/22/2008	J
Dimethylphthalate	BQL	6.08	0.675	1	7/22/2008	
2,4-Dimethylphenol	BQL	6.08	1.97	1	7/22/2008	
Di-n-octylphthalate	BQL	6.08	0.706	1	7/22/2008	
4,6-Dinitro-2-methylphenol	BQL	30.4	0.669	1	7/22/2008	
2,4-Dinitrophenol	BQL	30.4	0.779	1	7/22/2008	
2,4-Dinitrotoluene	BQL	6.08	0.651	1	7/22/2008	
2,6-Dinitrotoluene	BQL	6.08	0.791	1	7/22/2008	
Diphenylamine *	BQL	6.08	0.693	1	7/22/2008	
Fluoranthene	BQL	6.08	0.858	1	7/22/2008	
Fluorene	BQL	6.08	0.882	1	7/22/2008	
Hexachlorobenzene	BQL	6.08	0.614	1	7/22/2008	
Hexachlorobutadiene	BQL	6.08	0.925	1	7/22/2008	
Hexachlorocyclopentadiene	BQL	12.2	12.2	1	7/22/2008	
Hexachloroethane	BQL	6.08	0.906	1	7/22/2008	
Indeno(1,2,3-c,d)pyrene	BQL	6.08	2.78	1	7/22/2008	
Isophorone	BQL	6.08	1.08	1	7/22/2008	
Naphthalene	BQL	6.08	1.11	1	7/22/2008	
Nitrobenzene	BQL	6.08	1.28	1	7/22/2008	
2-Nitrophenol	BQL	6.08	1.50	1	7/22/2008	
4-Nitrophenol	BQL	30.4	1.31	1	7/22/2008	
N-Nitrosodi-n-propylamine	BQL	6.08	1.82	1	7/22/2008	
Pentachlorophenol	BQL	30.4	1.72	1	7/22/2008	
Phenanthrene	BQL	6.08	0.541	1	7/22/2008	

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW02
Client Project ID: CTO 015
Lab Sample ID: G649-48-2J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 14:15
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 822 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	6.08	1.29	1	7/22/2008	
Pyrene	BQL	6.08	2.51	1	7/22/2008	
1,2,4-Trichlorobenzene	BQL	6.08	0.876	1	7/22/2008	
2,4,6-Trichlorophenol	BQL	6.08	1.13	1	7/22/2008	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	9.1	91		
2-Fluorophenol		10	8.4	84		
Nitrobenzene-d5		10	9.3	93		
Phenol-d6		10	8.8	88		
2,4,6-Tribromophenol		10	9.2	92		
4-Terphenyl-d14		10	8.8	88		

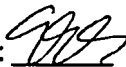
Comments:

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

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: USTAS843-MW02
Client Project ID: CTO 015
Lab Sample ID: G649-48-2J
Lab Project ID: G649-48
Sample Wt/Vol: 822 ML
Dilution: 1

Analyzed By: DES
Date Collected: 7/16/2008 14:15
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Date Analyzed: 7/22/2008
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Unknown	6.79	000571-58-4	93	8.02
2	Naphthalene, 1,4-dimethyl-	7.02			7.66
3	Unknown	9.60			6.37
4	Unknown	6.94			5.83
5	Unknown	7.09			5.73
6	Unknown	6.32			5.56
7	Unknown	6.36			5.01
8	Unknown	8.25			4.51
9	Unknown	6.67			4.46
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: 

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW03
 Client Project ID: CTO 015
 Lab Sample ID: G649-48-3J
 Lab Project ID: G649-48

Analyzed By: DES
 Date Collected: 7/16/2008 16:30
 Date Received: 7/17/2008
 Date Extracted: 7/21/2008
 Matrix: Water

