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June 15, 2004

Commander
Naval Facilities Engineering Command
Atlantic Division
6506 Hampton Blvd., Bldg. A, Room 1306
Norfolk, VA 23508

Attention: EV32JC Mr. John D. Conway, P.G.

Re: Phase II Limited Site Assessment
Rapid Refueler 2003 Release
Marine Corps Air Station
New River, North Carolina
Navy Contract No. N62470-01-D-3009
Delivery Order No. 0095
CATLIN Project No. 203-108

Dear Mr. Conway:

CATLIN Engineers and Scientists (CATLIN) is pleased to submit the FINAL Phase II Limited Site Assessment document for the above referenced site. We have reviewed the following comments to the Draft document received from Nikki Hall on June 10, 2004 and have made the appropriate revisions to the text.

1. Executive Summary and G2 in reference to optimization report; delete "will be beneficial to" and replace with "is planned for fiscal year 2005. This effort should be beneficial, minimize redundancy, and maximize...."

Acknowledged. The text has been changed in both instances..

CATLIN Engineers and Scientists appreciates the opportunity to continue to provide services to LANTDIV and the MCB on your environmental projects.

Michael E. Mason, P.E.
CATLIN Program Manager

Steven V. Hudson, P.G., CWD
CATLIN Project Manager

Attachments: Phase II

cc: Ms. Pamela Argilan – Code AQ11B Contracts, Correspondence only
Commanding General, Attn: Director I&E, EMD, EQB

203108_PHASE 2finl ltr

**PHASE II LIMITED
SITE ASSESSMENT**

**RAPID REFUELER
2003 RELEASE**

**MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA**

JUNE 15, 2004

**LATITUDE: 34° 42' 30"
LONGITUDE: 77° 25' 59"**

SITE INFORMATION		RELEASE INFORMATION	
NCDENR Incident No.	PENDING	Product Released	JP-5
Facility Identification No.	N/A	Date Discovered	October 9, 2003
Risk Classification	PENDING	Estimated Quantity	Unknown
Site Priority Ranking	PENDING	Cause of Release	Breach in Pipeline
NCDENR Assigned Land Use	Industrial/ Commercial	Source of Release	Underground Fuel Distribution Line

**CONTRACT NO. N62470-01-D-3009
DELIVERY ORDER NO. 0095
CATLIN PROJECT NO. 203-108**

Prepared by:

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Prepared for:

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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
ARO	Asheville Regional Office
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
CATLIN	CATLIN Engineers and Scientists (Formerly RC&A)
CFR	Code of Federal Regulations
Cr	Chromium
CSA	Comprehensive Site Assessment
CNP	Carbon Nitrogen Phosphorous
CPT	Cone Penetrometer Test
DEM	Division of Environmental Management
DIPE	Diisopropyl 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
EAD	Environmental Affairs Department
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
FOD	Foreign Object Debris
FRO	Fayetteville Regional Office
FT	Feet

GCL	Gross Contaminant Level
GIS	Geographic Information System
GPS	Global Positioning System
Guidelines Vol. I	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other Than Petroleum Underground Storage Tanks (May 1998)
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
LANTDIV	Atlantic Division
LSA	Limited Site Assessment
LUST	Leaking Underground Storage Tank
m-	meta
m	meter
MADEP	Massachusetts Department of Environmental Protection
MCALF	Marine Corps Auxiliary Landing Field
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCOLF	Marine Corps Outlying Landing Field
MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
MRO	Mooresville Regional Office
MSCC	Maximum Soil Contaminant Concentration
MSL	Mean Sea Level
MTBE	Methyl tertiary butyl ether
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Litre
NA	Not Analyzed
N/A	Not Applicable
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
NCDOC	North Carolina Department of Corrections
NCDOT	North Carolina Department of Transportation
NCSP	North Carolina State Plane
NCSPA	North Carolina State Ports Authority
NE	None Established
NM	Not Measured
NMT	No Measurable Thickness
NS	Not Sampled

o-	ortho
OVA	Organic Vapor Analyzer
p-	para
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
ROI	Radius of Influence
RRO	Raleigh Regional Office
SOW	Scope of Work
STGW	Soil-to-Groundwater
SVE	Soil Vapor Extraction
SVOC	Semi Volatile Organic Compound
TDHF	Toxicologically Defined Hydrocarbons Fractions
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TKN	Total Kjeldahl Nitrogen
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
WaRO	Washington Regional Office
WiRO	Wilmington Regional Office
WSRO	Winston-Salem Regional Office

**RAPID REFUELER
2003 RELEASE**

**MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA**

June 15, 2004

EXECUTIVE SUMMARY

The purpose of this assessment was to further define the extent of soil and groundwater contamination and free-phase product accumulation in the area of a release of JP-5 from an underground pipeline at the Rapid Refueler Facility aboard Marine Corps Air Station (MCAS), New River, North Carolina.

This Phase II Limited Site Assessment was conducted in response to the initial findings of a Phase I Limited Site Assessment that was being conducted at the site of a JP-5 underground transfer pipeline leak. Phase I activities included the installation of a Type II monitoring well at the location of a confirmed leak that occurred from an eight-inch diameter underground pipeline that transfers JP-5 fuel from the Campbell Street Fuel Farm to the Rapid Refueler facility. During the Phase I activities, free-phase product was confirmed in the subsurface, thus requiring the completion of a Phase II. Therefore, under the agreement of CATLIN and Camp Lejeune personnel, the Phase I activities were ceased and a Phase II assessment was conducted.

The assessment activities consisted of the installation of four shallow Type II monitoring wells in the immediate area of the JP-5 release. During each monitoring well borehole installation, a soil sample was obtained from just above the apparent capillary fringe. An independent, off-base laboratory analyzed each soil sample for selected volatile organic compounds, semi-volatile organic compounds, and hydrocarbon fractions per the following methods EPA 8260/5030 Preparation, EPA 8270, and MADEP VPH/EPH.

Following installation, gauging, and development of the additional monitoring wells, representative groundwater samples were obtained from each well not containing free-phase product in addition to six existing monitoring wells. An independent, off-base laboratory analyzed the groundwater samples for selected volatile organic compounds, semi volatile organic compounds, and hydrocarbon fractions per the following methods EPA 602+MTBE, EPA 625+TICs, and MADEP VPH/EPH.

Based on the investigation findings, the source area at the subject site has been delineated. The site vadose zone soils and surficial groundwater remain impacted with free-phase product and relatively low concentrations of petroleum constituents.

Laboratory analysis of soil samples collected from borings RR-19 and RR-23 utilizing EPA Method 8260/5035 and MADEP VPH/EPH revealed contaminant levels above the STGW, but below Residential and Industrial/Commercial MSCCs where established.

Groundwater contamination has been identified above 2L GWQS in the samples collected from monitoring wells AS511-1, MW-10, RR-14, and RR-23 and analyzed per EPA Methods 602, 625, and MADEP EPH/VPH, however, no contaminants were identified above established GCLs.

Free-phase product was detected in monitoring wells RR-19 (1.84') and RR-20 (0.10') during the March 12, 2004 gauging event. Additionally, a sorbent sock was observed in monitoring well MW-10 that indicates the potential for the presence of free-phase product.

Completion of a Risk Characterization and Land Use Form for this site indicated that the site might be characterized as a Low Risk and Industrial/Commercial site once the free-phase product is removed. The impacted groundwater and soil has been adequately defined. Therefore, a CAP should be prepared for the subject site. This CAP should consider the removal of free-phase product as the primary site remediation goal. Once free-phase product has been removed, groundwater sampling may be conducted to confirm that dissolved contaminant levels are below GCLs and if confirmed, request No Further Action at the site with Land Use Restrictions.

The entire Rapid Refueler site contains a number of individual releases. A comprehensive remedial effort addressing all of the individual releases as a "single entity" is planned for fiscal year 2005. This effort should be beneficial, minimize redundancy, and maximize remedial efficiency.

A copy of this report should be forwarded to the NCDENR WiRO.

**RAPID REFUELER
2003 RELEASE**

**MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA**

A. SITE IDENTIFICATION

Date Of Report: June 15, 2004
Facility ID: N/A UST Incident Number (if known): Pending
Site Name: Rapid Refueler
Site Location: Marine Corps Air Station, New River
Nearest City/Town: Jacksonville County: Onslow
Risk Classification: Pending Land Use Classification: Industrial/Commercial

AST Owner: Commanding General - MCB Camp Lejeune
Attn: Director I&E/EMD/EQB
Address: PSC 20004
MCB Camp Lejeune, NC 28542-0004 Phone: (910) 451-5068

AST 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: Marine Corps personnel
Address: Rapid Refueler, MCAS, New River Phone: Unknown

Consultant/Contractor: CATLIN Engineers and Scientists
Address: 220 Old Dairy Road, Wilmington, North Carolina 28405 Phone: (910) 452-5861

Release Information

Date Discovered: October 9, 2003
Longitude: N 77°25'59" Latitude: W 34°42'30"

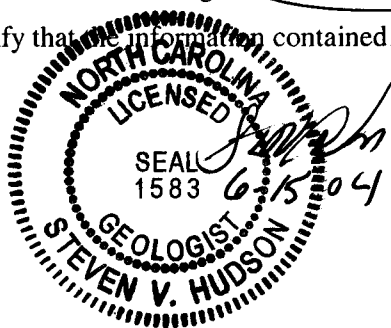
Estimated Quantity of Release: Unknown

Cause of Release: Breach in underground fuel transfer line.

Source of Release (e.g. Piping/UST):
Buried JP-5 distribution line leak

Sizes and contents of AST system from which the release occurred:
Eight-inch diameter underground pipeline used to transfer JP-5 from Campbell Street Fuel Farm to the
Rapid Refueler facility.

I, Steven V. Hudson a Professional Engineer/Licensed Geologist (circle one) for
CATLIN Engineers and Scientists, do certify that the information contained in this report is correct and
accurate to the best of my knowledge.



(Please Affix Seal and Signature)

B. INTRODUCTION

B.1 AUTHORIZATION

CATLIN Engineers and Scientists (CATLIN) was authorized to perform this Phase II Limited Site Assessment (Phase II), by the LANTDIV NAVFACENGCOM in accordance with the Order of Supplies Contract Number N62470-01-D-3009, Delivery Order Number 0095 with Modification 01.

B.2 PURPOSE OF INVESTIGATION

This Phase II was conducted in response to the initial findings of a Phase I Limited Site Assessment (Phase I) that was being conducted at the site of a JP-5 underground transfer pipeline leak. Phase I activities included the installation of a Type II monitoring well at the location of a confirmed leak that occurred in October 2003 from an eight-inch diameter underground pipeline that transfers JP-5 fuel from the Campbell Street Fuel Farm to the Rapid Refueler facility. During the Phase I activities, free-phase product was confirmed in the subsurface, thus requiring the completion of a Phase II. Therefore, under the agreement of CATLIN and Camp Lejeune personnel, the Phase I activities were ceased and a Phase II was conducted. The vicinity of the site is presented on Figure 1. Figure 2 illustrates the layout of Rapid Refueler subject site, aboard MCAS, New River, North Carolina.

C. RISK CHARACTERIZATION

NOTE: *Source area means point of release from a UST system.*

Risk Classification and Land Use Form

Part I - Groundwater/Surface Water/Vapor Impacts

High Risk

- | | |
|--|---------------|
| 1. <i>Has the release contaminated any water supply well including any used for non-drinking purposes?</i> | YES <u>NO</u> |
| 2. <i>Is a water supply well used for drinking water located within 1,000 feet of the source area of the discharge or release?</i> | YES <u>NO</u> |
| 3. <i>Is a water supply well not used for drinking water (e.g., irrigation, washing cars, industrial cooling water, filling swimming pools) located within 250 feet of the source area of the release?</i> | YES <u>NO</u> |
| 4. <i>Does groundwater within 500 feet of the source area of the release have the potential for future use (there is no other source of water supply other than the groundwater)?</i> | YES <u>NO</u> |

5. *Do vapors from the release pose a threat of explosion because of accumulation of the vapors in a confined space or pose any other serious threat to public health, public safety or the environment?* YES NO
If YES describe.

Buildings are slab on grade.

6. *Are there any other factors that would cause the discharge or release to pose an imminent danger to public health, public safety, or the environment?* YES NO
If YES describe.

Intermediate Risk

7. *Is a surface water body located within 500 feet of the source area of the discharge or release?* YES NO
If YES, does the maximum groundwater contaminant concentration exceed the surface water quality standards and criteria found in 15A NCAC 2B.0200 by a factor of 10? YES NO

A retention pond and drainage ditches are located approximately 550 feet east of the release.

8. *Is the source area of the discharge or release located within an approved or planned wellhead protection area as defined in 42 USC 300h-7(e)?* YES NO
If YES describe.

MCB, Camp Lejeune has identified proposed wellhead protection areas on the base. The site is not located in an area deemed as a potential wellhead protection area based on the Wellhead Protection Plan Update prepared by AH Consultants, dated August 2002.

9. *Is the release located in the Coastal Plain physiographic region as designated on a map entitled "Geology of North Carolina" published by the Department in 1985?* YES NO
If YES, is the source area of the release located in an area in which there is recharge to an unconfined or semi-confined deeper aquifer that is being used or may be used as a source of drinking water? YES NO
If YES describe.

Due to the geology and aquifer characteristics commonly encountered in the area, recharge to the underlying Castle Hayne aquifer may be possible. Analysis groundwater samples collected from the Type III monitoring wells (RR-14 and AS511-5) did not reveal detectable concentrations of petroleum constituents.

10. *Do the levels of groundwater contamination for any contaminant exceed the gross contamination levels established by the Department?* YES NO

All contaminant levels from the March 2004 sampling event are below current GCLs.

Part II - Land Use

Property Containing Source Area of Release

The questions below pertain to the property containing the source area of the release.

1. *Does the property contain one or more primary or secondary residences (permanent or temporary)?* YES **NO**
Describe.

The closest residences are approximately 4,000 to 5,000 feet north of the release.

2. *Does the property contain a school, daycare center, hospital, playground, park, recreation area, church, nursing home, or other place of public assembly?* YES **NO**
Describe.

3. *Does the property contain a commercial (e.g., retail, warehouse, office/business space, etc.) or industrial (e.g., manufacturing, utilities, industrial research and development, chemical/petroleum bulk storage, etc.) enterprise, an inactive commercial or industrial enterprise, or is the land undeveloped?* YES **NO**
Describe.

The subject sites consist of an active aircraft refueling facility that is located in the central portion of an active airfield located aboard MCAS, New River.

4. *Do children visit the property?* YES **NO**
Explain.

The site is used predominantly by active military personnel.

- Is access to the property reliably restricted consistent with its use (e.g., by fences, security personnel or both)?* YES **NO**
Explain.

Yes. The site is located aboard MCAS, New River airfield that is surrounded with fencing and it constantly monitored by security personnel.

5. *Do pavement, buildings, or other structures cap the contaminated soil?* YES **NO**
Describe.

The area associated with the actual release is covered with grass. The release occurred within the grassy portion of a refueler island that is part of the airfield.

If YES, what mechanisms are in place or can be put into place to ensure that the contaminated soil will remain capped in the foreseeable future?

6. *What is the zoning status of the property?*

The MCB, Camp Lejeune is not subject to local or county zoning requirements.

7. *Is the use of the property likely to change in the next 20 years?*

YES **NO**

Explain.

No. The designated use of the facility on the Base is not likely to change in the near future.

Property Surrounding Source Area of Release

The questions below pertain to the area within 1500 feet of the source area of the release (excludes property containing source area of the release):

1. *What is the distance from the source area of the release to the **nearest** primary or secondary residence (permanent or temporary)?*

The nearest residence appears to be military bachelor quarters located approximately 4,000 to 5,000 feet north of the release.

2. *What is the distance from the source area of the release to the **nearest** school, daycare center, hospital, playground, park, recreation area, church, nursing home or other place of public assembly?*

Greater than 5,000 feet.

3. *What is the zoning status of properties in the surrounding area?*

As previously stated, MCB, Camp Lejeune is not subject to local or county zoning requirements. The surrounding property has been developed for military aircraft support purposes.

4. *Briefly characterize the use and activities of the land in the surrounding area.*

The surrounding land is used for the refueling, maintenance, storage, and deployment of military aircraft.

D. RECEPTOR INFORMATION

D.1 WATER SUPPLY WELLS

No supply wells were identified within 1,500 feet of the release. The well locations are presented on the attached Figure 1.

D.2 PUBLIC WATER SUPPLIES

Are public water supplies available within 1,500 feet of the source area of the release?

YES NO

If YES, where is the location of the nearest public water lines and the source(s) of the public water supply (indicate on map). Describe.

Public water is provided to buildings within 1,500 feet of the subject site by water mains which carry treated potable water. Potable water is supplied to the site and surrounding areas by the MCAS water supply system. Potable water for MCAS, New River is obtained from various water treatment facilities throughout the MCAS and nearby MCB, Camp Lejeune. Groundwater obtained from the Castle Hayne Aquifer is the raw water source for the treatment facilities.

D.3 SURFACE WATER

Identify all surface water bodies (e.g., ditch, pond, stream, lake, river) within 1,500 feet of the source area of the release. This information must be shown on the USGS topographic map.

A retention pond and associated drainage ditches are located approximately 550 feet east of the release. See the attached Figure 1 for surface water locations.

D.4 WELLHEAD PROTECTION AREAS

Identify all planned or approved wellhead protection areas (e.g., ditch, pond, stream, lake, river) within 1,500 feet of the source area of the release. This information must be shown on the USGS topographic map. Wellhead protection areas are defined in 42 USC 300h-7(e).

According to the Wellhead Protection Plan – 2002 Update prepared by AH Environmental Consultants; the site is not located within a wellhead protection area. A wellhead protection area determined by the estimated ten year maximum pumping rate influence is located approximately 700 feet northeast of the release. The wellhead protection area is presented on Figure 1.

D.5 DEEP AQUIFERS IN THE COASTAL PLAIN PHYSIOGRAPHIC REGION

(refer to page 19 of the guidelines) NOTE: This requirement only pertains to releases in the Coastal Plain physiographic region as designated on a map entitled "Geology of North Carolina" published by the Department in 1985.

As identified in the Geologic Map of North Carolina (North Carolina Department of Natural Resources and Community Development 1985), the subject site lies within the Coastal Plain physiographic province. Results of the groundwater analysis conducted on samples collected from the Type III monitoring wells indicates that the deeper portions of the aquifer have not been impacted by petroleum constituents.

To some degree, seven of the ten aquifers identified to date in the North Carolina Coastal Plain are typically present beneath portions of the MCAS, New River. In order of increasing depth, these aquifers include the Surficial, Castle Hayne, Beaufort, Peedee, Black Creek, and upper and lower Cape Fear aquifers. The Castle Hayne Aquifer contains freshwater and is the principal aquifer used in the area for water supply.

D.6 SUBSURFACE STRUCTURES

Numerous underground utilities are present throughout the site. These utilities are located above the shallow groundwater table and are not considered potential receptors.

D.7 PROPERTY OWNERS AND OCCUPANTS

The subject site is owned and operated by the Commanding General – Marine Corps Base, Camp Lejeune.