Initial/Final Amt: 992 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	3.33	5.04	0.751	1	7/22/2008	J
Acenaphthylene	BQL	5.04	0.751	1	7/22/2008	
Anthracene	BQL	5.04	0.882	1	7/22/2008	
Benzo[a]anthracene	BQL	5.04	0.685	1	7/22/2008	
Benzo[a]pyrene	BQL	5.04	0.640	1	7/22/2008	
Benzo[b]fluoranthene	BQL	5.04	0.721	1	7/22/2008	
Benzo[g,h,i]perylene	BQL	5.04	0.620	1	7/22/2008	
Benzo[k]fluoranthene	BQL	5.04	0.554	1	7/22/2008	
Bis(2-chloroethoxy)methane	BQL	5.04	1.04	1	7/22/2008	
Bis(2-chloroethyl)ether	BQL	5.04	1.05	1	7/22/2008	
Bis(2-chloroisopropyl)ether	BQL	5.04	0.983	1	7/22/2008	
Bis(2-ethylhexyl)phthalate	2.97	5.04	0.413	1	7/22/2008	J
4-bromophenyl phenyl ether	BQL	5.04	0.786	1	7/22/2008	
Butylbenzylphthalate	BQL	5.04	0.449	1	7/22/2008	
2-Chloronaphthalene	BQL	5.04	0.872	1	7/22/2008	
2-Chlorophenol	BQL	5.04	1.18	1	7/22/2008	
4-Chloro-3-methylphenol	BQL	5.04	0.801	1	7/22/2008	
4-Chlorophenyl phenyl ether	BQL	5.04	3.28	1	7/22/2008	
Chrysene	BQL	5.04	0.559	1	7/22/2008	
Dibenzo[a,h]anthracene	BQL	5.04	0.444	1	7/22/2008	
Di-n-Butylphthalate	BQL	5.04	0.832	1	7/22/2008	
3,3'-Dichlorobenzidine	BQL	10.1	1.23	1	7/22/2008	
2,4-Dichlorophenol	BQL	5.04	1.13	1	7/22/2008	
Diethylphthalate	0.857	5.04	0.746	1	7/22/2008	J
Dimethylphthalate	BQL	5.04	0.559	1	7/22/2008	
2,4-Dimethylphenol	BQL	5.04	1.63	1	7/22/2008	
Di-n-octylphthalate	BQL	5.04	0.585	1	7/22/2008	
4,6-Dinitro-2-methylphenol	BQL	25.2	0.554	1	7/22/2008	
2,4-Dinitrophenol	BQL	25.2	0.645	1	7/22/2008	
2,4-Dinitrotoluene	BQL	5.04	0.539	1	7/22/2008	
2,6-Dinitrotoluene	BQL	5.04	0.655	1	7/22/2008	
Diphenylamine *	BQL	5.04	0.575	1	7/22/2008	
Fluoranthene	1.06	5.04	0.711	1	7/22/2008	J
Fluorene	2.87	5.04	0.731	1	7/22/2008	J
Hexachlorobenzene	BQL	5.04	0.509	1	7/22/2008	
Hexachlorobutadiene	BQL	5.04	0.766	1	7/22/2008	
Hexachlorocyclopentadiene	BQL	10.1	10.1	1	7/22/2008	
Hexachloroethane	BQL	5.04	0.751	1	7/22/2008	
Indeno(1,2,3-c,d)pyrene	BQL	5.04	2.30	1	7/22/2008	
Isophorone	BQL	5.04	0.892	1	7/22/2008	
Naphthalene	1.56	5.04	0.917	1	7/22/2008	J
Nitrobenzene	BQL	5.04	1.06	1	7/22/2008	
2-Nitrophenol	BQL	5.04	1.24	1	7/22/2008	
4-Nitrophenol	BQL	25.2	1.09	1	7/22/2008	
N-Nitrosodi-n-propylamine	BQL	5.04	1.51	1	7/22/2008	
Pentachlorophenol	BQL	25.2	1.43	1	7/22/2008	
Phenanthrene	0.806	5.04	0.449	1	7/22/2008	J

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW03
Client Project ID: CTO 015
Lab Sample ID: G649-48-3J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 16:30
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 992 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	5.04	1.07	1	7/22/2008	
Pyrene	BQL	5.04	2.08	1	7/22/2008	
1,2,4-Trichlorobenzene	BQL	5.04	0.726	1	7/22/2008	
2,4,6-Trichlorophenol	BQL	5.04	0.932	1	7/22/2008	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	9.1	91		
2-Fluorophenol		10	8.7	87		
Nitrobenzene-d5		10	9.7	97		
Phenol-d6		10	9.2	92		
2,4,6-Tribromophenol		10	8.9	89		
4-Terphenyl-d14		10	8.6	86		

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: USTAS843-MW03
Client Project ID: CTO 015
Lab Sample ID: G649-48-3J
Lab Project ID: G649-48
Sample Wt/Vol: 992 ML
Dilution: 1