E. SITE GEOLOGY AND HYDROLOGY

A number of borings and wells have been installed at the Rapid Refueler site. Borings were advanced to depths of 14 to 15 feet BLS for installation of the shallow Type II monitoring wells constructed during this investigation, and from 13 to 15 feet BLS for the Type II wells installed previously and 50 feet BLS for the previously installed Type III monitoring wells. Surficial materials encountered from ground surface to approximately three to six feet BLS consisted of light gray to orange brown, silty, very fine to fine grained sandy clay to clay. The clay was typically soft to stiff and exhibited moderate to high plasticity. The clay material was typically moist to wet and appeared to have the characteristics of an aquitard. Light gray to brown, moderately to well sorted, very fine to coarse grained sand with trace silt was identified beneath the clay unit to a depth of approximately 22 feet BLS. Greenish gray, moderately sorted fine grained silty sand with trace cemented sand nodules was identified beneath the sand unit and extended to a depth of 24.5 feet BLS. A sharp contact was noted in boring USTAS497-MW06 at a depth of 24.5 feet where the material changed from the fine grained silty sand to a weathered limestone. The weathered limestone consisted of "limey" sands and weathered fossiliferous limestone fragments and extended to a depth of approximately 42 feet BLS. Gray green fine to very fine grained silty sand was identified beneath the weathered limestone and extended to the boring termination depth of 50 feet. Boring logs for the newly installed monitoring wells (RR-19, RR-20, RR-21, and RR-23) are included in Appendix C.

F. SAMPLING RESULTS

F.1 SOIL SAMPLING METHODS

During the field assessment activities, CATLIN personnel obtained subsurface soil

samples while installing the boreholes for monitoring wells. Soil samples were taken from the three to five feet BLS interval from the borings advanced to install monitoring wells RR-19, RR-20 and RR-21 and from the four to six feet BLS interval in RR-23. Each soil sample was labeled with the borehole ID, sample date, site name, sampler, and placed in an iced cooler. Additional details pertaining to soil sampling methods are presented in Appendix A. The samples were then delivered to Paradigm Analytical Laboratories, Inc. (North Carolina Certification #481) in Wilmington, North Carolina. In accordance with the 2000 *Guidelines*, site soil samples obtained for the Phase II were analyzed for potential hydrocarbon compound concentrations per EPA Method 8260B/5035, EPA Method 8270, and MADEP VPH/EPH.

F.2 SOIL ANALYTICAL RESULTS

A copy of the resulting laboratory report has been provided in Appendix D. Analysis of the soil samples submitted for laboratory analysis can be summarized as follows:

F.2.1 Volatile Organic Compounds - EPA Method 8260B/5035

Analysis of the soil samples for volatile organic compounds per EPA Method 8260B/5035 revealed numerous constituents above the Soil to Groundwater MSCC in the sample collected from RR-19 at three to five feet BLS. No compounds of concern were identified above established Residential or Industrial/Commercial MSCCs except for 2-chlorotoluene and 4-isopropyltoluene. There are no established MSCC concentrations for these compounds. The sampling results and applicable compliance levels are summarized on Table 1 and graphically represented on Figure 3.

F.2.2 Semi-Volatile Organic Compounds - EPA Method 8270

Analysis of the soil samples for volatile organic compound concentrations per EPA Method 8270 revealed the following concentrations in excess of the most restrictive (Soil to Groundwater) MSCCs:

Borehole ID	Sample Depth (feet BLS)	Compound of Concern	Concentration (mg/Kg)	Residential Industrial/ Commercial Soil to Groundwater MSCCs
RR-19	3-5	2-Methylnaphthalene	44.3	63 1,635 3
		4-Nitroaniline	<20.6	NE NE NE
		Naphthalene	25	63 1,635 0.58

RR-23	4-6	2,4-Dimethylphenol	1.88	312 8,176 0.9
		2-Methylnaphthalene	13.5	63 1,635 3
		Naphthalene	9.24	63 1,635 0.58

Analytical results for the remaining EPA Method 8270 compounds were BQL. Due to the elevated quantitation limit of 20.6 mg/Kg for 4-nitroaniline in the sample collected from RR-19, the compound is listed as being above the lowest MSCC. No compounds were confirmed at concentrations above the Residential or Industrial/Commercial MSCCs. The EPA Method 8270 laboratory report data for the soil samples has been summarized on Table 2 and graphically summarized on Figure 4.

F.2.3 Hydrocarbon Fractions - MADEP VPH/EPH

Analysis of the soil samples for volatile organic compounds per MADEP VPH/EPH revealed three hydrocarbon fractions of concern potentially above the lowest (Soil to Groundwater) MSCCs at the following locations:

Borehole ID	Sample Depth (feet BLS)	Hydrocarbon Fraction	Concentration (mg/Kg)	Residential Industrial/Commercial Soil to Groundwater MSCCs
RR-19	3-5	C ₅ -C ₈ Aliphatics	<500	939 24,528 72
		C ₉ -C ₂₂ Aromatics	<740	469 12,264 34
RR-23	4-6	C ₉ -C ₂₂ Aromatics	<78	469 12,264 34

The analytical results for the remaining MADEP VPH/EPH revealed hydrocarbon fractions that were below the lowest MSCCs or BQL with the quantitation limits below the lowest MSCCs.

The MADEP VPH/EPH laboratory report for the submitted soil samples has been summarized on Tables 3A and 3B. Data regarding C₅-C₈ Aliphatics and C₉-C₂₂ Aromatics concentration levels, in relation to the site map, have been summarized on Figure 5.

F.3 GROUNDWATER SAMPLING METHODS

Four shallow (Type II) monitoring wells were installed to assess petroleum impact to the groundwater near the 2003 pipeline release. On March 12, 2004 CATLIN gauged the four newly installed monitoring wells in addition to six existing monitoring wells near the release for depth to water, potential free-phase product thickness, and to determine well volume. CATLIN purged a minimum of three well volumes from eight monitoring wells selected for groundwater sampling, prior to placing the groundwater directly into laboratory sample glassware. All groundwater samples were labeled with the well ID, sample date, site name, sampler, and placed in an iced cooler. Samples were then delivered to Paradigm Analytical Laboratories, Inc. (Paradigm; North Carolina Certification #481) in Wilmington, North Carolina. In accordance with the *2000 Guidelines*, groundwater samples obtained for laboratory analysis were analyzed for potential petroleum hydrocarbon compound concentrations, in micrograms per liter ($\mu\text{g/L}$), per the following methods EPA Method 602 + MTBE, EPA Method 625 + TICs, and MADEP VPH/EPH. Groundwater sampling methods are discussed in further detail in Appendix A.

F.4 GROUNDWATER ANALYTICAL RESULTS

A copy of the resulting laboratory report has been provided in Appendix D. Analysis of the groundwater samples are summarized as follows:

F.4.1 Volatile Organic Compounds - EPA Method 602 plus MTBE

Analysis of the groundwater samples for volatile organic compound concentrations per EPA Method 602 plus MTBE revealed benzene and ethylbenzene to be above 2L GWQS. The benzene concentrations ranged from 2.0 to 2.3 $\mu\text{g/L}$ and ethylbenzene concentrations ranged from 44 to 49 $\mu\text{g/L}$ in the groundwater samples collected from monitoring well RR-23 and the duplicate sample, respectively.

Analytical results for the remaining EPA Method 602 plus MTBE compound concentrations were either BQL or below applicable 2L GWQS. No EPA Method 602 + MTBE compounds were identified above current GCL.

A summary of the EPA Method 602 + MTBE laboratory report data for the groundwater samples has been listed on Table 5. A summary of the EPA Method 602 + MTBE compounds of concern (benzene and ethylbenzene) in relation to the site map, have been presented on Figure 6.

F.4.2 Semi-Volatile Organic Compounds - EPA Method 625 + TICs

Analysis of the groundwater samples for volatile organic compound concentrations per EPA Method 625 revealed three compounds of concern at

the following location:

Compound Of Concern	Well ID	Concentration (µg/L)	GCL 2L GWQS
Bis (2-ethylhexyl) phthalate	AS511-1	83.5	NE 3
	MW-10	25.2	
	RR-14	86.1	
Naphthalene	MW-10	41.2	15,500 21
	RR-23	366	

Analytical results for the remaining EPA Method 625 compound concentrations were either BQL or below applicable 2L GWQS.

A summary of the EPA 625 Method laboratory report data from the groundwater samples has been listed on Table 6 and graphically summarized on Figure 7.

Ten (10) largest (peak area) non-target compounds, or TICs

In accordance with the 2000 Guidelines EPA Method 625 sample(s) are also analyzed for the ten (10) largest (peak area) non-target compounds, or TICs. TICs refer to detected tentatively identified compounds, which are not present in the EPA Method 625 list of compounds. Laboratory analysis for the ten largest TICs can be summarized as follows:

WELL ID	NUMBER OF TICs	WELL ID	NUMBER OF TICs
RR-9	2	RR-23	10
RR-11	0	AS511-1	4
RR-14	0	AS511-5	10
RR-21	1	MW-10	10

Laboratory analytical summary detailing these results is included in Appendix D.

F.4.3 Hydrocarbon Fractions - MADEP VPH/EPH

The groundwater samples were analyzed for MADEP VPH/EPH hydrocarbon fractions. Analysis results revealed three hydrocarbon fractions of concern above the interim 2L GWQS at the following locations and concentrations:

Well ID	Toxicological Defined Hydrocarbon Fraction of Concern	Concentration (µg/L)	Interim 2L GWQS
MW-10	C ₉ -C ₁₈ Aliphatics	5,700	4,200
	C ₉ -C ₂₂ Aromatics	700	210
RR-23	C ₉ -C ₂₂ Aromatics	380	210

Laboratory analysis for the remaining MADEP VPH/EPH hydrocarbon fraction concentrations were either BQL or below applicable interim 2L GWQS.

Groundwater MADEP EPH/VPH analysis results have been listed on Tables 6A and 6B. A summary of the MADEP VPH/EPH hydrocarbon fraction concentration levels, in relation to the site map, has been summarized on Figure 8. The estimated horizontal extent of surficial groundwater with MADEP VPH/EPH constituents in excess of applicable interim 2L GWQS has been illustrated on Figure 8.

F.4.4 Free-Phase Product

During the gauging event, free-phase product was detected in monitoring wells RR-19 at a thickness of 1.84 feet and in RR-20 at a thickness of 0.10 feet. Additionally, monitoring well MW-10 was observed with sorbent material (sock) which indicates the potential that free-phase product is present in the immediate vicinity. This release occurred in an area that has previously been identified with free-phase product associated with a different release that occurred at the Rapid Refueler. The sorbent sock observed in monitoring well MW-10 is assumed to be associated with the earlier release. Additionally, due to logistical difficulties, gauging was not conducted in monitoring well RR-18. Free-phase product associated with past releases has historically been identified in RR-18. Groundwater gauging data is summarized in Table 7. The estimated areal extent along with the measured free-phase product thickness is presented on Figure 10.

F.5 SURFICIAL GROUNDWATER TABLE

Once installation of the additional monitoring wells was completed, the TOCs of the newly installed monitoring wells were surveyed in relation to the elevation of the existing site monitoring wells. CATLIN personnel gauged 10 monitoring wells for depth to groundwater table, and potential free-phase product thickness, on March 12, 2004. The depth to groundwater table measurement was subtracted from the corresponding TOC elevation data to determine the surficial groundwater table elevations. The March 12, 2004 surficial groundwater table contours, illustrated on

the potentiometric surface map presented on Figure 10, were generated by entering the groundwater elevation data for the site Type II monitoring wells into a contouring software program (AutoCAD Land Development). A summary of the monitoring well TOCs and water table elevations is presented in Table 7.

A review of Figure 9 revealed that the surficial groundwater flows to the west and east at the subject site. The generalized groundwater flow typically observed at the site is to the east to northeast. To evaluate the surficial groundwater table hydraulic gradient, the difference in surficial water table elevations from site monitoring wells.

The flow of the shallow groundwater appears to be influenced by the AFVR events that are conducted on numerous wells in the area in addition to the drainage ditches.

G. CONCLUSIONS AND RECOMMENDATIONS

G.1 CONCLUSIONS

Based on the results of the completed Risk Characterization and Land Use Form, field reconnaissance, and review of the data generated during this investigation, the following conclusions are made:

Site Owner

The U.S. Government owns the Rapid Refueler facility as well as the surrounding MCAS, New River, North Carolina property.

Potable Water Supply

The MCAS water treatment plant currently supplies the Rapid Refueler facility with potable water. The raw water source for the MCAS water treatment plant is the Castle Hayne Aquifer.

Wellhead Protection Program

At the time of this report preparation, the State of North Carolina Public Water Supply Section does not list the MCAS, New River, North Carolina as having an approved wellhead protection plan. In reviewing the Marine Corp Base, Camp Lejeune Wellhead Protection Plan-2002 Update (AH Environmental Consultants, 2002), the nearest water supply well is PSWAS-4150 located approximately 3,360 feet west of the Rapid Refueler 2003 release area and PSWAS-5001 located approximately west-southwest of the release. The site is located approximately 700 feet southeast of the estimated extent of the maximum pumping rate influence area (Wellhead Protection Area) as determined in the 2002 Wellhead Protection Plan. The approximate locations of the water supply wells are presented on Figure 1.

Surface Water

The closest mapped surface water body is the New River, located approximately 3,500 feet east of the 2003 release. A network of drainage ditches is located across the airfield with the closest existing approximately 550 feet east of the 2003 release.

Refer to Figure 1 for the locations of the surface water features.

Vadose Zone Soil Compounds of Concern

No target compounds were identified in the selected soil samples above established Residential or Industrial/Commercial MSCCs. The following compounds were identified in the selected soil samples above the minimum MSCC:

- Numerous EPA Method 8260B/5035 constituents were identified above the Soil-to-Groundwater MSCC:
 - RR-19 @ 3-5 feet BLS
- 2-Methylnaphthalene greater than Soil-to-Groundwater MSCC of 3 mg/Kg:
 - RR-19 @ 3-5 feet BLS (44.3 mg/Kg)
 - RR-23 @ 4-6 feet (13.5 mg/Kg)
- 2,4-Dimethylphenol greater than Soil-to-Groundwater MSCC of 0.9 mg/Kg:
 - RR-23 @ 4-6 feet BLS (44.3 mg/Kg)
- 4-Nitroaniline. There is no MSCC established for this compound. Therefore, any measured concentration is considered reportable:
 - RR-19 @ 3-5 feet BLS (<20.6 mg/Kg)
- C₉-C₂₂ Aromatics - greater than Soil-to-Groundwater MSCC of 34 mg/Kg:
 - RR-19 @ 3-5 feet BLS (<740 mg/Kg)
 - RR-23 @ 4-6 feet BLS (<78 mg/Kg)

Groundwater Compounds of Concern

No dissolved contaminants of concern were identified in excess of established GCLs. The following compounds were identified at concentrations greater than 2L GWQS:

- Benzene greater than 2L GWQS of 1 µg/L (GCL = 5,000 µg/L):
 - RR-23 (2.0 µg/L)
- Ethylbenzene greater than 2L GWQS of 29 (GCL = 29,000 µg/L):
 - RR-23 (44 µg/L)
- Bis(2-ethylhexyl)phthalate greater than 2L GWQS of 3 µg/L (No GCL established):
 - AS511-1 (83.5 µg/L)
 - MW-10 (25.2 µg/L)
 - RR-14 (86.1 µg/L)
- Naphthalene greater than 2L GWQS of 21 µg/L (GCL = 15,500 µg/L):
 - MW-10 (41.2 µg/L)
 - RR-23 (366 µg/L)
- C₉-C₁₈ Aliphatics greater than the IGWQS of 4,200 µg/L (No GCL established):
 - MW-10 (5,700 µg/L);
- C₉-C₂₂ Aromatics greater than the IGWQS of 210 µg/L (No GCL established):
 - MW-10 (700 µg/L)
 - RR-23 (380 µg/L).

Free-Phase Product

Free-phase product was detected in monitoring wells RR-19 (1.84') and RR-20 (0.10') during the March 12, 2004 gauging event. Additionally, a sorbent sock was observed in monitoring well MW-10 that indicates the potential for the presence of free-phase product. However, any potential product in monitoring well MW-10 is likely associated with previous releases at the Rapid Refueler.

Source Area – Deep Groundwater Compounds of Concern

Based on the analysis (EPA Method 602 + MTBE, EPA Method 625 + TICs and MADEP VPH/EPH) of groundwater samples obtained from Type III monitoring wells AS511-5 and RR-14, there was no evidence of petroleum impact to groundwater greater than 40 feet BLS.

G.2 RECOMMENDATIONS

Future regulatory requirements for the site will be based on NCDENR's final determination of the risk classification for the incident. The land use for this site appears to be Industrial/Commercial and the risk classification appears to be intermediate due to the site being located within the Coastal Plain physiographic province and the confirmed presence of free-phase product. Should this site be classified as Intermediate Risk and Industrial/Commercial Land Use, the Industrial MSCCs should be applicable for soil cleanup along with the GCLs for groundwater. The site groundwater remains impacted with free-phase product and dissolved petroleum compounds. Vadose zone soils at the site remain impacted with compounds of concern. In order for the subject site to receive regulatory closure under 15A NCAC 2L .0115, NCDENR will likely require a CAP for achieving the following goals:

1) Vadose Zone Soils

Site soils were not confirmed with contaminant levels in excess of current Industrial/Commercial MSCCs. Therefore, remediation of vadose soils associated with the 2003 release will not be necessary.

2) Free-Phase Product

When free-phase product ($>0.02'$) is encountered, 15A NCAC 2L .0106 requires the immediate and ongoing removal of free-phase product. As of March 12, 2004, monitoring wells RR-19 and RR-20 exhibited free-phase product confirmed in excess of 0.02 feet thick. The site CAP should include free-phase product recovery measures in the area of RR-19 and RR-20.

3) Surficial Groundwater Conditions

Assuming an Industrial/Commercial land use and an Intermediate land use

classification, groundwater cleanup standards will be the applicable GCLs and the IGWQS for the identified compounds. With the exception of bis(2-ethylhexyl)phthalate for which there is no established GCL, no dissolved petroleum compounds were identified above current GCLs. Two groundwater samples were identified with concentrations of C₉-C₂₂ Aromatics above the current IGWQS of 210 µg/L. According to the Guidelines, the site CAP should include measures for reducing dissolved compounds of concern concentrations to at or below applicable standards. NCDENR requires four consecutive compliant sample events before considering an incident for "no further action".

The entire Rapid Refueler site contains a number of individual releases. A comprehensive remedial effort addressing all of the individual releases as a "single entity" is planned for fiscal year 2005. This effort should be beneficial, minimize redundancy, and maximize remedial efficiency.

A copy of this report should be forwarded to the NCDENR WiRO at the following address:

North Carolina Department of Environment and Natural Resources
Division of Water Quality
Groundwater Section
Attention: Dr. Charles F. Stehman, Ph.D., P.G.
127 Cardinal Drive Extension
Wilmington, North Carolina 28405

H. LIMITATIONS

The field, soil, and groundwater data evaluated as part of this investigation only provide isolated data points and may not represent conditions at every location in the project area. Analyses and conclusions of this report, being based on interpolation between data points at the project area, may not be completely representative of all site conditions. Conclusions and recommendations of this investigation and report are based on the best available data in an effort to comply with current regulatory requirements.

I. REFERENCES

AH Environmental Consultants, Wellhead Protection Plan – 2002 Update, Marine Corp Base, Camp Lejeune, North Carolina, August 2002.

North Carolina Department of Environment and Natural Resources (NCDENR), Groundwater Section. *Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I Sources other than Petroleum Underground Storage Tanks*. Effective July 1, 2000.

North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Resources, Hydrogeology Framework Database.
http://www.ehnr.state.nc.us/Data_and_Modeling/Ground_Water_Databases/framestn_ew.php.

North Carolina Wellhead Protection Program Website.
http://www.deh.enr.state.nc.us/pws/welhead/update/wellhead_protection_program.htm.

U.S. Geological Survey. Jacksonville South, North Carolina Topographic Quadrangle. Dated 1952.

Previous Reports:

Final Site Assessment Report, The Campbell Street JP-5 Pipeline, New River Marine Corps Air Station, Jacksonville, North Carolina dated August 12, 1992, Prepared by Baker Environmental, Inc.