Analyzed By: DES
Date Collected: 7/16/2008 16:30
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Date Analyzed: 7/22/2008
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Alkane, Unknown	8.17			29.4
2	Alkane, Unknown	8.66			23.9
3	Unknown	7.89			23.1
4	Alkane, Unknown	6.90			21.8
5	Alkane, Unknown	4.30			17.7
6	2,3-Dihydro-1-methylindene	5.09	027133-93-3	97	13.1
7	Naphthalene, 2,3,6-trimethyl-	7.51	000829-26-5	97	12.9
8	Alkane, Unknown	5.79			11.8
9	Unknown	7.46			10.8
10	Unknown	5.55			10.4

Comment:

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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: 

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW05
Client Project ID: CTO 015
Lab Sample ID: G649-48-4J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 13:10
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 835 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	7.43	5.99	0.892	1	7/22/2008	
Acenaphthylene	BQL	5.99	0.892	1	7/22/2008	
Anthracene	BQL	5.99	1.05	1	7/22/2008	
Benzo[a]anthracene	BQL	5.99	0.814	1	7/22/2008	
Benzo[a]pyrene	BQL	5.99	0.760	1	7/22/2008	
Benzo[b]fluoranthene	BQL	5.99	0.856	1	7/22/2008	
Benzo[g,h,i]perylene	BQL	5.99	0.737	1	7/22/2008	
Benzo[k]fluoranthene	BQL	5.99	0.659	1	7/22/2008	
Bis(2-chloroethoxy)methane	BQL	5.99	1.23	1	7/22/2008	
Bis(2-chloroethyl)ether	BQL	5.99	1.25	1	7/22/2008	
Bis(2-chloroisopropyl)ether	BQL	5.99	1.17	1	7/22/2008	
Bis(2-ethylhexyl)phthalate	1.86	5.99	0.491	1	7/22/2008	J
4-bromophenyl phenyl ether	BQL	5.99	0.934	1	7/22/2008	
Butylbenzylphthalate	BQL	5.99	0.533	1	7/22/2008	
2-Chloronaphthalene	BQL	5.99	1.04	1	7/22/2008	
2-Chlorophenol	BQL	5.99	1.40	1	7/22/2008	
4-Chloro-3-methylphenol	BQL	5.99	0.952	1	7/22/2008	
4-Chlorophenyl phenyl ether	BQL	5.99	3.90	1	7/22/2008	
Chrysene	BQL	5.99	0.665	1	7/22/2008	
Dibenzo[a,h]anthracene	BQL	5.99	0.527	1	7/22/2008	
Di-n-Butylphthalate	BQL	5.99	0.988	1	7/22/2008	
3,3'-Dichlorobenzidine	BQL	12.0	1.46	1	7/22/2008	
2,4-Dichlorophenol	BQL	5.99	1.34	1	7/22/2008	
Diethylphthalate	1.32	5.99	0.886	1	7/22/2008	J
Dimethylphthalate	BQL	5.99	0.665	1	7/22/2008	
2,4-Dimethylphenol	BQL	5.99	1.94	1	7/22/2008	
Di-n-octylphthalate	BQL	5.99	0.695	1	7/22/2008	
4,6-Dinitro-2-methylphenol	BQL	29.9	0.659	1	7/22/2008	
2,4-Dinitrophenol	BQL	29.9	0.766	1	7/22/2008	
2,4-Dinitrotoluene	BQL	5.99	0.641	1	7/22/2008	
2,6-Dinitrotoluene	BQL	5.99	0.778	1	7/22/2008	
Diphenylamine *	BQL	5.99	0.683	1	7/22/2008	
Fluoranthene	BQL	5.99	0.844	1	7/22/2008	
Fluorene	2.75	5.99	0.868	1	7/22/2008	J
Hexachlorobenzene	BQL	5.99	0.605	1	7/22/2008	
Hexachlorobutadiene	BQL	5.99	0.910	1	7/22/2008	
Hexachlorocyclopentadiene	BQL	12.0	12.0	1	7/22/2008	
Hexachloroethane	BQL	5.99	0.892	1	7/22/2008	
Indeno(1,2,3-c,d)pyrene	BQL	5.99	2.74	1	7/22/2008	
Isophorone	BQL	5.99	1.06	1	7/22/2008	
Naphthalene	139	5.99	1.09	1	7/22/2008	
Nitrobenzene	BQL	5.99	1.26	1	7/22/2008	
2-Nitrophenol	BQL	5.99	1.47	1	7/22/2008	
4-Nitrophenol	BQL	29.9	1.29	1	7/22/2008	
N-Nitrosodi-n-propylamine	BQL	5.99	1.80	1	7/22/2008	
Pentachlorophenol	BQL	29.9	1.69	1	7/22/2008	
Phenanthrene	0.898	5.99	0.533	1	7/22/2008	J