Final Site Assessment Report, AS-527 and the South End of the Aircraft Direct Refueling Area, Marine Corps Air Station, New River, Jacksonville, North Carolina dated January 1993, Prepared by Baker Environmental, Inc.

Initial Site Assessment (Site Check) Report, UST Closure by Removal Three (3) JP-5 Fuel Tanks, one (1) Oil/Water Separator Tank, C-D Tank Farm Area, Aircraft Rapid Refueler Facility, Marine Corps Air Station, New River, Jacksonville, Onslow County, NC dated May 1994, Prepared by Coastal Environmental Services Company.

Leaking Underground Storage Tank Phase I Limited Site Assessment, Rapid Refueler, Marine Corps Base, Camp Lejeune, North Carolina dated November 1, 1994, Prepared by Richard Catlin & Associates, Inc.

Leaking Underground Storage Tank Phase I Limited Site Assessment, USTs AS-511-3, 548, 549 (Rapid Refueler Addendum Report), Marine Corps Air Station, New River, North Carolina, dated June 5, 1996, Prepared by Richard Catlin & Associates, Inc.

Leaking Underground Storage Tank Corrective Action Plan, Rapid Refueler, Marine Corps Air Station, New River, North Carolina, dated April 6, 1998, Prepared by CATLIN Engineers and Scientists.

Comprehensive Site Assessment, Rapid Refueler A-B Tanks, Marine Corps Air Station, New River, North Carolina, Dated August 26, 2003, Prepared by CATLIN Engineers and Scientists.

TABLES

TABLE 1 SUMMARY OF SOIL LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: EPA Method 8260B/5035

Sample ID	Contaminant of Concern →		n-Butylbenzene	sec-Butylbenzene	4-Chlorotoluene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	n-Propyl benzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	All Other Analytes
	Date Collected	Sample Depth (ft. BGS)												
Residential MSCC (mg/kg)			156	156	NE	1,560	1,564	NE	63	156	782	782	32,000	Varies
Industrial/Commercial MSCC (mg/kg)			4,088	4,088	NE	40,000	40,880	NE	1,635	4,088	20,440	20,440	200,000	Varies
Soil to Groundwater MSCC (mg/kg)			4	3	NE	0.24	2	NE	0.58	2	7	8	5	Varies
RR-19 (3-5') *	1/9/2004	3-5	14	11	0.13	2.2	3.4	5.7	21	7.9	38	6	<2.956	BQL
RR-20 (3-5')	3/11/2004	3-5	<0.00429	<0.00429	<0.00429	<0.00429	<0.00429	<0.00429	<0.00429	<0.00429	<0.00429	<0.00429	<0.01286	BQL
RR-20 (3-5') Dup.	3/11/2004	3-5	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.01491	BQL
RR-21 (3-5')	3/11/2004	3-5	<0.00566	<0.00566	<0.00566	<0.00566	<0.00566	<0.00566	<0.00566	<0.00566	<0.00566	<0.00566	<0.01696	BQL
RR-23 (4-6')	3/11/2004	4-6	<0.0413	<0.0413	<0.0413	<0.0413	<0.0413	<0.0413	<0.0413	<0.0413	<0.0413	<0.0413	<0.1239	BQL

All results in mg/kg.

NE = None Established

ft. BGS = feet below ground surface

Bold numbers indicate concentration is greater than the lowest MSCC.

* = Sample field labeled as MW-16 (3-5)

TABLE 2 SUMMARY OF SOIL LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: EPA Method 8270

Sample ID	Contaminant of Concern →		2,4-Dimethylphenol	2-Methylnaphthalene	4-Nitroaniline	Naphthalene	All Other Analytes
	Date Collected	Sample Depth (ft. BGS)					
Residential MSCC (mg/kg)			312	63	NE	63	Varies
Industrial/Commercial MSCC (mg/kg)			8,176	1,635	NE	1,635	Varies
Soil to Groundwater MSCC (mg/kg)			0.9	3	NE	0.58	Varies
RR-19 (3-5') *	1/9/2004	3-5	<4.13	44.3	<20.6	25	BQL
RR-20 (3-5')	3/11/2004	3-5	<0.338	<0.338	<1.69	<0.338	BQL
RR-21 (3-5')	3/11/2004	3-5	<0.383	<0.383	<1.91	<0.383	BQL
RR-23 (4-6')	3/11/2004	4-6	1.88	13.5	<1.8	9.24	BQL

All results in mg/kg.

NE = None Established

ft. BGS = feet below ground surface

Bold number indicates concentration is greater than the lowest MSCC.

* = Sample field labeled as MW-16 (3-5)

TABLE 3A SUMMARY OF SOIL LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: MADEP VPH/EPH

Sample ID	Contaminant of Concern →		C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	C5-C8 Aliphatics	C9-C12 Aliphatics	C9-C10 Aromatics
	Date Collected	Sample Depth (ft. BGS)						
RR-19 (3-5') *	1/9/2004	3-5	500	<10	240	<500	1500	<500
RR-20 (3-5')	3/11/2004	3-5	<10	<10	<10	<10	<10	<10
RR-21 (3-5')	3/11/2004	3-5	<10	<10	<10	<10	<10	<10
RR-23 (4-6')	3/11/2004	4-6	300	<10	68	<10	94	<10

All results in mg/kg.

* = Sample field labeled as MW-16 (3-5')

ft. BGS = feet below ground surface

TABLE 3B SUMMARY OF SOIL LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: MADEP VPH/EPH AS COMPARED TO NCDENR MSCCs

Sample ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Date Collected	Sample Depth (ft. BGS)				
Residential MSCC (mg/kg)			939	9,386	93,860	469
Industrial/Commercial MSCC (mg/kg)			24,528	245,280	#	12,264
Soil to Groundwater MSCC (mg/kg)			72	3,255	##	34
RR-19 (3-5') **	1/9/2004	3-5	<500	2,000	<10	<740*
RR-20 (3-5')	3/11/2004	3-5	<10	<20	<10	<20
RR-21 (3-5')	3/11/2004	3-5	<10	<20	<10	<20
RR-23 (4-6')	3/11/2004	4-6	<10	394	<10	<78*

* The value represents the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction.

** = Sample field labeled as MW-16 (3-5)

Health based level >100%

Considered immobile

All results in mg/kg.

Bold numbers indicate the concentration is greater than the lowest MSCC.

TABLE 4 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: EPA Method 602

Well ID	Contaminant of Concern		Benzene	Diisopropyl ether (DIPE)	Ethylbenzene	Methyl-tert butyl ether (MTBE)	Toluene	Total Xylenes
	Sample ID	Date Collected						
GCL (µg/L) 2L GWQS (µg/L)			5,000 1	70,000 70	29,000 29	200,000 200	257,500 1,000	87,500 530
AS511-1	AS511-1	3/12/2004	<1	<1	<1	<2	<1	<4
AS511-5	AS511-5	3/12/2004	<1	<1	<1	<2	<1	<4
MW-10	MW-10	3/12/2004	<1	<1	6.1	<2	<1	<9.1
RR-9	RR-9	3/12/2004	<1	<1	<1	<2	<1	<4
RR-11	RR-11	3/12/2004	<1	<1	<1	<2	<1	<4
RR-14	RR-14	3/12/2004	<1	<1	<1	<2	<1	<4
RR-21	RR-21	3/12/2004	<1	<1	<1	<2	<1	<4
RR-23	RR-23	3/12/2004	2	<1	44	<2	<1	41
RR-23 Dup.	RR-23 Dup.	3/12/2004	2.3	<1	49	<2	1.1	48
Trip Blank	Trip Blank	3/12/2004	<1	<1	<1	<2	<1	<4

All results in µg/L

Bold result indicates concentration is greater than the 2L GWQS.

TABLE 5 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: EPA Method 625

Well ID	Contaminant of Concern		Bis(2-ethylhexyl)phthalate	2,4-Dimethylphenol	Naphthalene	All Other Analytes
	Sample ID	Date Collected				
GCL (µg/L) 2L GWQS (µg/L)			NE 3	140,000 140	15,500 21	Varies Varies
AS511-1	AS511-1	3/12/2004	83.5	<10	<10	BQL
AS511-5	AS511-5	3/12/2004	<10	<10	<10	BQL
MW-10	MW-10	3/12/2004	25.2	20.2	41.2	BQL
RR-9	RR-9	3/12/2004	<10	<10	<10	BQL
RR-11	RR-11	3/12/2004	<10	<10	<10	BQL
RR-14	RR-14	3/12/2004	86.1	<10	<10	BQL
RR-21	RR-21	3/12/2004	<10	<10	<10	BQL
RR-23	RR-23	3/12/2004	<10	<10	366	BQL

All results in µg/L

NE = None Established

Bold result indicates concentration is greater than the 2L GWQS.

TABLE 6A SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: MADEP EPH/VPH

Well ID	Contaminant of Concern →		C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	C5-C8 Aliphatics	C9-C12 Aliphatics	C9-C10 Aromatics
	Sample ID	Date Collected						
AS511-1	AS511-1	3/12/2004	<100	<100	<100	<100	<100	<100
AS511-5	AS511-5	3/12/2004	<100	<100	<100	<100	<100	<100
MW-10	MW-10	3/12/2004	1600	<100	350	<100	4100	350
RR-9	RR-9	3/12/2004	<100	<100	<100	<100	<100	<100
RR-11	RR-11	3/12/2004	<100	<100	<100	<100	<100	<100
RR-14	RR-14	3/12/2004	<100	<100	<100	<100	<100	<100
RR-21	RR-21	3/12/2004	<100	<100	<100	<100	<100	<100
RR-23	RR-23	3/12/2004	970	<100	240	<100	610	140

All results in µg/L

TABLE 6B SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: March 2004

Incident Number and Name: Pending - Rapid Refueler 2003 Release

Facility ID#: N/A

Analytical Method: MADEP VPH/EPH AS COMPARED TO NCDENR IGWQS

Well ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Sample ID	Date Collected				
IGWQS(µg/L)			420	4,200	42,000	210
AS511-1	AS511-1	3/12/2004	<100	<200	<100	<200
AS511-5	AS511-5	3/12/2004	<100	<200	<100	<200
MW-10	MW-10	3/12/2004	<100	5,700	<100	700
RR-9	RR-9	3/12/2004	<100	<200	<100	<200
RR-11	RR-11	3/12/2004	<100	<200	<100	<200
RR-14	RR-14	3/12/2004	<100	<200	<100	<200
RR-21	RR-21	3/12/2004	<100	<200	<100	<200
RR-23	RR-23	3/12/2004	<100	1,580	<100	380

All results in µg/L.

Bold result indicates concentration is greater than the IGWQS.

TABLE 7

MONITORING WELL CONSTRUCTION AND WATER LEVEL GAUGING DATA

Rapid Refueler 2003 Release

New River Air Station, NC

WELL IDENTIFICATION	DATE INSTALLED	DATE WATER LEVEL MEASURED	WELL CASING DEPTH (ft. BLS)	SCREEN INTERVAL (ft. BLS)	BOTTOM OF WELL (ft. BLS)	TOP OF CASING ELEV.* (ft.)	DEPTH TO WATER From Top of Casing (ft.)	FREE PRODUCT THICKNESS (ft.)	GROUND WATER ELEV. ** (ft.)	OUTER CASING DEPTH (ft. BLS) Type III	THIRD CASING DEPTH (ft. BLS) Triple Cased Type III
MW-10		03/12/04	5.0	5.0 - 15.0	15.0	22.68	7.43	SOCK	15.25	-	-
RR-09	05/23/94	03/12/04	5.0	5.0 - 15.0	15.0	25.93	7.93	NMT	18.00	-	-
RR-11	05/26/94	03/12/04	4.5	4.5 - 14.5	15.0	21.73	6.29	NMT	15.44	-	-
RR-14	06/02/94	03/12/04	44.5	44.5 - 49.5	50.0	21.82	5.74	NMT	16.08	39.5	-
RR-19	01/09/04	01/09/04	4.0	4.0 - 14.0	14.5	26.09	9.05	1.84	18.55	-	-
RR-20	03/11/04	03/12/04	5.0	5.0 - 15.0	15.5	26.68	6.04	0.10	20.72	-	-
RR-21	03/11/04	03/12/04	4.0	4.0 - 14.0	14.5	26.00	4.48	NMT	21.52	-	-
RR-23	03/11/04	03/12/04	4.0	4.0 - 14.0	14.5	24.41	6.21	NMT	18.20	-	-
USTAS511-MW01	02/06/95	03/12/04	5.0	5.0 - 15.0	15.5	26.34	5.94	NMT	20.40	-	-
USTAS511-MW05	02/09/95	03/12/04	45.0	45.0 - 50.0	50.5	25.98	6.47	NMT	19.51	40.0	-

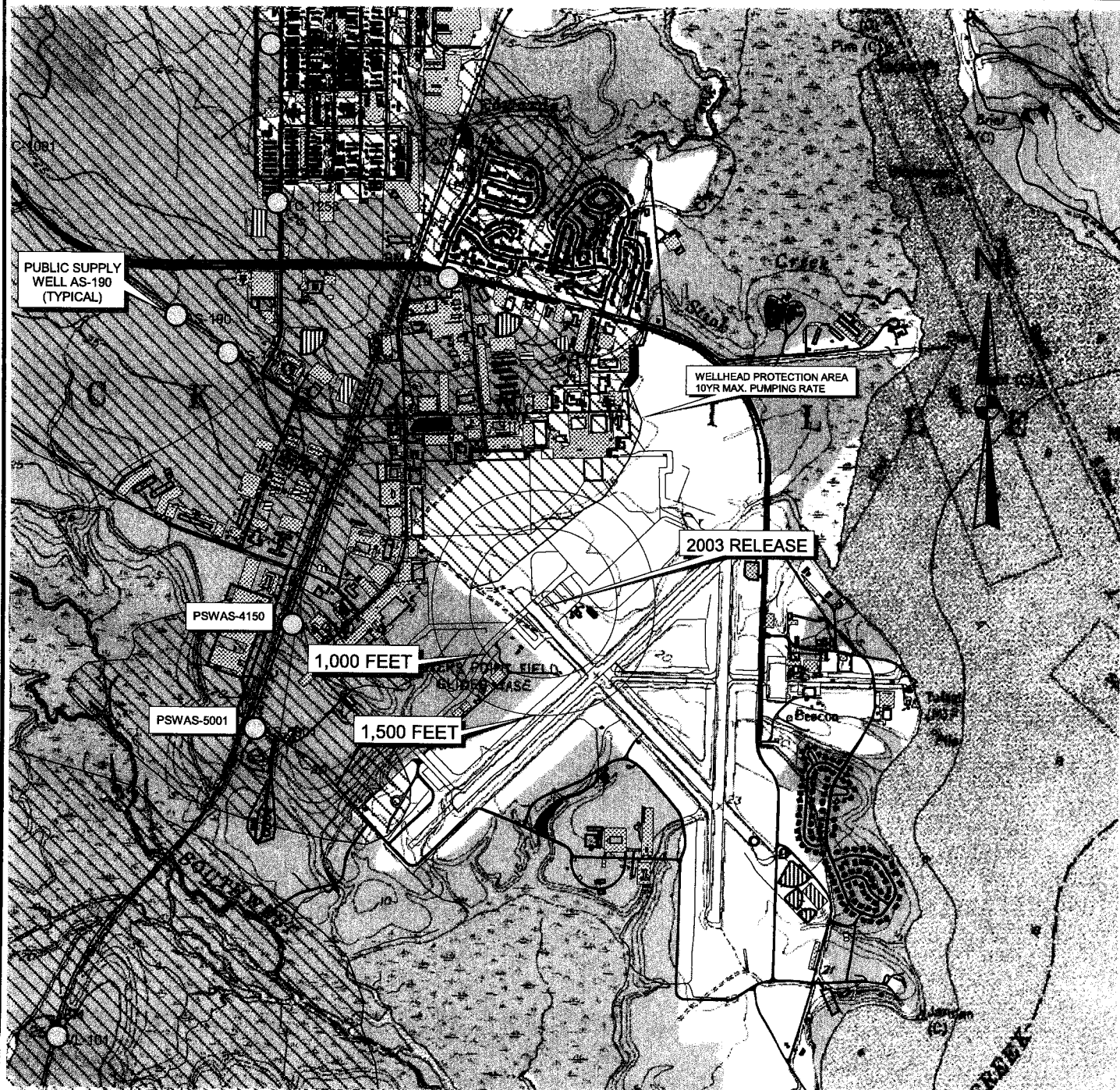
* Reference Point for Elevation Measurements (TOC of RR-10 TOC), Elevation: (22.68 ft.)

** If free product is present in a well, ground water elevation was calculated by: [Top of Casing Elevation - Depth to Water] + [Free Product Thickness x (0.82 (for JP-5 fuel))]

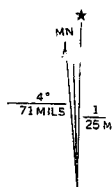
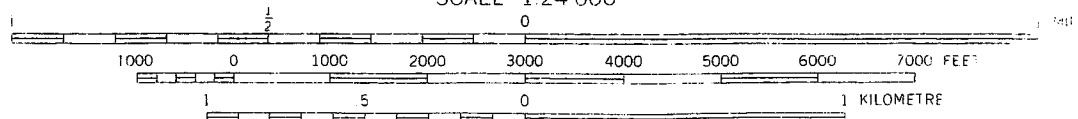
ft. BLS = feet below land surface

NMT = No Measurable Thickness

SOCK = Sorbent sock observed in well.



SCALE 1:24 000



UTM GRID AND 1952 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



QUADRANGLE LOCATION

JACKSONVILLE SOUTH, N. C.
NW/4 NEW RIVER 15' QUADRANGLE
N3437.5—W7722.5/7.5

1952
PHOTOINSPECTED 1971

CATLIN
ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT
RAPID REFUELER
2003 RELEASE
MARINE CORPS AIR STATION
NEW RIVER, N.C.