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-MW05
Client Project ID: CTO 015
Lab Sample ID: G649-48-4J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 13:10
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 835 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	5.99	1.27	1	7/22/2008	
Pyrene	BQL	5.99	2.47	1	7/22/2008	
1,2,4-Trichlorobenzene	BQL	5.99	0.862	1	7/22/2008	
2,4,6-Trichlorophenol	BQL	5.99	1.11	1	7/22/2008	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	9.5	94		
2-Fluorophenol		10	8.4	84		
Nitrobenzene-d5		10	9.4	94		
Phenol-d6		10	8.8	88		
2,4,6-Tribromophenol		10	9.9	99		
4-Terphenyl-d14		10	8.9	89		

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: USTAS843-MW05
Client Project ID: CTO 015
Lab Sample ID: G649-48-4J
Lab Project ID: G649-48
Sample Wt/Vol: 835 ML
Dilution: 1

Analyzed By: DES
Date Collected: 7/16/2008 13:10
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Date Analyzed: 7/22/2008
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Indene	4.37	000095-13-6	96	300
2	Heptadecane, 2,6,10,14-tetramethyl-	6.90	018344-37-1	91	50
3	Tridecane	5.96	000629-50-5	95	44.4
4	Unknown	5.79			40.8
5	Indane	4.30	000496-11-7	95	36.1
6	Benzofuran, 7-methyl-	4.78	017059-52-8	94	21.1
7	Unknown	8.13			16.4
8	Alkane, Unknown	8.17			15.6
9	Alkane, Unknown	6.35			13.4
10	Unknown	6.28			13.2

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: 

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-Duplicate
 Client Project ID: CTO 015
 Lab Sample ID: G649-48-5J
 Lab Project ID: G649-48

Analyzed By: DES
 Date Collected: 7/16/2008 0:00
 Date Received: 7/17/2008
 Date Extracted: 7/21/2008
 Matrix: Water

Initial/Final Amt: 916 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	7.26	5.46	0.813	1	7/22/2008	
Acenaphthylene	BQL	5.46	0.813	1	7/22/2008	
Anthracene	BQL	5.46	0.955	1	7/22/2008	
Benzo[a]anthracene	BQL	5.46	0.742	1	7/22/2008	
Benzo[a]pyrene	BQL	5.46	0.693	1	7/22/2008	
Benzo[b]fluoranthene	BQL	5.46	0.781	1	7/22/2008	
Benzo[g,h,i]perylene	BQL	5.46	0.671	1	7/22/2008	
Benzo[k]fluoranthene	BQL	5.46	0.600	1	7/22/2008	
Bis(2-chloroethoxy)methane	BQL	5.46	1.12	1	7/22/2008	
Bis(2-chloroethyl)ether	BQL	5.46	1.14	1	7/22/2008	
Bis(2-chloroisopropyl)ether	BQL	5.46	1.06	1	7/22/2008	
Bis(2-ethylhexyl)phthalate	BQL	5.46	0.448	1	7/22/2008	
4-bromophenyl phenyl ether	BQL	5.46	0.852	1	7/22/2008	
Butylbenzylphthalate	BQL	5.46	0.486	1	7/22/2008	
2-Chloronaphthalene	BQL	5.46	0.944	1	7/22/2008	
2-Chlorophenol	BQL	5.46	1.28	1	7/22/2008	
4-Chloro-3-methylphenol	BQL	5.46	0.868	1	7/22/2008	
4-Chlorophenyl phenyl ether	BQL	5.46	3.55	1	7/22/2008	
Chrysene	BQL	5.46	0.606	1	7/22/2008	
Dibenzo[a,h]anthracene	BQL	5.46	0.480	1	7/22/2008	
Di-n-Butylphthalate	BQL	5.46	0.901	1	7/22/2008	
3,3'-Dichlorobenzidine	BQL	10.9	1.33	1	7/22/2008	
2,4-Dichlorophenol	BQL	5.46	1.22	1	7/22/2008	
Diethylphthalate	0.873	5.46	0.808	1	7/22/2008	J
Dimethylphthalate	BQL	5.46	0.606	1	7/22/2008	
2,4-Dimethylphenol	BQL	5.46	1.77	1	7/22/2008	
Di-n-octylphthalate	BQL	5.46	0.633	1	7/22/2008	
4,6-Dinitro-2-methylphenol	BQL	27.3	0.600	1	7/22/2008	
2,4-Dinitrophenol	BQL	27.3	0.699	1	7/22/2008	
2,4-Dinitrotoluene	BQL	5.46	0.584	1	7/22/2008	
2,6-Dinitrotoluene	BQL	5.46	0.710	1	7/22/2008	
Diphenylamine *	BQL	5.46	0.622	1	7/22/2008	
Fluoranthene	BQL	5.46	0.770	1	7/22/2008	
Fluorene	2.57	5.46	0.791	1	7/22/2008	J
Hexachlorobenzene	BQL	5.46	0.551	1	7/22/2008	
Hexachlorobutadiene	BQL	5.46	0.830	1	7/22/2008	
Hexachlorocyclopentadiene	BQL	10.9	10.9	1	7/22/2008	
Hexachloroethane	BQL	5.46	0.813	1	7/22/2008	
Indeno(1,2,3-c,d)pyrene	BQL	5.46	2.49	1	7/22/2008	
Isophorone	BQL	5.46	0.966	1	7/22/2008	
Naphthalene	137	5.46	0.993	1	7/22/2008	
Nitrobenzene	BQL	5.46	1.15	1	7/22/2008	
2-Nitrophenol	BQL	5.46	1.34	1	7/22/2008	
4-Nitrophenol	BQL	27.3	1.18	1	7/22/2008	
N-Nitrosodi-n-propylamine	BQL	5.46	1.64	1	7/22/2008	
Pentachlorophenol	BQL	27.3	1.54	1	7/22/2008	
Phenanthrene	BQL	5.46	0.486	1	7/22/2008	