JOB NO: 203-108 DATE: MAY 2004

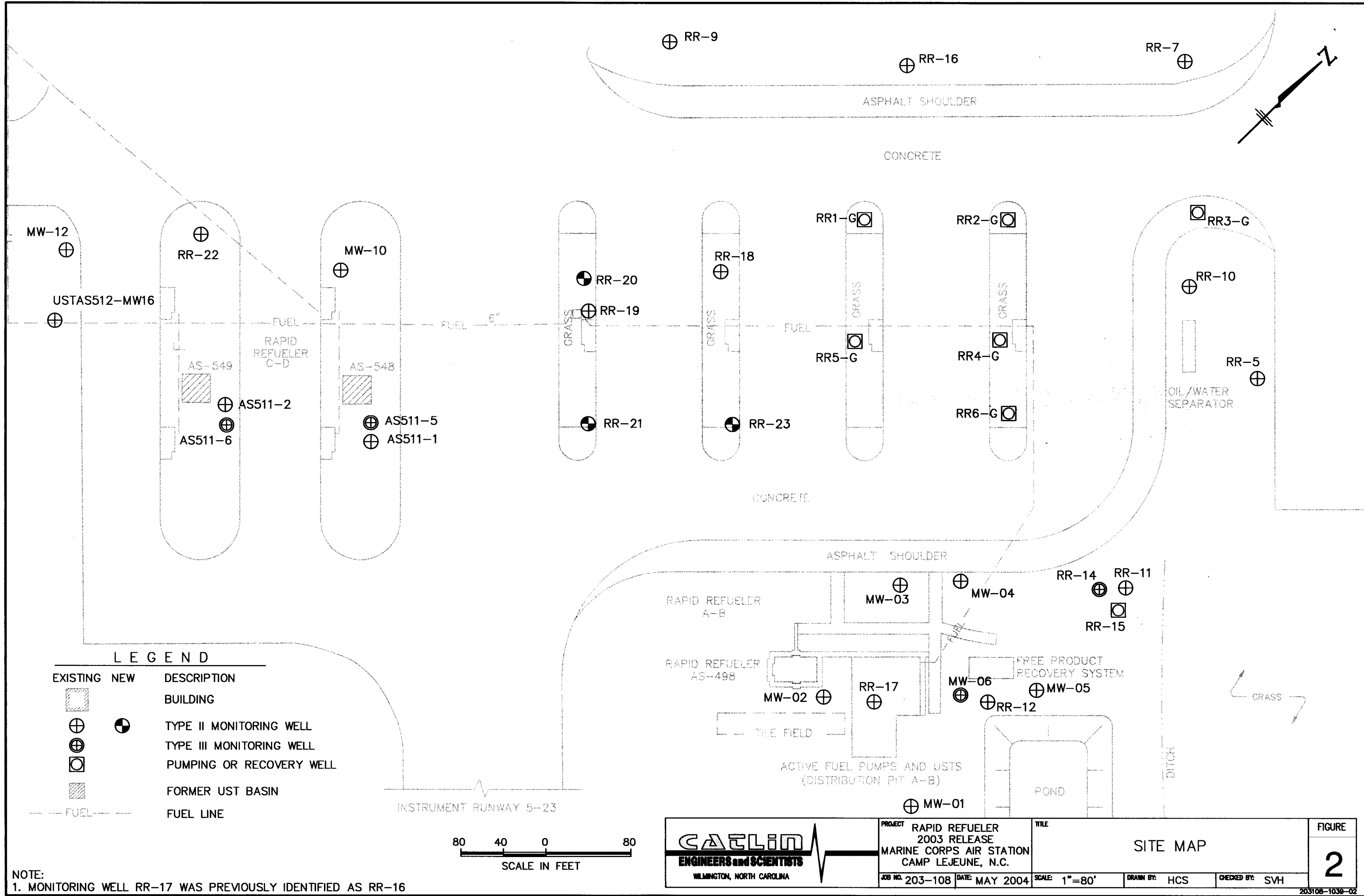
TITLE
GENERAL LOCATION USGS
TOPOGRAPHIC QUADRANGLE

SCALE: AS SHOWN DRAWN BY: HCS CHECKED BY: SVH

FIGURE

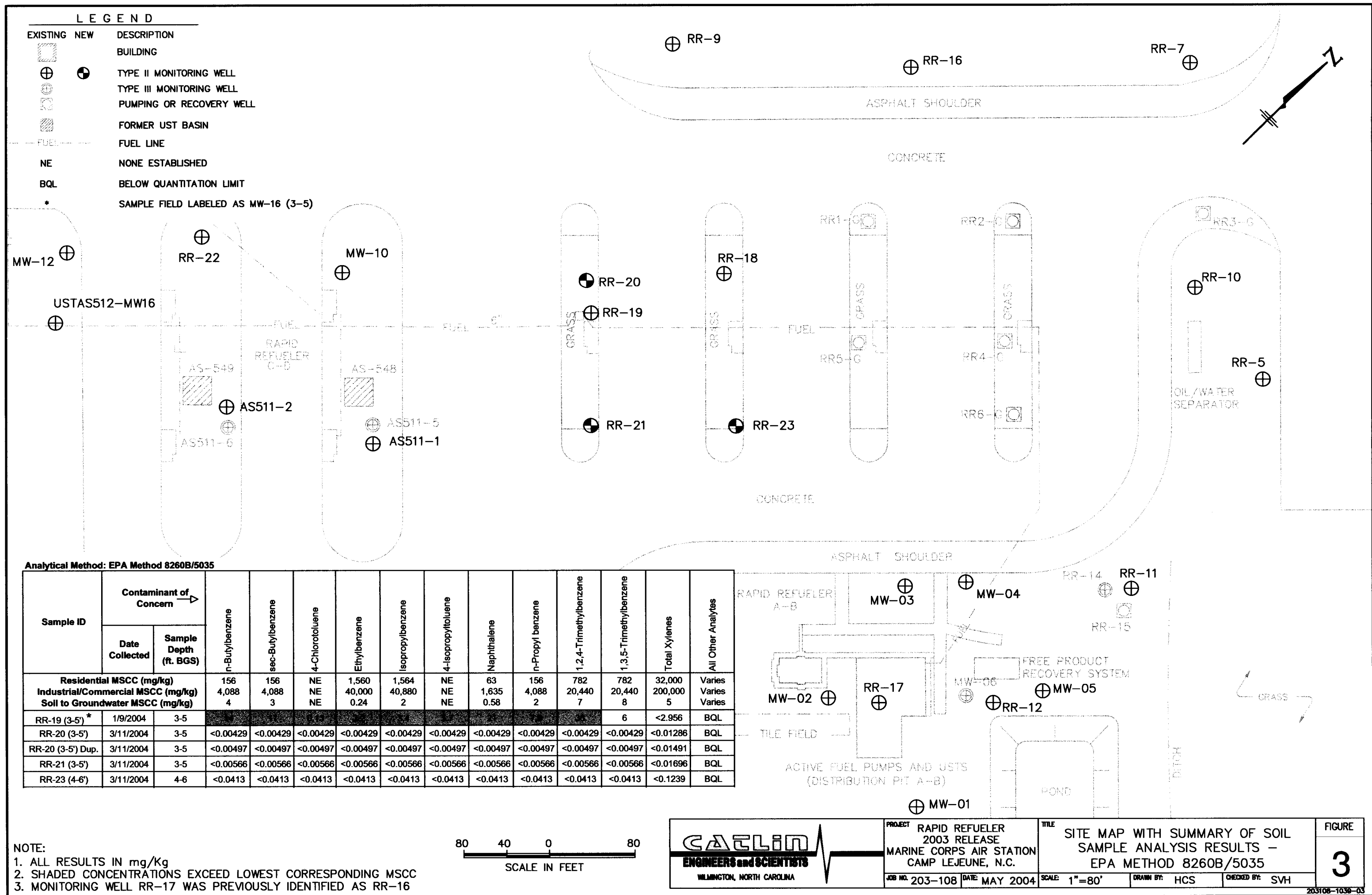
1

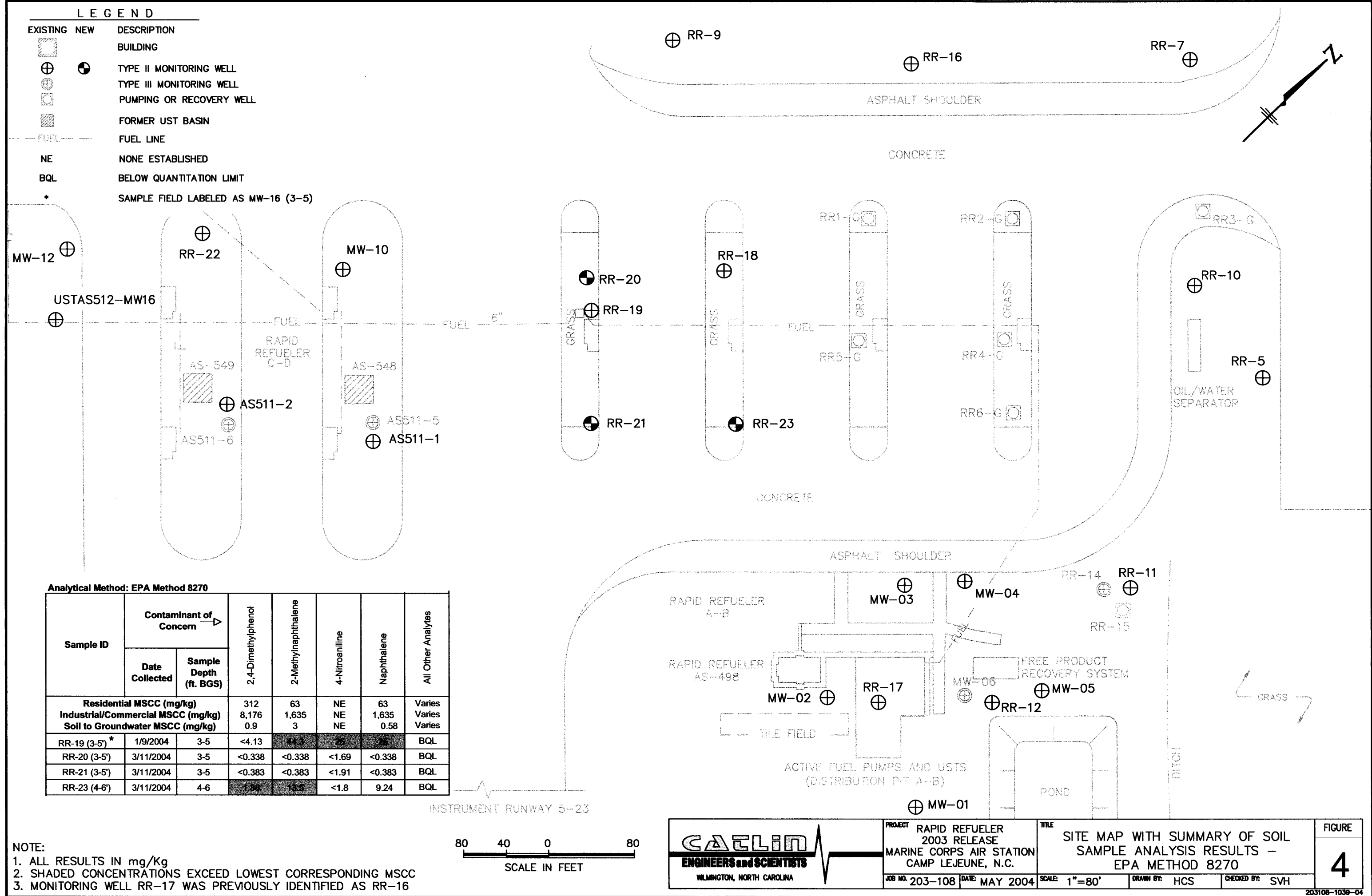
203108-1039-01

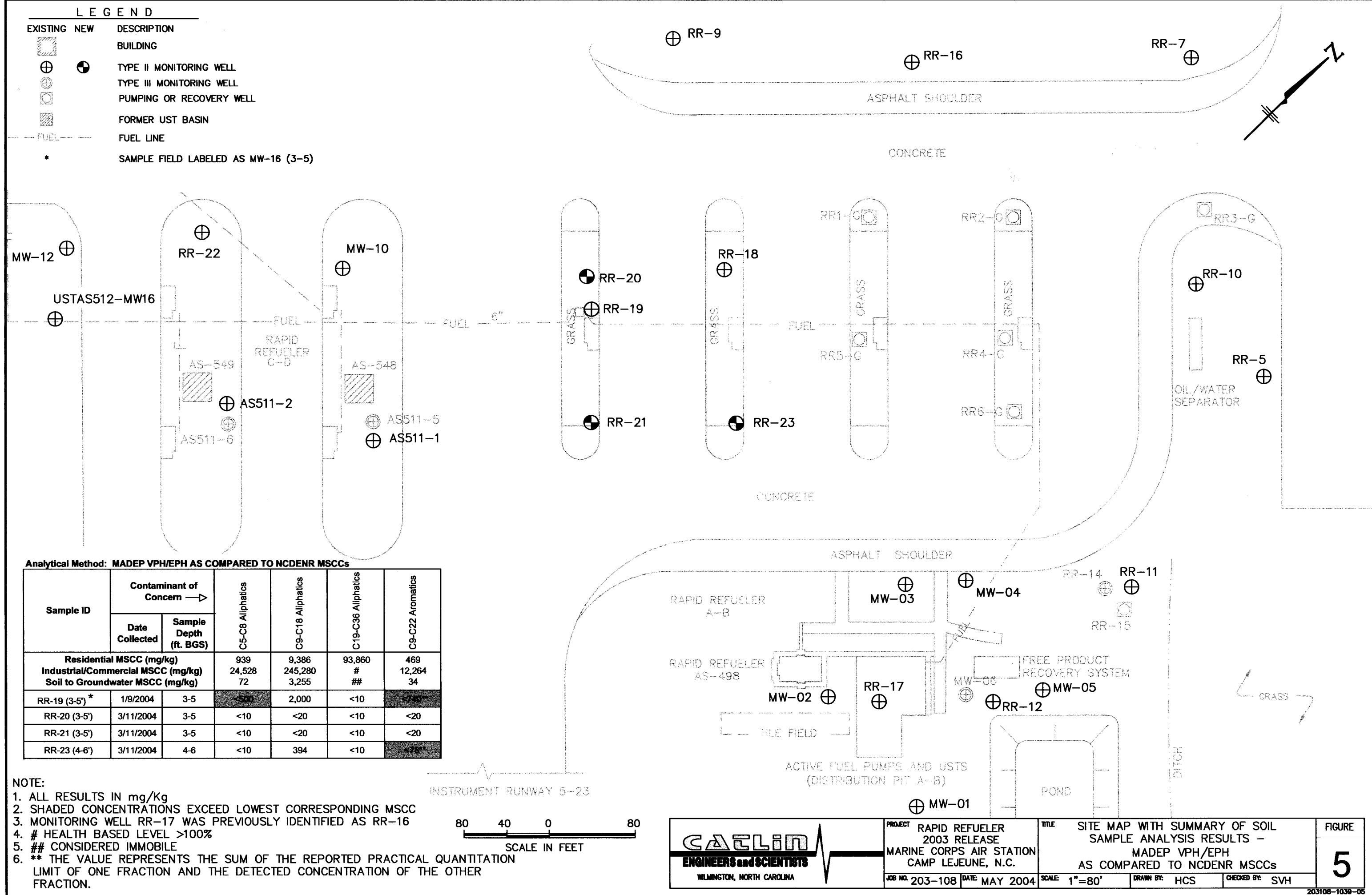


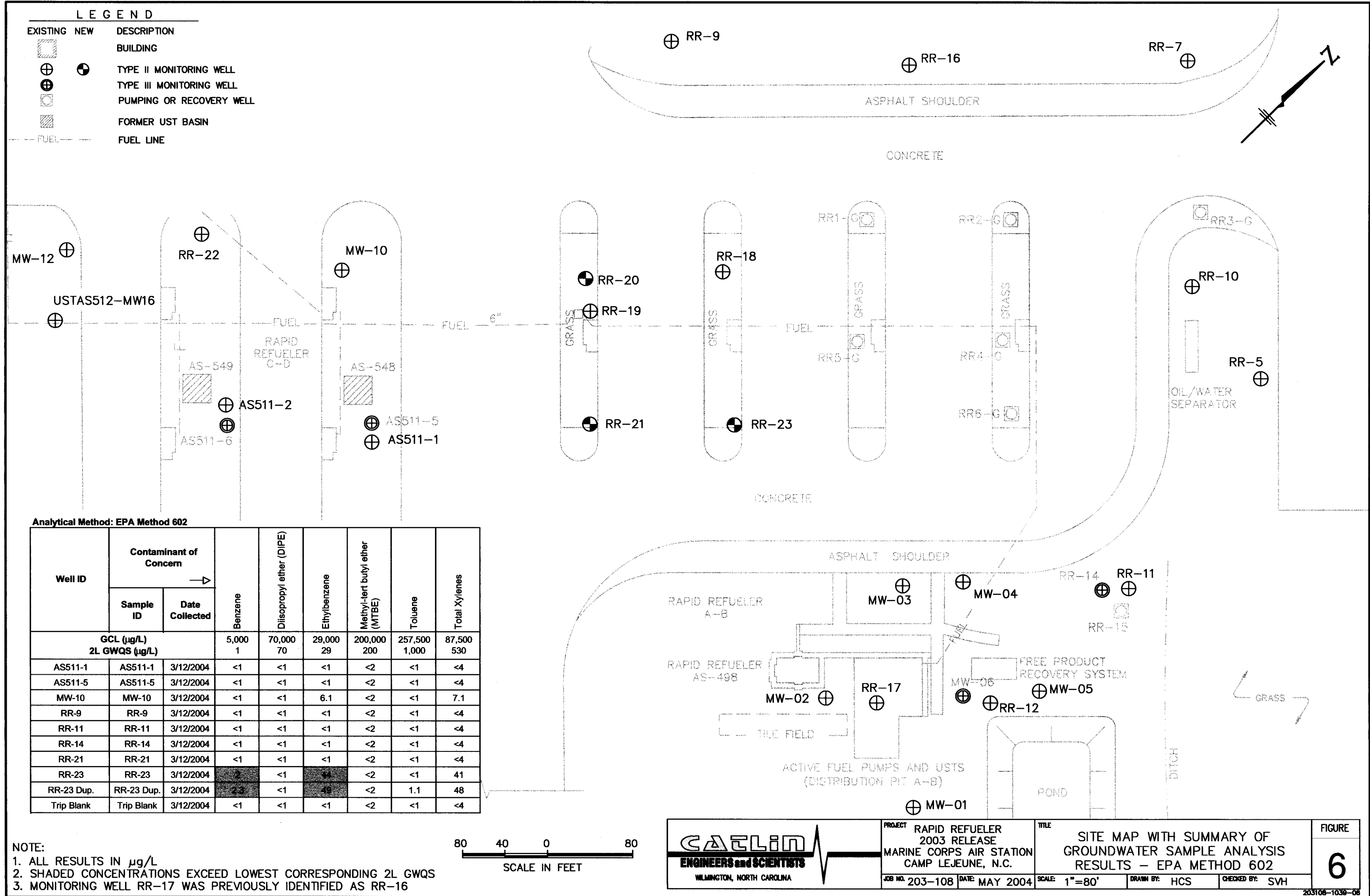
CATLIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER 2003 RELEASE MARINE CORPS AIR STATION CAMP LEJEUNE, N.C.	TITLE SITE MAP		FIGURE 2
	JOB NO. 203-108	DATE: MAY 2004	SCALE: 1"=80'	DRAWN BY: HCS CHECKED BY: SVH

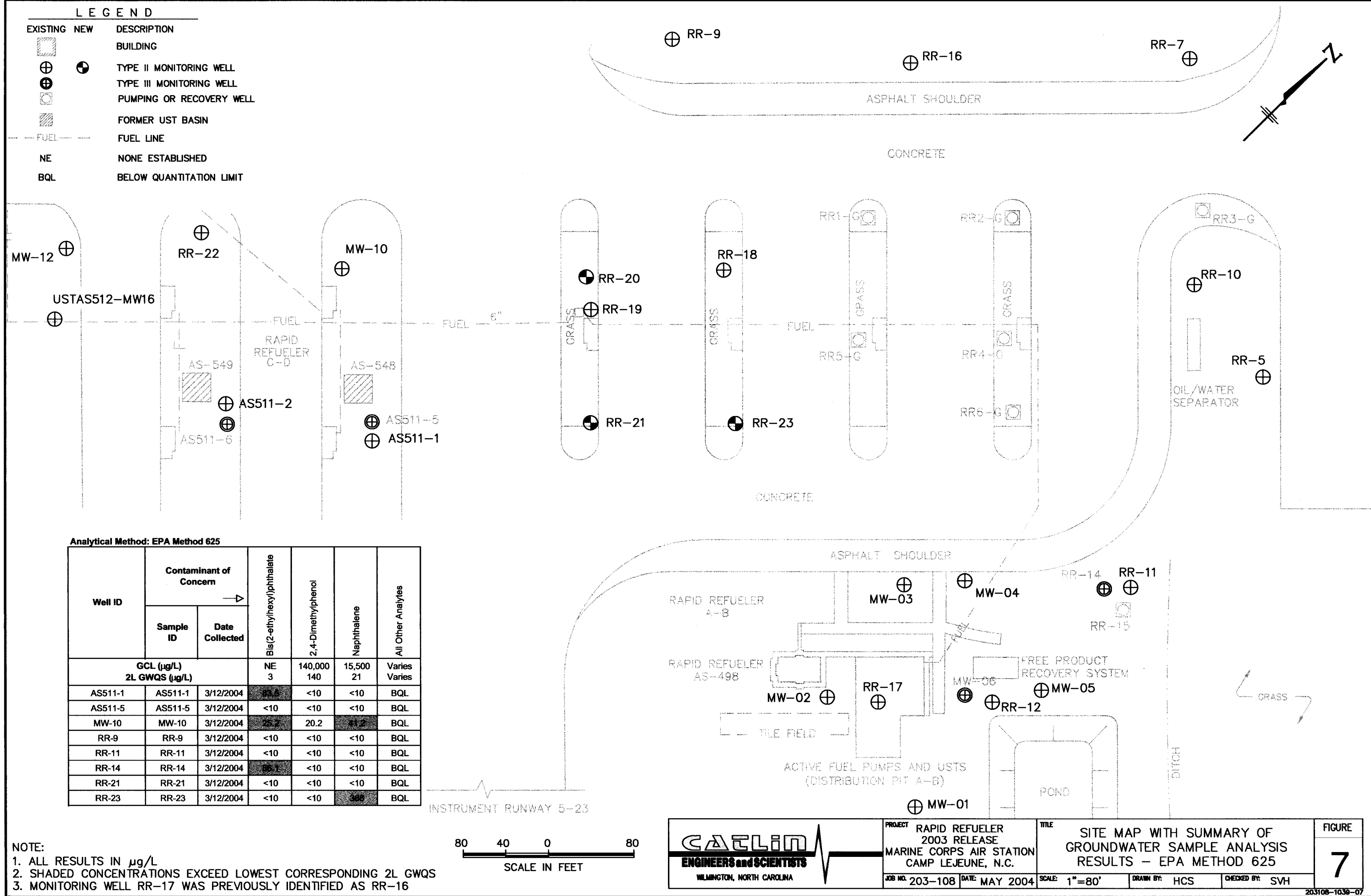
203108-1030-02

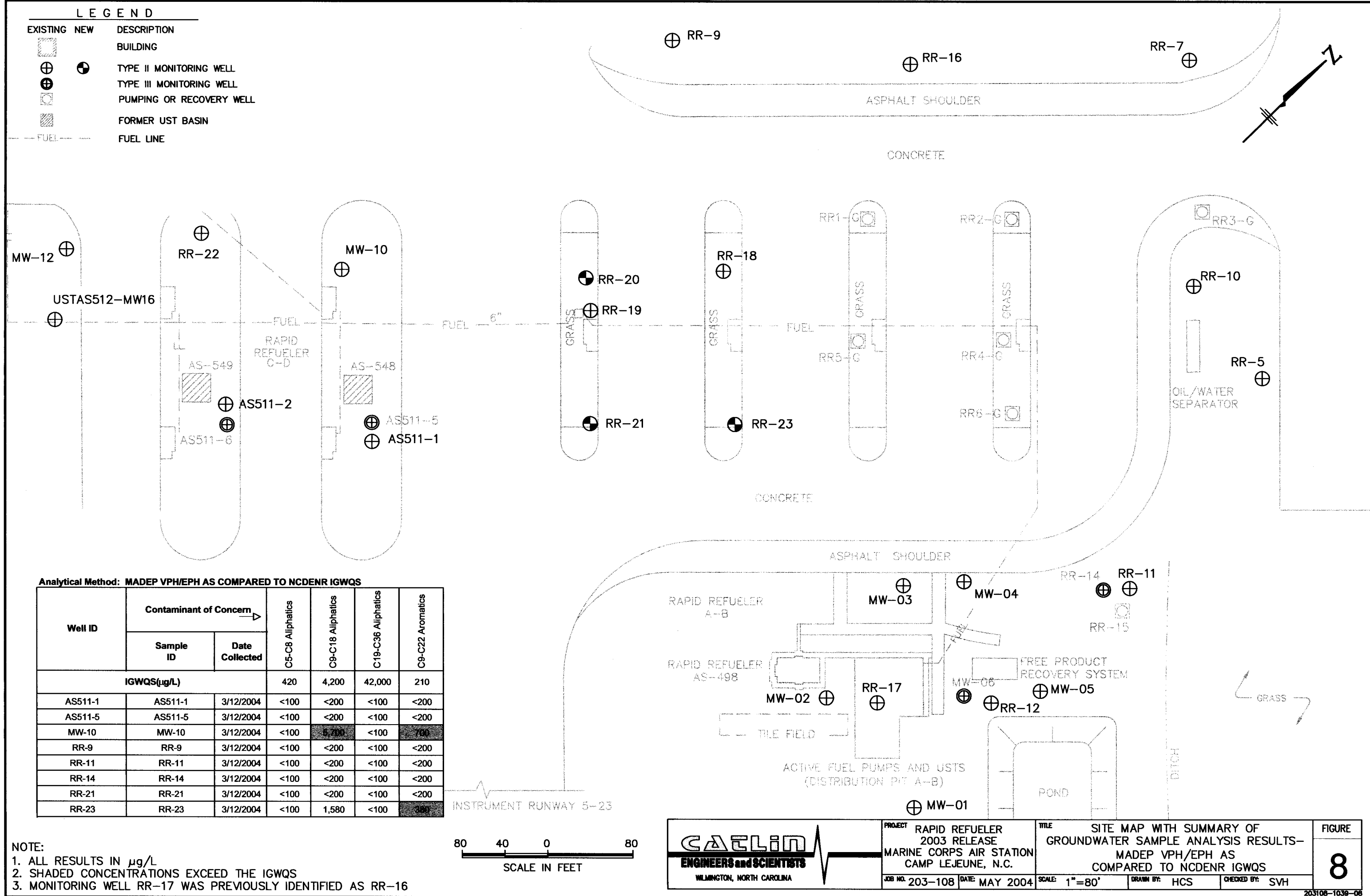


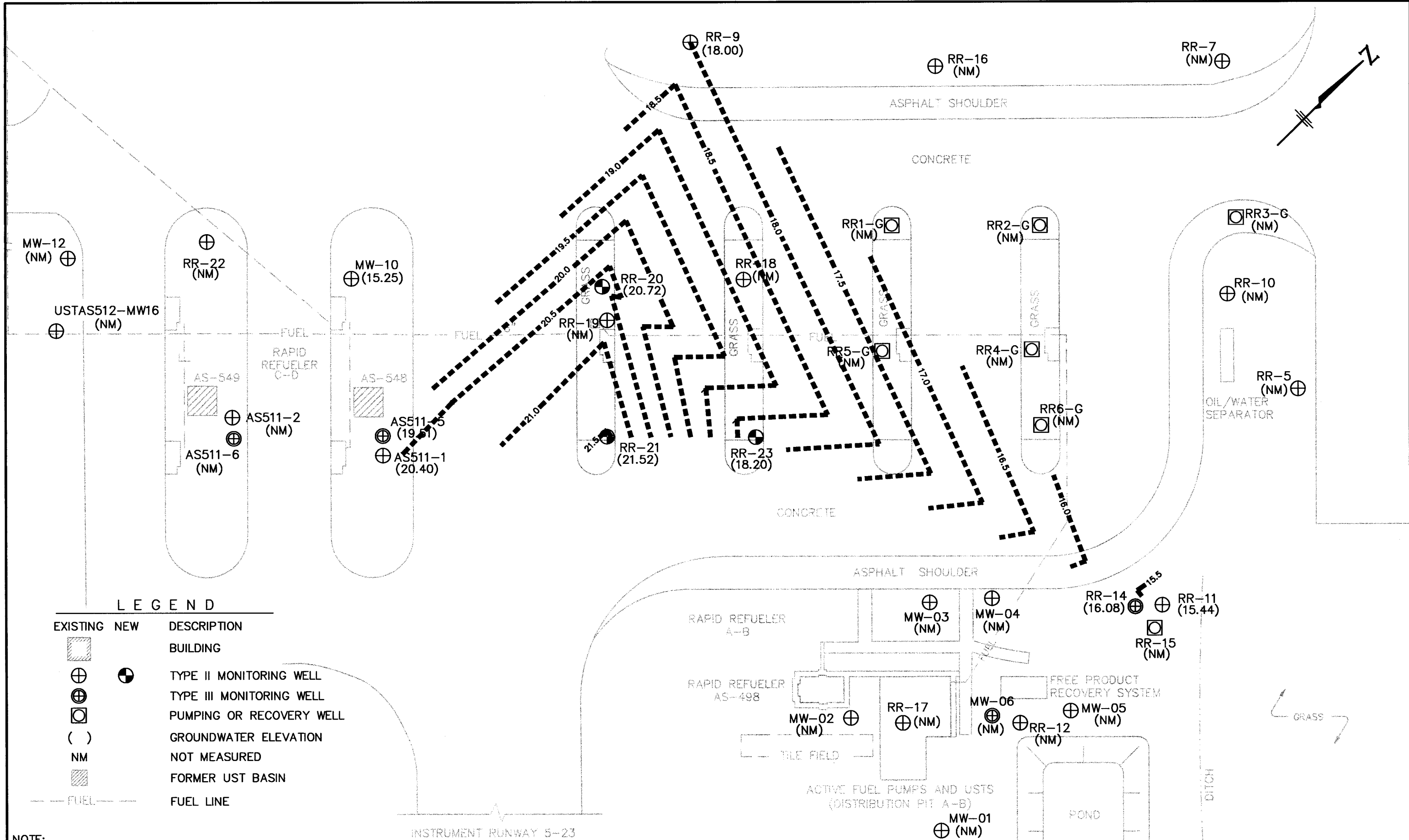


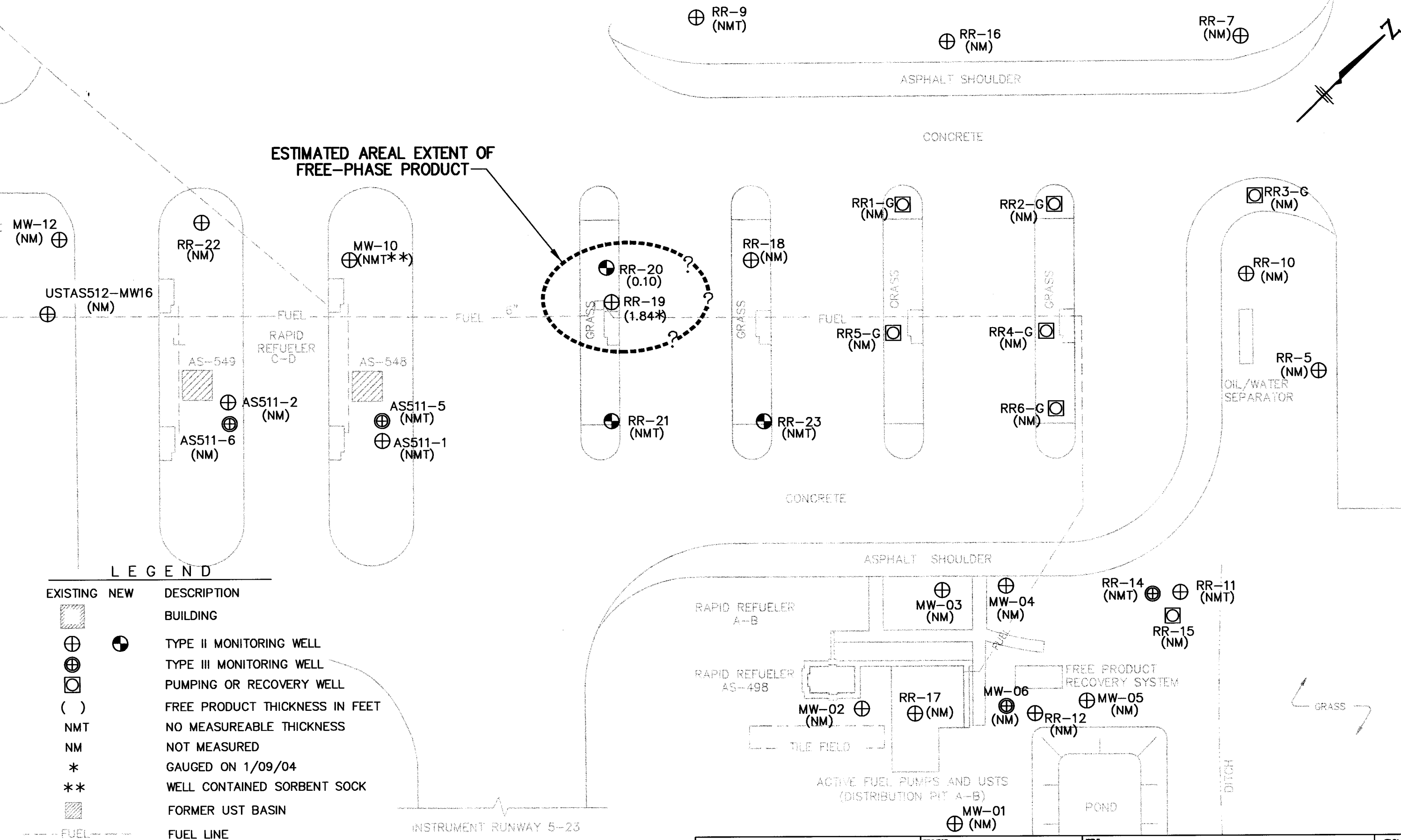












APPENDIX A

CATLIN STANDARD PROCEDURES

CATLIN STANDARD METHODS OF INVESTIGATION

(REVISED APRIL 2002)

1.0 DATA COLLECTION

1.1 BACKGROUND DATA

Background data and history information relevant to the site investigation is generated through numerous sources. These sources may include, but are not limited to, the following:

- Conversations with the client and regulatory officials involved with the incident.
- Review of pertinent regulatory correspondence.
- Review of previous and existing reports and other technical data.
- Review of available historical records.

1.2 SURVEYS AND POTENTIAL RECEPTOR DATA

Physical survey and potential receptor data are collected in accordance with the intended level of investigation. In general, the purpose is to collect sufficient information for site assessment and corrective action planning.

Individual receptors are identified and evaluated in the context of their potential for contaminant impact. Potential receptors of contamination can include surface water bodies, groundwater supply wells, wellhead protection areas, and subsurface building structures.

1.2.1 Horizontal Survey

Horizontal survey data are generated using either accepted general field surveying techniques, or existing survey maps; or by using a combination of existing data and field generated information. The survey area generally extends to a point at least 50 feet beyond suspected plume boundaries. A receptor scale survey of a larger area surrounding a site will be made if appropriate and necessary.

1.2.2 Vertical Survey

A vertical survey is conducted at the site typically within an accuracy of 0.01 foot. The datum plane is generally assumed unless otherwise noted. Assumed temporary benchmarks (TBM) are selected near ground level. The vertical survey includes such points as top of all well casings, selected ground shots, important utility inverts, utility fluid levels, important surface water levels, and other items determined to be significant.

1.3 DRILLING AND MONITORING WELL/PIEZOMETER INSTALLATION

Necessary permits are applied for and obtained in accordance with federal, state, and local requirements prior to drilling or well construction activities. Additionally, the well locations are scanned for underground utilities prior to conducting intrusive subsurface activities. Wells are installed under applicable licensing requirements, and are designed and constructed in accordance with accepted standards and practices. Any wells purposely installed at off-site locations are permitted through appropriate right-of-entry agreements with all necessary property owners and/or their agents.

1.3.1 Drilling Methods and Subsurface Data Collection

Drilling is accomplished utilizing one or more of the following methods:

Auger Drilling

Auger drilling is the preferred, most often used method of subsurface investigation and is accomplished using a vehicle or trailer mounted drill rig. Continuous flight auger types used vary upon the site and situation; ranging from the 4-inch outside diameter solid stem to the 12-inch outside diameter hollow stem. Auger type is selected based upon appropriateness and/or site-specific requirements.

Hand Augering

Hand augering is utilized when economically and scientifically feasible, or when no other method is suitable. Hand augers typically produce three-inch diameter holes and are generally limited to depths of less than 15 feet.

Direct Push

Direct push methods of subsurface investigation are used generally for soil screening purposes or collection of groundwater samples where permanent wells are not viable.

Other Methods

Other drilling methods, such as mud and air rotary, rock coring, cable tool, and large bucket augering are used when site conditions or project requirements dictate.

Regardless of the drilling method used, the drill rig(s) and all drilling tools are thoroughly cleaned between boreholes to prevent cross introduction of contaminants. Split spoon samples are collected and field-described at intervals of five feet or less, and cuttings are continuously monitored for organic vapors. Drill cuttings are containerized for off-site disposal or are spread on the ground surface in proximity to the well or boring in accordance with North Carolina Department of Environment and Natural Resources (NCDENR) requirements. A geologist or engineer, trained in using visual/manual techniques, is always present during drilling and is responsible for subsurface contaminant and geologic data collection. Soils are classified in general agreement with the Unified Soils Classification System (USCS).

1.3.2 Hydropunch Installation

Hydropunch penetrometers (Hydropunches) are used to delineate the spatial extent of dissolved and free phase plumes. Soil borings are advanced to the appropriate depth and then the Hydropunch is advanced through the soil boring into undisturbed material. Groundwater samples are collected by pulling back on the body of the Hydropunch and allowing the groundwater to enter the screened portion of the sample chamber. Samples are retrieved using a decontaminated Teflon bailer or peristaltic pump.

1.3.3 Well Installation

Wells are typically constructed of threaded PVC casing and screen. No glues or cements are used in joining PVC components. Well diameter, slot sizes, and protective covers vary depending upon site-specific conditions or situation-specific requirements.

1.3.4 Well Development

Wells are developed by over-pumping or surging using appropriate pumps, blocks, or bailers. Through development, unwanted fine materials are removed from the natural formation surrounding the well. Well development will be performed no sooner than 24-hours after grouting is completed for the Type III wells. Water generated during development is containerized and properly disposed or is discharged onto the ground in proximity of the well in accordance with NCDENR requirements.

1.4 HYDROGEOLOGIC DATA COLLECTION

Data used to help characterize hydrogeologic conditions at a site are obtained through various procedures including, but not necessarily limited to, those described below:

1.4.1 Regional Geology

Information pertaining to the regional geologic framework is compiled from existing publications, maps, and scientific papers.

1.4.2 Site Geology

Shallow site geology is generally determined from field descriptions and borehole samples. Interpretations with regard to hydrogeologically important contacts, zones, fractures, faults, cleavage, and facies changes are made when possible.

1.4.3 Groundwater Occurrence and Characteristics

Groundwater data is obtained utilizing a number of methods and procedures, not limited to the general list below:

Well Water Levels

After well development, wells are allowed to stabilize for a minimum of 24 hours prior to measuring. Water level and free product thickness (where applicable) measurements are performed using an electronic interface probe or steel tape with water/product finding pastes.

The specific gravity of any accumulated product is determined and used to calculate true hydraulic grade from measured water levels. This information is combined with vertical survey data to determine relative potentiometric surface elevations for all wells.

Aquifer Testing

Various aquifer tests may be used to make determinations of hydraulic conductivity. Slug or pumping tests are often used to characterize site hydrogeologic conditions and to develop remedial action alternatives utilizing appropriate pumping technologies.

Other Methods

Other methods may be deemed appropriate for determining various groundwater characteristics. These other methods may include nested well configurations and/or clustered piezometer installations; sieve or pipette analysis; fracture trace analysis; computer modeling; and geophysical logging.

1.5 PETROLEUM HYDROCARBON DATA COLLECTION

1.5.1 Collection Methods

Petroleum hydrocarbon data is obtained through various methods including, but not limited to, the following:

Field Analysis

- Direct thickness measurement of phase separated components using tapes and/or probes.
- Manual vapor analysis using a photoionization detector (PID) or flame ionization detector (FIS).
- Detectable odor and visual observation.

Laboratory Analysis

- Laboratory analysis of phase-separated products.
- Laboratory vapor, soil, and groundwater analysis using appropriate EPA Methods.