SGS Environmental Services, Inc.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS843-Duplicate
Client Project ID: CTO 015
Lab Sample ID: G649-48-5J
Lab Project ID: G649-48

Analyzed By: DES
Date Collected: 7/16/2008 0:00
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Matrix: Water

Initial/Final Amt: 916 mL / 5.0 mL

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	5.46	1.16	1	7/22/2008	
Pyrene	BQL	5.46	2.25	1	7/22/2008	
1,2,4-Trichlorobenzene	BQL	5.46	0.786	1	7/22/2008	
2,4,6-Trichlorophenol	BQL	5.46	1.01	1	7/22/2008	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	9.1	91		
2-Fluorophenol		10	8.6	86		
Nitrobenzene-d5		10	9.4	94		
Phenol-d6		10	8.9	89		
2,4,6-Tribromophenol		10	9.5	94		
4-Terphenyl-d14		10	9.1	91		

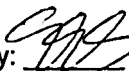
Comments:

* 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: USTAS843-Duplicate
Client Project ID: CTO 015
Lab Sample ID: G649-48-5J
Lab Project ID: G649-48
Sample Wt/Vol: 916 ML
Dilution: 1

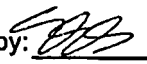
Analyzed By: DES
Date Collected: 7/16/2008 0:00
Date Received: 7/17/2008
Date Extracted: 7/21/2008
Date Analyzed: 7/22/2008
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Indene	4.38	000095-13-6	96	463
2	Alkane, Unknown	4.31			37.1
3	Benzofuran, 2-methyl-	4.78	004265-25-2	94	20.6
4	Unknown	8.12			11.7
5	Benzofuran	8.27	000271-89-6	93	9.36
6	Benzofuran, 2-methyl-	4.72	004265-25-2	96	8.5
7	Unknown	8.79			7.79
8	Benzonitrile, 2-methyl-	4.51	000529-19-1	96	7.14
9	Unknown	8.82			6.89
10	Benzofuran	4.02	000271-89-6	91	6.82

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: 



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SGS Environmental Services Inc.

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• Ohio • Maryland
• New Jersey • North Carolina
• West Virginia

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1 CLIENT: <u>OSAGE of VIRGINIA</u>						SGS Reference: <u>G649-48</u>										PAGE <u>1</u> OF <u>1</u>			
CONTACT: <u>THELISA ELLMAN</u> PHONE NO.: <u>(757) 274-4949</u>																			
PROJECT: <u>CTO 015</u> SITE/PWSID#: <u>AS843</u>																			
REPORTS TO: <u>Shaun Whitworth</u> E-MAIL: <u>swhitworth@osageva.com</u>																			
INVOICE TO: <u>MIKE CREE</u> QUOTE #																			
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