1.5.2 Field Sampling

Field sampling procedures are performed in accordance with recommended protocol, accepted industry standards, and under appropriate chain-of-custody procedures. Generally, sampling procedures are as follows:

Product Samples

Product samples are obtained using clean equipment and containers. Each is shipped to the analytical laboratory in protective containers.

Vapor Samples

PID/FID readings are measured from soil sample headspace using containerized samples that have been brought to ambient temperature.

Carbon tubes are utilized in conjunction with a laboratory-calibrated vacuum pump to obtain vapor samples. The carbon tubes are sealed and refrigerated for shipment to the analytical laboratory (This method is known as the Carbon Adsorption Method).

Soil Samples

Soil samples are immediately packed into clean containers, and refrigerated for shipment to the analytical laboratory.

Groundwater Samples

Groundwater samples are collected in accordance with the following procedures:

- Creeks/Lakes/Etc.

Grab samples are obtained.

- Domestic Wells

Wells are pumped for a time sufficient to completely purge the well and any pressure or holding tanks prior to sampling.

- Monitoring Wells

Water level measurements are made and well volumes calculated for each well.

Three well volumes are removed from each well using a thoroughly cleaned Teflon bailer or appropriate purging pump. If it is not possible to remove three volumes, due to very low yields, a minimum of one volume is removed prior to obtaining a sample.

Where analysis for metals is required, wells are typically sampled utilizing low flow techniques, which reduce turbidity and the potential for matrix interference.

Samples are collected and containerized in a manner that minimizes agitation and contact with the air.

Sampling records are field prepared.

Samples are labeled and proper chain of custody documents are maintained.

Samples are promptly protectively packed, refrigerated, and shipped to the analytical laboratory for analysis.

2.0 DATA EVALUATION

Data obtained as a result of the site investigation is compiled and evaluated and a report is prepared for client review and distribution to the appropriate agencies. Generally, specific data are evaluated as follows:

- Background data are evaluated in context with the suspected or confirmed problem.
- Survey data are utilized to develop site maps and to evaluate contaminant receptors.
- Well construction records are compiled and presented as part of the report. As-built information is used in combination with other data to evaluate subsurface conditions and monitoring well screen settings as they relate to the investigation.
- Subsurface drilling logs are used to develop geologic cross-sections, fence diagrams, isopachs, structure contours, or other constructions. Regional geologic data are used to obtain an overall framework.
- Hydrogeologic data are used to develop contour maps, flow nets and other constructions. The data is also used to calculate various hydrogeologic parameters that describe aquifer characteristics.
- Hydrocarbon data are utilized to develop various plume geometry and isoconcentration maps.
- All data are compiled and utilized for making specific recommendations with regard to remedial action alternatives.

APPENDIX B

**WELL CONSTRUCTION RECORDS AND
BORING LOGS**

WELL LOG

CATLIN

ENGINEERS and SCIENTISTS

Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-108 STATE: NC COUNTY: Onslow LOCATION: New River Air Station

PROJECT NAME: Rapid Refueler 2003 Release LOGGED BY: Tom Stetler WELL ID: RR-19
DRILLER: Bobbie Fowler

NORTHING: 3,843,827.3 EASTING: 276,116.7 CREW:

SYSTEM: UTM NAD83 (m) BORING LOCATION: In grass next to fuel island T.O.C. ELEV.: 26.09

DRILL MACHINE: Diedrich D-25 METHOD: HSA 0 HOUR DTW: 9.05 BORING DEPTH: 14.0

START DATE: 1/9/04 FINISH DATE: 1/9/04 24 HOUR DTW: NM WELL DEPTH: 14.0

DEPTH	BLOW COUNT				OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION	WELL DETAIL
	6in	6in	6in	6in								
0.0									0.0	LAND SURFACE	26.4	0.0
	P	U	S	H	18		SP		1.0	Light brown to tan, f. to v.f. SAND. Moderately well sorted. Minor Fe-oxide staining/banding. Moist. No HCO.	25.4	-0.3
							SM		2.0	Dark brown, SILTY to CLAYEY, v.f. SAND. Moist. Slight HCO.	24.4	2.0
3.0									3.0		23.4	3.0
	P	U	S	H	1000+	MW-16 (3-5')	SC/ CL		5.0	Dark brown, organic-rich, SILTY to CLAYEY, v.f. SAND. Strong HCO. Moist. Large (up to ~2" in length) wood fragments at base of spoon.	21.4	3.5
8.0									8.0		18.4	
	P	U	S	H	1000+		SC/ CL		10.0	S. A. A. Dark brown, organic-rich, SILTY to CLAYEY, v.f. SAND. Saturated. Strong HCO. No wood.	16.4	2" Slot 010 Sch. 40 PVC
12.0									12.0		14.4	
	P	U	S	H	24		CL		14.0	Brown (lighter in color than above), SILTY to v.f. SANDY CLAY. Soft. Saturated.	12.4	13.5
												14.0
										Boring Terminated at Elevation 12.4 ft		14.0



Portland Cement



Bentonite Pellets



#2 Medium Sand

CATLIN BORING LOG 203-108 RR 2003 RELEASE GPL CATLIN GDT 5/19/04

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Bobbie Fowler CERTIFICATION # 2869
WELL CONTRACTOR COMPANY NAME CATLIN Engineers & Scientists PHONE # (910) 452-5861
STATE WELL CONSTRUCTION PERMIT # _____ ASSOCIATED WO PERMIT # N/A
(if applicable) (if applicable)

RR-19

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION: (Show sketch of the location below)
Nearest Town: New River Air Station County: Onslow

MCAS, New River
(Road Name and Numbers, Community, Subdivision, Lot No., Zip Code)

3. OWNER: LANTDIV NAVFACENGCOM Commanding General

Address: AC/S EMD/Marine Corps Base/PSC Box 20004
(Street or Route No.)

Camp Lejeune NC 28542-0004
City or Town State Zip Code

Area code - Phone number

4. DATE DRILLED: 1/9/2004

5. TOTAL DEPTH: 14

6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

7. STATIC WATER LEVEL Below Top of Casing 9.05 FT.
(Use "+" if Above Top of Casing)

8. TOP OF CASING IS -0.3 FT. Above Land Surface*

* Top of casing terminated at/or below land surface requires
a variance in accordance with 15A NCAC 2C.0118

9. YIELD (gpm): N/A METHOD OF TEST N/A

10. WATER ZONES (depth): Surficial Aquifer

12. DISINFECTION: Type N/A Amount N/A

13. CASING:

Depth	Diameter	Wall Thickness or Weight/Ft.	Material
From <u>0.3</u> To <u>3.5</u> ft.	<u>2</u> in.	<u>Sch. 40</u>	<u>PVC</u>
From _____ To _____ ft.	_____ in.	_____	_____
From _____ To _____ ft.	_____ in.	_____	_____

14. GROUT:

Depth	Material	Method
From <u>0.5</u> To <u>2</u> ft.	<u>Portland Cement</u>	<u>Surface Pour</u>
From <u>2</u> To <u>3</u> ft.	<u>Bent. Pellets</u>	<u>Surface Pour</u>

15. SCREEN:

Depth	Diameter	Slot Size	Material
From <u>3.5</u> To <u>13.5</u> ft.	<u>2</u> in.	<u>Slot .010</u> in.	<u>PVC</u>
From _____ To _____ ft.	_____ in.	_____ in.	_____

16. SAND/GRAVEL PACK:

Depth	Size	Material
From <u>3</u> To <u>14</u> ft.	<u>#2 Medium</u>	<u>Torpedo Sand</u>
From _____ To _____ ft.	_____	_____

17. REMARKS: _____

Topographic/Land Setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)

Northing/Easting of well location
3843827.26/276116.7

UTM NAD83 (m)

Latitude/longitude source: ☒ GPS ☐ Topo. map
(check box)

DEPTH
From To

DRILLING LOG
Formation Description

SEE
ATTACHED

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include road numbers and common road names.

SEE
ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

Submit original to Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

Modified from:
GW-1 REV.07/2001

WELL LOG

CATLIN

ENGINEERS and SCIENTISTS

Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-108 STATE: NC COUNTY: Onslow LOCATION: New River Air Station

PROJECT NAME: Rapid Refueler 2003 Release LOGGED BY: Tom Stetler WELL ID: RR-23

NORTHING: 3,843,831.9 EASTING: 276,169.2 CREW: Dimitri Talbert

SYSTEM: BORING LOCATION: Fuel Island T.O.C. ELEV.: 24.41

DRILL MACHINE: Diedrich D-25 METHOD: HSA 0 HOUR DTW: NM BORING DEPTH: 14.0

START DATE: 3/11/04 FINISH DATE: 3/11/04 24 HOUR DTW: NM WELL DEPTH: 14.0

DEPTH	BLOW COUNT				OVA (ppm)	LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION	WELL DETAIL
	6in	6in	6in	6in								
0.0									0.0	LAND SURFACE	24.7	0.0
	2	3	7	8	1.1		SM		2.0	Light Brownish-gray to light orange-brown, silty, f. to v.f. SAND. Minor clay. Dry. No HCO. ~4" TOPSOIL	22.7	-0.3
												2" Sch. 40 PVC
												3.5
4.0							CL		4.0	Light gray to gray-brown, silty CLAY. Very soft. Moist. Strong HCO.	20.7	
	1	2	4	3	397.3	RR-23 (4-6')	SC		5.0	S. A. A. but high f. to v.f. sand content. Light brownish gray, silty to clayey f. to v.f. SAND. Moist. Strong HCO.	19.7	
									6.0		18.7	
8.0							CL		8.0	Similar to top of last spoon. Light gray-brown, silty CLAY. Very soft. Moist. Strong HCO.	16.7	
	2	4	6	9	542.2		SP/SM		8.5	Light gray to greenish-gray, f. to v.f. SAND. Minor silt. Minor v.f. opaque mineral grains. Saturated. Strong HCO.	16.2	
									10.0		14.7	2" Slot .010 Sch. 40 PVC
12.0									12.0		12.7	
	G	R	A	B	15.1		SP/SM			S. A. A. Saturated. Slight HCO. -from auger cuttings.		
									14.0		10.7	13.5
										Boring Terminated at Elevation 10.7 ft	14.0	14.0

Concrete

Bentonite Pellets

#2 Medium Sand

CATLIN BORING LOG 203-108, RE 2003 RELEASE GPL CATLIN GDI 5/19/04

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Bobbie Fowler CERTIFICATION # 2869

WELL CONTRACTOR COMPANY NAME CATLIN Engineers & Scientists PHONE # (910) 452-5861

STATE WELL CONSTRUCTION PERMIT # _____ ASSOCIATED WO PERMIT # N/A
(if applicable) (if applicable)

RR-23

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION: (Show sketch of the location below)

Nearest Town: New River Air Station County: Onslow

MCAS, New River

(Road Name and Numbers, Community, Subdivision, Lot No., Zip Code)

3. OWNER: LANTDIV NAVFACENGCOM Commanding General

Address: AC/S EMD/Marine Corps Base/PSC Box 20004
(Street or Route No.)

Camp Lejeune
City or Town

NC
State

28542-0004
Zip Code

Area code - Phone number

4. DATE DRILLED: 3/11/2004

5. TOTAL DEPTH: 14

6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

7. STATIC WATER LEVEL Below Top of Casing NM FT.
(Use "+" if Above Top of Casing)

8. TOP OF CASING IS -0.3 FT. Above Land Surface*

* Top of casing terminated at/or below land surface requires
a variance in accordance with 15A NCAC 2C.0118

9. YIELD (gpm): N/A METHOD OF TEST N/A

10. WATER ZONES (depth): Surficial Aquifer

12. DISINFECTION: Type N/A Amount N/A

13. CASING: Depth Diameter Wall Thickness or Weight/Ft. Material
From 0.3 To 3.5 ft. 2 in. Sch. 40 PVC
From _____ To _____ ft. _____ in. _____
From _____ To _____ ft. _____ in. _____

14. GROUT: Depth Material Method
From _____ To _____ ft. _____
From 1 To 2 ft. Bent. Pellets Surface Pour

15. SCREEN: Depth Diameter Slot Size Material
From 3.5 To 13.5 ft. 2 in. Slot .010 in. PVC
From _____ To _____ ft. _____ in. _____ in. _____

16. SAND/GRAVEL PACK: Depth Size Material
From 2 To 14 ft. #2 Medium Torpedo Sand
From _____ To _____ ft. _____

17. REMARKS: _____

Topographic/Land Setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)
Northing/Easting of well location
3843831.86/276169.19

Latitude/longitude source: ☒ GPS ☐ Topo. map
(check box)
DEPTH DRILLING LOG
From To Formation Description

SEE
ATTACHED

LOCATION SKETCH

Show direction and distance in miles from at least two State Roads or County Roads. Include road numbers and common road names.

SEE
ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

Submit original to Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC 27699-1636 Phone No. (919) 733-3221, within 30 days.

Modified from:
GW-1 REV.07/2001

WELL LOG

CATLIN
ENGINEERS and SCIENTISTS

Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-108 STATE: NC COUNTY: Onslow LOCATION: New River Air Station

PROJECT NAME: Rapid Refueler 2003 Release LOGGED BY: Tom Stetler WELL ID: RR-21
DRILLER: Bobbie Fowler

NORTHING: 3,843,803.9 EASTING: 276,138.0 CREW: Dimitri Talbert

SYSTEM: BORING LOCATION: Fuel Island T.O.C. ELEV.: 26.00

DRILL MACHINE: Diedrich D-25 METHOD: HSA 0 HOUR DTW: NM BORING DEPTH: 14.0

START DATE: 3/11/04 FINISH DATE: 3/11/04 24 HOUR DTW: NM WELL DEPTH: 14.0

DEPTH	BLOW COUNT				OVA (ppm)	LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION	WELL DETAIL
6in	6in	6in	6in									
0.0									0.0	LAND SURFACE	26.3	0.0
2	3	4	4	1.5			SM		2.0	Dark brown, silty, f. to v.f.. SAND. Almost black, very organic-rich. Moist. No HCO.	24.3	-0.3
3.0									3.0		23.3	
3	5	7	8	2.2		RR-21 (3-5')	SM		4.0	S. A. A. Dark brown, silty, f. to v.f.. SAND. Moist. No HCO.	22.3	3.5
							SM		5.0	S. A. A. but dark reddish-brown in color ~4' BLS. Relatively abrupt gradational contact.	21.3	
8.0									8.0		18.3	
1	2	1	2	4.8			SC		10.0	Dark gray to reddish-brown, v.f.. sandy CLAY. Saturated. Slight HCO.	16.3	2" Slot .010 Sch. 40 PVC
12.0									12.0		14.3	
G	R	A	B	1.7			SC		14.0	S. A. A. Clayey, dark gray to reddish-brown SAND to v.f.. sandy CLAY. Saturated. Slight HCO? -from auger cuttings.	12.3	13.5
										Boring Terminated at Elevation 12.3 ft		14.0

Concrete

Bentonite Pellets

#2 Medium Sand

CATLIN BORING LOG 203-108 RR-2003 RELEASE GPL CATLIN GDT 5/19/04

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Bobbie Fowler CERTIFICATION # 2869

WELL CONTRACTOR COMPANY NAME CATLIN Engineers & Scientists PHONE # (919) 452-5861

STATE WELL CONSTRUCTION PERMIT # _____ ASSOCIATED WQ PERMIT # N/A
(if applicable) (if applicable)

RR-21

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION: (Show sketch of the location below)

Nearest Town: New River Air Station County: Onslow

MCAS, New River

(Road Name and Numbers, Community, Subdivision, Lot No., Zip Code)

3. OWNER: LANTDIV NAVFACENGCOM Commanding General

Address: AC/S EMD/Marine Corps Base/PSC Box 20004
(Street or Route No.)

Camp Lejeune

NC

28542-0004

City or Town

State

Zip Code

Area code - Phone number

4. DATE DRILLED: 3/11/2004

5. TOTAL DEPTH: 14

6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

7. STATIC WATER LEVEL Below Top of Casing NM FT.
(Use "+" if Above Top of Casing)

8. TOP OF CASING IS -0.3 FT. Above Land Surface*

* Top of casing terminated at/or below land surface requires
a variance in accordance with 15A NCAC 2C.0118

9. YIELD (gpm): N/A METHOD OF TEST N/A

10. WATER ZONES (depth): Surficial Aquifer

12. DISINFECTION: Type N/A Amount N/A

13. CASING: Depth Diameter Wall Thickness or Weight/Ft. Material
From 0.3 To 3.5 ft. 2 in. Sch. 40 PVC
From _____ To _____ ft. _____ in. _____
From _____ To _____ ft. _____ in. _____

14. GROUT: Depth Material Method
From _____ To _____ ft. _____
From 1 To 2 ft. Bent. Pellets Surface Pour

15. SCREEN: Depth Diameter Slot Size Material
From 3.5 To 13.5 ft. 2 in. Slot .010 in. PVC
From _____ To _____ ft. _____ in. _____ in. _____

16. SAND/GRAVEL PACK: Depth Size Material
From 2 To 14 ft. #2 Medium Torpedo Sand
From _____ To _____ ft. _____

17. REMARKS: _____

Topographic/Land Setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)

Northing/Easting of well location

3843803.94/276138.02

Latitude/longitude source: ☒ GPS ☐ Topo. map
(check box)

DEPTH
From To

DRILLING LOG
Formation Description

SEE
ATTACHED

LOCATION SKETCH

Show direction and distance in miles from at least
two State Roads or County Roads. Include road
numbers and common road names.

SEE
ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL
CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

Submit original to Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC
27699-1636 Phone No. (919) 733-3221, within 30 days.

Modified from:
GW-1 REV.07/2001

WELL LOG

CATLIN

ENGINEERS and SCIENTISTS

Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-108 STATE: NC COUNTY: Onslow LOCATION: New River Air Station

PROJECT NAME: Rapid Refueler 2003 Release LOGGED BY: Tom Stetler WELL ID: RR-20

NORTHING: 3,843,832.9 EASTING: 276,106.2 CREW: Dimitri Talbert

SYSTEM: BORING LOCATION: Fuel Island T.O.C. ELEV.: 26.68

DRILL MACHINE: Diedrich D-25 METHOD: HSA 0 HOUR DTW: NM BORING DEPTH: 15.0

START DATE: 3/11/04 FINISH DATE: 3/11/04 24 HOUR DTW: NM WELL DEPTH: 15.0

DEPTH	BLOW COUNT				OVA (ppm)	LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION	WELL DETAIL
6in	6in	6in	6in									
0.0									0.0	LAND SURFACE	27.0	0.0
	3	5	8	15	0		SM		2.0	Dark brown, silty, f. to v.f.. SAND. Very organic-rich (resembles topsoil). Minor light orange-brown to dark brown layering @ base of spoon (layering up to 3 mm in thickness). Dry. Minor clay. Slight HCO?	25.0	-0.3
3.0									3.0		24.0	2.0
	6	5	3	3	3.9	RR-20 (3-5') + DUP	SM		4.0	S. A. A. Moist. No HCO.	23.0	3.0
							SC		5.0	Dark gray to dark brown, soft, clayey, f. to v.f.. SAND. Higher clay content than above. Moist. Slight HCO?	22.0	4.5
8.0									8.0		19.0	
	0	2	6	7	133.7		CL		9.0	Light gray, silty CLAY. Very soft. Stiff. High plasticity clay. Slight HCO.	18.0	
							SP/SM		10.0	Light gray to gray-brown, silty, f. to v.f.. SAND. Minor fines. Saturated. Slight HCO?	17.0	
12.0									12.0		15.0	
	10	10	3	4	349.8		SP/SM		14.0	S. A. A. Light grayish-brown, silty, f. to v.f.. SAND. Well sorted. Saturated. Slight HCO. Base of spoon contains very poorly sorted, c. to f. silty SAND, and a large wood fragment (~2" in diameter).	13.0	
												14.5
												15.0
										Boring Terminated at Elevation 12.0 ft Drilled hole down to 15' BLS to set well.		15.0

Portland Cement Bentonite Pellets #2 Medium Sand

CATLIN BORING LOG 203-108 RR 2003 RELEASE GPL CATLIN GDT 5/19/04

WELL CONSTRUCTION RECORD

North Carolina - Department of Environment and Natural Resources - Division of Water Quality - Groundwater Section

WELL CONTRACTOR (INDIVIDUAL) NAME (print) Bobbie Fowler CERTIFICATION # 2869
WELL CONTRACTOR COMPANY NAME CATLIN Engineers & Scientists PHONE # (910) 452-5861
STATE WELL CONSTRUCTION PERMIT # _____ ASSOCIATED WQ PERMIT # N/A
(if applicable) (if applicable)

RR-20

1. WELL USE (Check Applicable Box): Residential ☐ Municipal/Public ☐ Industrial ☐ Agricultural ☐
Monitoring ☒ Recovery ☐ Heat Pump Water Injection ☐ Other ☐ If Other, List Use _____

2. WELL LOCATION: (Show sketch of the location below)

Nearest Town: New River Air Station County: Onslow

MCAS, New River

(Road Name and Numbers, Community, Subdivision, Lot No., Zip Code)

3. OWNER: LANTDIV NAVFACENGCOM Commanding General

Address: AC/S EMD/Marine Corps Base/PSC Box 20004

(Street or Route No.)

Camp Lejeune

NC

28542-0004

City or Town

State

Zip Code

Area code - Phone number

4. DATE DRILLED: 3/11/2004

5. TOTAL DEPTH: 15

6. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

7. STATIC WATER LEVEL Below Top of Casing NM FT.
(Use "+" if Above Top of Casing)

8. TOP OF CASING IS -0.3 FT. Above Land Surface*

* Top of casing terminated at/or below land surface requires
a variance in accordance with 15A NCAC 2C.0118

9. YIELD (gpm): N/A METHOD OF TEST N/A

10. WATER ZONES (depth): Surficial Aquifer

12. DISINFECTION: Type N/A Amount N/A

13. CASING: Depth Diameter Wall Thickness or Weight/Ft. Material
From 0.3 To 4.5 ft. 2 in. Sch. 40 PVC
From _____ To _____ ft. _____ in. _____
From _____ To _____ ft. _____ in. _____

14. GROUT: Depth Material Method
From 0 To 2 ft. Portland Cement Surface Pour
From 2 To 3 ft. Bent. Pellets Surface Pour

15. SCREEN: Depth Diameter Slot Size Material
From 4.5 To 14.5 ft. 2 in. Slot .010 in. PVC
From _____ To _____ ft. _____ in. _____ in. _____

16. SAND/GRAVEL PACK: Depth Size Material
From 3 To 15 ft. #2 Medium Torpedo Sand
From _____ To _____ ft. _____

17. REMARKS: Drilled hole down to 15' BLS to set well.

Topographic/Land Setting
☐ Ridge ☐ Slope ☐ Valley ☒ Flat
(check appropriate box)

Northing/Easting of well location

3843832.85/276106.2

Latitude/longitude source: ☒ GPS ☐ Topo. map
(check box)

DEPTH
From To

DRILLING LOG
Formation Description

SEE
ATTACHED

LOCATION SKETCH

Show direction and distance in miles from at least
two State Roads or County Roads. Include road
numbers and common road names.

SEE
ATTACHED

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL
CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

SIGNATURE OF PERSON CONSTRUCTING THE WELL

DATE

Submit original to Division of Water Quality, Groundwater Section, 1636 Mail Service Center - Raleigh, NC
27699-1636 Phone No. (919) 733-3221, within 30 days.

Modified from:
GW-1 REV.07/2001

APPENDIX C

LABORATORY ANALYTICAL REPORTS
AND
CHAIN-OF-CUSTODY RECORDS

FILE COPY

203-108

PARADIGM ANALYTICAL LABORATORIES, INC.

5500 Business Drive
Wilmington, North Carolina 28405
(910) 350-1903
Fax (910) 350-1557

Mr. Steve Hudson
Richard Catlin & Associates
P.O. Box 10279
Wilmington NC 28404-0279

Report Number: G128-1277

Client Project: Rapid Refueler 2003 Release

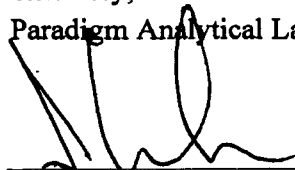
Dear Mr. Hudson:

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

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

Sincerely,
Paradigm Analytical Laboratories, Inc.



Laboratory Director
J. Patrick Weaver

3/26/04

Date

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GC 602

Client Sample ID: RR-21

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-5A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/18/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/18/04
Ethylbenzene	BQL	1.0	1	3/18/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/18/04
Toluene	BQL	1.0	1	3/18/04
m/p-Xylene	BQL	2.0	1	3/18/04
o-Xylene	BQL	2.0	1	3/18/04
Surrogate Spike Recoveries		Spike Added	Spike Result	Percent Recovery
Trifluorotoluene		40	39.8	99.4

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: RR-23

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-6A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	2.0	1.0	1	3/18/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/18/04
Ethylbenzene	44	1.0	1	3/18/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/18/04
Toluene	BQL	1.0	1	3/18/04
m/p-Xylene	31	2.0	1	3/18/04
o-Xylene	10	2.0	1	3/18/04

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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GC 602

Client Sample ID: RR-23 Dup.

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-7A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

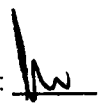
Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	2.3	1.0	1	3/18/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/18/04
Ethylbenzene	49	1.0	1	3/18/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/18/04
Toluene	1.1	1.0	1	3/18/04
m/p-Xylene	36	2.0	1	3/18/04
o-Xylene	12	2.0	1	3/18/04

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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: RR-11

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-8A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/18/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/18/04
Ethylbenzene	BQL	1.0	1	3/18/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/18/04
Toluene	BQL	1.0	1	3/18/04
m/p-Xylene	BQL	2.0	1	3/18/04
o-Xylene	BQL	2.0	1	3/18/04

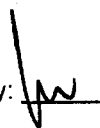
Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	39.9	99.9

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

5 of 80

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: RR-14

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-9B

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/19/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/19/04
Ethylbenzene	BQL	1.0	1	3/19/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/19/04
Toluene	BQL	1.0	1	3/19/04
m/p-Xylene	BQL	2.0	1	3/19/04
o-Xylene	BQL	2.0	1	3/19/04

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.2	103

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By 

6 of 80

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: AS511-1

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-10A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/19/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/19/04
Ethylbenzene	BQL	1.0	1	3/19/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/19/04
Toluene	BQL	1.0	1	3/19/04
m/p-Xylene	BQL	2.0	1	3/19/04
o-Xylene	BQL	2.0	1	3/19/04

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	39.9	99.9

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: AS511-5

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-11B

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/19/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/19/04
Ethylbenzene	BQL	1.0	1	3/19/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/19/04
Toluene	BQL	1.0	1	3/19/04
m/p-Xylene	BQL	2.0	1	3/19/04
o-Xylene	BQL	2.0	1	3/19/04

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.3	101

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: MW-10

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-12B

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/19/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/19/04
Ethylbenzene	6.1	1.0	1	3/19/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/19/04
Toluene	BQL	1.0	1	3/19/04
m/p-Xylene	7.1	2.0	1	3/19/04
o-Xylene	BQL	2.0	1	3/19/04

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.6	102

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: RR-9

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-13A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/19/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/19/04
Ethylbenzene	BQL	1.0	1	3/19/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/19/04
Toluene	BQL	1.0	1	3/19/04
m/p-Xylene	BQL	2.0	1	3/19/04
o-Xylene	BQL	2.0	1	3/19/04

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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles

by GC 602

Client Sample ID: trip blank

Analyzed By: JTF

Client Project ID: Rapid Refueler 2003 Release

Date Collected: 3/12/04

Lab Sample ID: G128-1277-14A

Date Received: 3/15/04

Lab Project ID: G128-1277

Matrix: Water

Analyte	Result ug/L	RL ug/L	Dilution Factor	Date Analyzed
Benzene	BQL	1.0	1	3/19/04
Diisopropyl ether (DIPE)	BQL	1.0	1	3/19/04
Ethylbenzene	BQL	1.0	1	3/19/04
Methyl-tert butyl ether (MTBE)	BQL	2.0	1	3/19/04
Toluene	BQL	1.0	1	3/19/04
m/p-Xylene	BQL	2.0	1	3/19/04
o-Xylene	BQL	2.0	1	3/19/04

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.6	102

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: RR-21

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-5F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	BQL	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	BQL	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: RR-21
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-5F
Lab Project ID: G128-1277

Analyzed By: MRC
Date Collected: 03-12-2004
Date Received: 03-15-2004
Matrix: Water

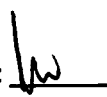
Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	BQL	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8	80
2-Fluorophenol	10	8.2	82
Nitrobenzene-d5	10	8	80
Phenol-d6	10	7.9	79
2,4,6-Tribromophenol	10	8.1	81
4-Terphenyl-d14	10	6.6	66

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: RR-21

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-5F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Dilution: 1

Date Analyzed: 03-18-2004

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Alkane, Unknown	20.14			57
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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: RR-23

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-6F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	BQL	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	BQL	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles by GCMS 625

Client Sample ID: RR-23

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-6F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

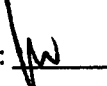
Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	366	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.8	78
2-Fluorophenol	10	8.8	88
Nitrobenzene-d5	10	7	70
Phenol-d6	10	8.8	88
2,4,6-Tribromophenol	10	9.2	92
4-Terphenyl-d14	10	6.7	67

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: RR-23
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-6F
Lab Project ID: G128-1277

Analyzed By: MRC
Date Collected: 03-12-2004
Date Received: 03-15-2004
Matrix: Water

Dilution: 1

Date Analyzed: 03-18-2004

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	2-Methylnaphthalene	10.94	000091-57-6	99	280
2	1-Methylnaphthalene	11.10	000090-12-0	98	170
3	Alkane, Unknown	11.68			160
4	Alkane, Unknown	8.75			130
5	Trimethylbenzene, Isomer of	7.61			120
6	Alkane, Unknown	11.46			100
7	Diethylbenzene, Isomer of	8.33			97
8	Dimethylnaphthalene, Isomer of	12.06			91
9	Decahydronaphthalene, Isomer of	8.43			78
10	Alkane, Unknown	12.53			77

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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles by GCMS 625

Client Sample ID: RR-11

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-8F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	BQL	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	BQL	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles by GCMS 625

Client Sample ID: RR-11
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-8F
Lab Project ID: G128-1277

Analyzed By: MRC
Date Collected: 03-12-2004
Date Received: 03-15-2004
Matrix: Water

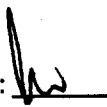
Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	BQL	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.8	78
2-Fluorophenol	10	8	80
Nitrobenzene-d5	10	7.8	78
Phenol-d6	10	7.8	78
2,4,6-Tribromophenol	10	8.3	83
4-Terphenyl-d14	10	11.8	118

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: RR-11

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-8F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Dilution: 1

Date Analyzed: 03-18-2004

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: 

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: RR-14

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-9F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	86.1	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	BQL	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles by GCMS 625

Client Sample ID: RR-14

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-9F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

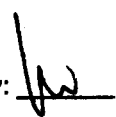
Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	BQL	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.3	83
2-Fluorophenol	10	8.6	86
Nitrobenzene-d5	10	8.3	83
Phenol-d6	10	8.4	84
2,4,6-Tribromophenol	10	8.5	85
4-Terphenyl-d14	10	11.3	113

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds
by GCMS**

Client Sample ID: RR-14
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-9F
Lab Project ID: G128-1277

Analyzed By: MRC
Date Collected: 03-12-2004
Date Received: 03-15-2004
Matrix: Water

Dilution: 1

Date Analyzed: 03-18-2004

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: 

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: AS511-1

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-10F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	83.5	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	BQL	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: AS511-1

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-10F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	BQL	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.6	76
2-Fluorophenol	10	7.2	72
Nitrobenzene-d5	10	7.3	73
Phenol-d6	10	7.5	75
2,4,6-Tribromophenol	10	8.8	88
4-Terphenyl-d14	10	10.6	106

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: AS511-1

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-10F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Dilution: 1

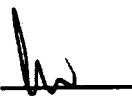
Date Analyzed: 03-18-2004

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Alkane, Unknown	10.48			32
2	Alkane, Unknown	11.45			21
3	Alkane, Unknown	12.18			16
4	Alkane, Unknown	9.91			10
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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: AS511-5

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-11F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	BQL	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	BQL	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: AS511-5

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-11F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

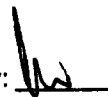
Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	BQL	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.1	71
2-Fluorophenol	10	7.1	71
Nitrobenzene-d5	10	7.3	73
Phenol-d6	10	8	80
2,4,6-Tribromophenol	10	8.5	85
4-Terphenyl-d14	10	6.8	68

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds
by GCMS**

Client Sample ID: AS511-5
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-11F
Lab Project ID: G128-1277

Analyzed By: MRC
Date Collected: 03-12-2004
Date Received: 03-15-2004
Matrix: Water

Dilution: 1

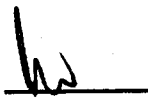
Date Analyzed: 03-18-2004

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Unknown	17.94			220
2	Unknown	27.69			190
3	Aromatic acid, Unknown	10.47			69
4	Carboxylic Acid, Unknown	17.17			28
5	Unknown	16.62			20
6	Unknown	20.35			16
7	Unknown	19.78			13
8	Unknown	19.06			8
9	Unknown	14.72			8
10	Unknown	19.03			7.4

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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: MW-10

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-12F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-18-2004
Acenaphthylene	BQL	10.0	1	03-18-2004
Anthracene	BQL	10.0	1	03-18-2004
Benzo[a]anthracene	BQL	10.0	1	03-18-2004
Benzo[a]pyrene	BQL	10.0	1	03-18-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-18-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-18-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-18-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-18-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-18-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-18-2004
Bis(2-ethylhexyl)phthalate	25.2	10.0	1	03-18-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-18-2004
Butylbenzylphthalate	BQL	10.0	1	03-18-2004
2-Chloronaphthalene	BQL	10.0	1	03-18-2004
2-Chlorophenol	BQL	10.0	1	03-18-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-18-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-18-2004
Chrysene	BQL	10.0	1	03-18-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-18-2004
Di-n-Butylphthalate	BQL	10.0	1	03-18-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-18-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-18-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-18-2004
2,4-Dichlorophenol	BQL	10.0	1	03-18-2004
Diethylphthalate	BQL	10.0	1	03-18-2004
Dimethylphthalate	BQL	10.0	1	03-18-2004
2,4-Dimethylphenol	20.2	10.0	1	03-18-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-18-2004
2,4-Dinitrophenol	BQL	50.0	1	03-18-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-18-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-18-2004
Di-n-octylphthalate	BQL	10.0	1	03-18-2004
Fluoranthene	BQL	10.0	1	03-18-2004
Fluorene	BQL	10.0	1	03-18-2004
Hexachlorobenzene	BQL	10.0	1	03-18-2004
Hexachlorobutadiene	BQL	10.0	1	03-18-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-18-2004
Hexachloroethane	BQL	10.0	1	03-18-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-18-2004
Isophorone	BQL	10.0	1	03-18-2004

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: MW-10

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-12F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

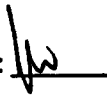
Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-18-2004
4-Nitrophenol	BQL	50.0	1	03-18-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-18-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-18-2004
Naphthalene	41.2	10.0	1	03-18-2004
Nitrobenzene	BQL	10.0	1	03-18-2004
Pentachlorophenol	BQL	50.0	1	03-18-2004
Phenanthrene	BQL	10.0	1	03-18-2004
Phenol	BQL	10.0	1	03-18-2004
Pyrene	BQL	10.0	1	03-18-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-18-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-18-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	6.8	68
2-Fluorophenol	10	9.3	93
Nitrobenzene-d5	10	9.5	95
Phenol-d6	10	9.2	92
2,4,6-Tribromophenol	10	9.8	98
4-Terphenyl-d14	10	9.9	99

Comments:**Flags:**

BQL = Below Quantitation Limits.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: MW-10
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-12F
Lab Project ID: G128-1277

Analyzed By: MRC
Date Collected: 03-12-2004
Date Received: 03-15-2004
Matrix: Water

Dilution: 1

Date Analyzed: 03-18-2004

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Unknown	4.72			74
2	Unknown	13.70			110
3	Unknown	8.44			76
4	Unknown	8.07			66
5	Unknown	13.30			64
6	Alkane, Unknown	7.61			53
7	Unknown	13.06			47
8	Alkane, Unknown	9.53			40
9	Unknown	12.95			40
10	Unknown	8.27			35

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: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: RR-9

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-13F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
Acenaphthene	BQL	10.0	1	03-19-2004
Acenaphthylene	BQL	10.0	1	03-19-2004
Anthracene	BQL	10.0	1	03-19-2004
Benzo[a]anthracene	BQL	10.0	1	03-19-2004
Benzo[a]pyrene	BQL	10.0	1	03-19-2004
Benzo[b]fluoranthene	BQL	10.0	1	03-19-2004
Benzo[g,h,i]perylene	BQL	10.0	1	03-19-2004
Benzo[k]fluoranthene	BQL	10.0	1	03-19-2004
Bis(2-chloroethoxy)methane	BQL	10.0	1	03-19-2004
Bis(2-chloroethyl)ether	BQL	10.0	1	03-19-2004
Bis(2-chloroisopropyl)ether	BQL	10.0	1	03-19-2004
Bis(2-ethylhexyl)phthalate	BQL	10.0	1	03-19-2004
4-bromophenyl phenyl ether	BQL	10.0	1	03-19-2004
Butylbenzylphthalate	BQL	10.0	1	03-19-2004
2-Chloronaphthalene	BQL	10.0	1	03-19-2004
2-Chlorophenol	BQL	10.0	1	03-19-2004
4-Chloro-3-methylphenol	BQL	10.0	1	03-19-2004
4-Chlorophenyl phenyl ether	BQL	10.0	1	03-19-2004
Chrysene	BQL	10.0	1	03-19-2004
Dibenzo[a,h]anthracene	BQL	10.0	1	03-19-2004
Di-n-Butylphthalate	BQL	10.0	1	03-19-2004
1,2-Dichlorobenzene	BQL	10.0	1	03-19-2004
1,3-Dichlorobenzene	BQL	10.0	1	03-19-2004
1,4-Dichlorobenzene	BQL	10.0	1	03-19-2004
3,3'-Dichlorobenzidine	BQL	20.0	1	03-19-2004
2,4-Dichlorophenol	BQL	10.0	1	03-19-2004
Diethylphthalate	BQL	10.0	1	03-19-2004
Dimethylphthalate	BQL	10.0	1	03-19-2004
2,4-Dimethylphenol	BQL	10.0	1	03-19-2004
4,6-Dinitro-2-methylphenol	BQL	50.0	1	03-19-2004
2,4-Dinitrophenol	BQL	50.0	1	03-19-2004
2,4-Dinitrotoluene	BQL	10.0	1	03-19-2004
2,6-Dinitrotoluene	BQL	10.0	1	03-19-2004
Di-n-octylphthalate	BQL	10.0	1	03-19-2004
Fluoranthene	BQL	10.0	1	03-19-2004
Fluorene	BQL	10.0	1	03-19-2004
Hexachlorobenzene	BQL	10.0	1	03-19-2004
Hexachlorobutadiene	BQL	10.0	1	03-19-2004
Hexachlorocyclopentadiene	BQL	20.0	1	03-19-2004
Hexachloroethane	BQL	10.0	1	03-19-2004
Indeno(1,2,3-c,d)pyrene	BQL	10.0	1	03-19-2004
Isophorone	BQL	10.0	1	03-19-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: RR-9

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-13F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Compound	Result ug/L	Quantitation Limit ug/L	Dilution Factor	Date Analyzed
2-Nitrophenol	BQL	10.0	1	03-19-2004
4-Nitrophenol	BQL	50.0	1	03-19-2004
N-Nitrosodiphenylamine	BQL	10.0	1	03-19-2004
N-Nitrosodi-n-propylamine	BQL	10.0	1	03-19-2004
Naphthalene	BQL	10.0	1	03-19-2004
Nitrobenzene	BQL	10.0	1	03-19-2004
Pentachlorophenol	BQL	50.0	1	03-19-2004
Phenanthrene	BQL	10.0	1	03-19-2004
Phenol	BQL	10.0	1	03-19-2004
Pyrene	BQL	10.0	1	03-19-2004
1,2,4-Trichlorobenzene	BQL	10.0	1	03-19-2004
2,4,6-Trichlorophenol	BQL	10.0	1	03-19-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.9	79
2-Fluorophenol	10	8.1	81
Nitrobenzene-d5	10	7.9	79
Phenol-d6	10	8	80
2,4,6-Tribromophenol	10	8.1	81
4-Terphenyl-d14	10	6.4	64

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: RR-9

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-13F

Lab Project ID: G128-1277

Analyzed By: MRC

Date Collected: 03-12-2004

Date Received: 03-15-2004

Matrix: Water

Dilution: 1

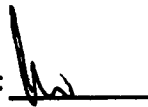
Date Analyzed: 03-19-2004

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Unknown	10.48			18
2	Alkane, Unknown	11.45	003891-98-3	78	11
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: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

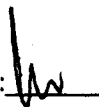
Sample Information and Analytical Results	
Sample Identification	RR-20 (3-5')
Sample Matrix	Soil
Date Collected	03/11/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/17/04
Dry Weight	88.8
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 10 (mg/Kg)
C ₁₉ -C ₃₈ Aliphatics*	< 10 (mg/Kg)
C ₁₁ -C ₂₂ Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	88
Aromatic Surrogate % Recovery	82

Comments:

* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1277-1F

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

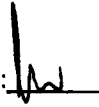
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-21 (3-5')
Sample Matrix	Soil
Date Collected	03/11/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/17/04
Dry Weight	81.7
Dilution Factor	1
C ₈ -C ₁₈ Aliphatics*	< 10 (mg/Kg)
C ₁₈ -C ₃₈ Aliphatics*	< 10 (mg/Kg)
C ₁₁ -C ₂₂ Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	98
Aromatic Surrogate % Recovery	91

Comments:

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

Lab info: G128-1277-3G

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

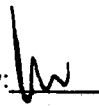
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-23 (4-6')
Sample Matrix	Soil
Date Collected	03/11/04
Date Received	03/15/04
Date Extracted	02/10/04
Date Analyzed	03/22/04
Dry Weight	72.6
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	300 (mg/Kg)
C ₁₉ -C ₃₆ Aliphatics*	< 10 (mg/Kg)
C ₁₁ -C ₂₂ Aromatics*	68 (mg/Kg)
Aliphatic Surrogate % Recovery	87
Aromatic Surrogate % Recovery	81
Fractionation Surrogate 1 % Recovery	68

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G128-1277-4G

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-21
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/18/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 100 (µg/L)
C ₁₉ -C ₃₈ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	40
Aromatic Surrogate % Recovery	53

Comments:

* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1277-5G

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-23
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/19/04
Date Analyzed	03/24/04
Dry Weight	
Dilution Factor	1
C ₈ -C ₁₈ Aliphatics*	970 (µg/L)
C ₁₈ -C ₃₈ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	240 (µg/L)
Aliphatic Surrogate % Recovery	26
Aromatic Surrogate % Recovery	52
Fractionation Surrogate 1 % Recovery	68

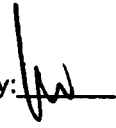
Comments:

* = Excludes any surrogates or internal standards.

Note:

Low surrogates confirmed by duplicate analysis.

Lab info: G128-1277-6F

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

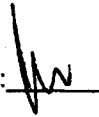
Sample Information and Analytical Results	
Sample Identification	RR-11
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/18/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 100 (µg/L)
C ₁₉ -C ₃₆ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	110
Aromatic Surrogate % Recovery	99

Comments:

* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1277-8G

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

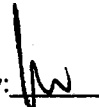
Sample Information and Analytical Results	
Sample Identification	RR-14
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/18/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 100 (µg/L)
C ₁₉ -C ₃₈ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	110
Aromatic Surrogate % Recovery	74

Comments:

* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1277-9G

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler 2003 Release

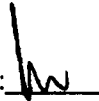
Sample Information and Analytical Results	
Sample Identification	AS511-1
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/18/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 100 (µg/L)
C ₁₉ -C ₃₈ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	67
Aromatic Surrogate % Recovery	86

Comments:

* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1277-10G

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

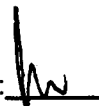
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	AS511-5
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/19/04
Date Analyzed	03/23/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 100 (µg/L)
C ₁₉ -C ₃₆ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	60
Aromatic Surrogate % Recovery	58
Fractionation Surrogate 1 % Recovery	68

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G128-1277-11G

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	MW-10
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/19/04
Date Analyzed	03/24/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	1600 (µg/L)
C ₁₉ -C ₃₆ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	350 (µg/L)
Aliphatic Surrogate % Recovery	84
Aromatic Surrogate % Recovery	78
Fractionation Surrogate 1 % Recovery	68

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G128-1277-12F

Reviewed By: 

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-9
Sample Matrix	Water
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/16/04
Date Analyzed	03/18/04
Dry Weight	
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 100 (µg/L)
C ₁₉ -C ₃₆ Aliphatics*	< 100 (µg/L)
C ₁₁ -C ₂₂ Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	78
Aromatic Surrogate % Recovery	66

Comments:

* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1277-13G

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/10/04

Calibration Ranges and Limits

Range	MDL (mg/Kg)	(µg/L)	ML (mg/Kg)	(µg/L)	RL (mg/Kg)	(µg/L)
C ₉ -C ₁₈ Aliphatics	0.1	0.8	0.3	2.6	100	10
C ₁₉ -C ₃₆ Aliphatics	0.1	1.6	0.3	5	100	10
C ₁₁ -C ₂₂ Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	(mg/Kg)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	0.06	1	2.20	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C ₁₉ -C ₃₆ Aliphatics	0.08	1.33	11.7	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C ₁₁ -C ₂₂ Aromatics	0.17	2.83	7.4	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 03/17/04

Calibration Check

Range	Levels (µg/mL)	(mg/Kg)	RPD
C ₉ -C ₁₈ Aliphatics	0.6	10	-1.9
C ₁₉ -C ₃₆ Aliphatics	0.8	13.3	2.0
C ₁₁ -C ₂₂ Aromatics	1.7	28.3	-1.7

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

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

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/10/04

Calibration Ranges and Limits

Range	MDL (mg/Kg)	(µg/L)	ML (mg/Kg)	(µg/L)	RL (mg/Kg)	(µg/L)
C ₉ -C ₁₈ Aliphatics	0.1	0.8	0.3	2.6	100	10
C ₁₉ -C ₃₆ Aliphatics	0.1	1.6	0.3	5	100	10
C ₁₁ -C ₂₂ Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	(mg/Kg)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	0.06	1	2.20	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C ₁₉ -C ₃₆ Aliphatics	0.08	1.33	11.7	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C ₁₁ -C ₂₂ Aromatics	0.17	2.83	7.4	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 03/18/04

Calibration Check

Range	Levels (µg/mL)	(mg/Kg)	RPD
C ₉ -C ₁₈ Aliphatics	0.6	10	-2.5
C ₁₉ -C ₃₆ Aliphatics	0.8	13.3	3.0
C ₁₁ -C ₂₂ Aromatics	1.7	28.3	-3.1

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

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

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/10/04

Calibration Ranges and Limits

Range	MDL (mg/Kg)	(µg/L)	ML (mg/Kg)	(µg/L)	RL (mg/Kg)	(µg/L)
C ₉ -C ₁₈ Aliphatics	0.1	0.8	0.3	2.6	100	10
C ₁₉ -C ₃₆ Aliphatics	0.1	1.6	0.3	5	100	10
C ₁₁ -C ₂₂ Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	(mg/Kg)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	0.06	1	2.20	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C ₁₉ -C ₃₆ Aliphatics	0.08	1.33	11.7	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C ₁₁ -C ₂₂ Aromatics	0.17	2.83	7.4	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 03/22/04

Calibration Check

Range	Levels (µg/mL)	(mg/Kg)	RPD
C ₉ -C ₁₈ Aliphatics	0.6	10	-7.6
C ₁₉ -C ₃₆ Aliphatics	0.8	13.3	-24.5
C ₁₁ -C ₂₂ Aromatics	1.7	28.3	-20.4

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

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

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/10/04

Calibration Ranges and Limits

Range	MDL (mg/Kg)	(µg/L)	ML (mg/Kg)	(µg/L)	RL (mg/Kg)	(µg/L)
C ₉ -C ₁₈ Aliphatics	0.1	0.8	0.3	2.6	100	10
C ₁₉ -C ₃₆ Aliphatics	0.1	1.6	0.3	5	100	10
C ₁₁ -C ₂₂ Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels (µg/L) (mg/Kg)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	0.06 1	2.20	Calibration Factor
	0.15 2.5		
	0.3 5		
	0.6 10		
	1.2 20		
C ₁₉ -C ₃₆ Aliphatics	0.08 1.33	11.7	Calibration Factor
	0.2 3.33		
	0.4 6.67		
	0.8 13.3		
	1.6 26.7		
C ₁₁ -C ₂₂ Aromatics	0.17 2.83	7.4	Calibration Factor
	0.425 7.08		
	0.85 14.2		
	1.7 28.3		
	3.4 56.7		

Calibration Check Date: 03/24/04

Calibration Check

Range	Levels (µg/mL) (mg/Kg)	RPD
C ₉ -C ₁₈ Aliphatics	0.6 10	-2.3
C ₁₉ -C ₃₆ Aliphatics	0.8 13.3	-4.3
C ₁₁ -C ₂₂ Aromatics	1.7 28.3	-14.5

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

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

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

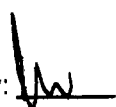
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-20 (3-5')
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	03/11/04
Date Received	03/15/04
Date Extracted	03/11/04
Date Analyzed	03/24/04
Dry Weight	89
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	92
Surrogate % Recovery - FID	97

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-1E

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-21 (3-5')
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	03/11/04
Date Received	03/15/04
Date Extracted	03/11/04
Date Analyzed	03/24/04
Dry Weight	82
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	88
Surrogate % Recovery - FID	93

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-3E

Reviewed By: lw

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-23 (4-6')
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	03/11/04
Date Received	03/15/04
Date Extracted	03/11/04
Date Analyzed	03/24/04
Dry Weight	85
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	94 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	150***
Surrogate % Recovery - FID	180***

* = 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.

***= High surrogate recovery due to matrix interference

Lab Info: G128-1277-4D

Reviewed By: lw

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

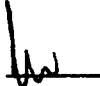
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-21
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/20/04
Date Analyzed	03/20/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₀ Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	100
Surrogate % Recovery - FID	98

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-5B

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

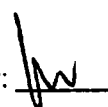
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-23
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/22/04
Date Analyzed	03/22/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	610 (µg/L)
C ₉ -C ₁₀ Aromatics**	140 (µg/L)
Surrogate % Recovery - PID	80
Surrogate % Recovery - FID	100

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-6B

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-11
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/20/04
Date Analyzed	03/20/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₀ Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	97
Surrogate % Recovery - FID	95

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-8D

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-14
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/20/04
Date Analyzed	03/20/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₀ Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	94
Surrogate % Recovery - FID	96

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-9A

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

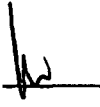
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	AS511-1
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/20/04
Date Analyzed	03/20/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₀ Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	92
Surrogate % Recovery - FID	96

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-10B

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

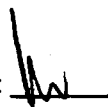
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	AS511-5
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/20/04
Date Analyzed	03/20/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₀ Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	94
Surrogate % Recovery - FID	100

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

** = Excludes any surrogates or internal standards.

Lab Info: G128-1277-11A

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	MW-10
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/24/04
Date Analyzed	03/24/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	4100 (µg/L)
C ₉ -C ₁₀ Aromatics**	350 (µg/L)
Surrogate % Recovery - PID	120
Surrogate % Recovery - FID	600***

* = 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.

***= High surrogate recovery due to matrix interference

Lab Info: g128-1277-12d

Reviewed By: 

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

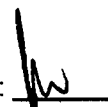
Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 Release

Sample Information and Analytical Results	
Sample Identification	RR-9
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/12/04
Date Received	03/15/04
Date Extracted	03/22/04
Date Analyzed	03/22/04
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₀ Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	88
Surrogate % Recovery - FID	98

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

** = Excludes any surrogates or internal standards

Lab Info: G128-1277-13B

Reviewed By: 

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date

03/15/04

PID Initial Calibration Date:

03/15/04

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	9.3	0.41	29.4	1.3	100	10
C ₉ -C ₁₂ Aliphatics	7.9	0.3	25.2	0.97	100	10
C ₉ -C ₁₀ Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C ₅ -C ₈ Aliphatics	20	2	8.5	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C ₉ -C ₁₂ Aliphatics	15	1.5	13.5	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C ₉ -C ₁₀ Aromatics	32.5	3.25	1	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date:

03/19/04

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C ₅ -C ₈ Aliphatics	200	20	-15.6
C ₉ -C ₁₂ Aliphatics	150	15	-6.0
C ₉ -C ₁₀ Aromatics	325	32.5	-5.7

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 03/02/04PID Initial Calibration Date: 03/02/04

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	9.3	0.41	29.4	1.3	100	10
C ₉ -C ₁₂ Aliphatics	7.9	0.3	25.2	0.97	100	10
C ₉ -C ₁₀ Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C ₅ -C ₈ Aliphatics	20	2	4.7	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C ₉ -C ₁₂ Aliphatics	15	1.5	14.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C ₉ -C ₁₀ Aromatics	32.5	3.25	0.998	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 03/23/04

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C ₅ -C ₈ Aliphatics	200	20	2.0
C ₉ -C ₁₂ Aliphatics	150	15	-0.3
C ₉ -C ₁₀ Aromatics	325	32.5	-10.5

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: RR-20 (3-5')
 Client Project ID: Rapid Refueler 2003 Release
 Lab Sample ID G128-1277-1A
 Lab Project ID: G128-1277
 Report Basis: Dry Weight

Analyzed By: JTF
 Date Collected: 03-11-2004
 Date Received: 03-15-2004
 Matrix: Soil
 %Solids: 88.8

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	0.0429	1	03-17-2004
Benzene	BQL	0.00429	1	03-17-2004
Bromobenzene	BQL	0.00429	1	03-17-2004
Bromochloromethane	BQL	0.00429	1	03-17-2004
Bromodichloromethane	BQL	0.00429	1	03-17-2004
Bromoform	BQL	0.00429	1	03-17-2004
Bromomethane	BQL	0.00429	1	03-17-2004
2-Butanone	BQL	0.0214	1	03-17-2004
n-Butylbenzene	BQL	0.00429	1	03-17-2004
sec-Butylbenzene	BQL	0.00429	1	03-17-2004
tert-Butylbenzene	BQL	0.00429	1	03-17-2004
Carbon disulfide	BQL	0.00429	1	03-17-2004
Carbon tetrachloride	BQL	0.00429	1	03-17-2004
Chlorobenzene	BQL	0.00429	1	03-17-2004
Chloroethane	BQL	0.00429	1	03-17-2004
Chloroform	BQL	0.00429	1	03-17-2004
Chloromethane	BQL	0.00429	1	03-17-2004
2-Chlorotoluene	BQL	0.00429	1	03-17-2004
4-Chlorotoluene	BQL	0.00429	1	03-17-2004
Dibromochloromethane	BQL	0.00429	1	03-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.00429	1	03-17-2004
Dibromomethane	BQL	0.00429	1	03-17-2004
1,2-Dibromoethane (EDB)	BQL	0.00429	1	03-17-2004
1,2-Dichlorobenzene	BQL	0.00429	1	03-17-2004
1,3-Dichlorobenzene	BQL	0.00429	1	03-17-2004
1,4-Dichlorobenzene	BQL	0.00429	1	03-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.00429	1	03-17-2004
1,1-Dichloroethane	BQL	0.00429	1	03-17-2004
1,1-Dichloroethene	BQL	0.00429	1	03-17-2004
1,2-Dichloroethane	BQL	0.00429	1	03-17-2004
cis-1,2-Dichloroethene	BQL	0.00429	1	03-17-2004
trans-1,2-dichloroethene	BQL	0.00429	1	03-17-2004
1,2-Dichloropropane	BQL	0.00429	1	03-17-2004
1,3-Dichloropropane	BQL	0.00429	1	03-17-2004
2,2-Dichloropropane	BQL	0.00429	1	03-17-2004
1,1-Dichloropropene	BQL	0.00429	1	03-17-2004
cis-1,3-Dichloropropene	BQL	0.00429	1	03-17-2004
trans-1,3-Dichloropropene	BQL	0.00429	1	03-17-2004
Dichlorodifluoromethane	BQL	0.00429	1	03-17-2004
Diisopropyl ether (DIPE)	BQL	0.00429	1	03-17-2004
Ethylbenzene	BQL	0.00429	1	03-17-2004
Hexachlorobutadiene	BQL	0.00429	1	03-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles by GCMS 8260-5035

Client Sample ID: RR-20 (3-5')
 Client Project ID: Rapid Refueler 2003 Release
 Lab Sample ID G128-1277-1A
 Lab Project ID: G128-1277
 Report Basis: Dry Weight

Analyzed By: JTF
 Date Collected: 03-11-2004
 Date Received: 03-15-2004
 Matrix: Soil
 %Solids: 88.8

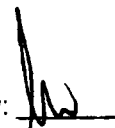
Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00429	1	03-17-2004
Iodomethane	BQL	0.00429	1	03-17-2004
Isopropylbenzene	BQL	0.00429	1	03-17-2004
4-Isopropyltoluene	BQL	0.00429	1	03-17-2004
Methylene chloride	BQL	0.0171	1	03-17-2004
4-Methyl-2-pentanone	BQL	0.00429	1	03-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00429	1	03-17-2004
Naphthalene	BQL	0.00429	1	03-17-2004
n-Propyl benzene	BQL	0.00429	1	03-17-2004
Styrene	BQL	0.00429	1	03-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.00429	1	03-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.00429	1	03-17-2004
Tetrachloroethene	BQL	0.00429	1	03-17-2004
Toluene	BQL	0.00429	1	03-17-2004
1,2,3-Trichlorobenzene	BQL	0.00429	1	03-17-2004
1,2,4-Trichlorobenzene	BQL	0.00429	1	03-17-2004
Trichloroethene	BQL	0.00429	1	03-17-2004
1,1,1-Trichloroethane	BQL	0.00429	1	03-17-2004
1,1,2-Trichloroethane	BQL	0.00429	1	03-17-2004
Trichlorofluoromethane	BQL	0.00429	1	03-17-2004
1,2,3-Trichloropropane	BQL	0.00429	1	03-17-2004
1,2,4-Trimethylbenzene	BQL	0.00429	1	03-17-2004
1,3,5-Trimethylbenzene	BQL	0.00429	1	03-17-2004
Vinyl chloride	BQL	0.00429	1	03-17-2004
m-,p-Xylene	BQL	0.00857	1	03-17-2004
o-Xylene	BQL	0.00429	1	03-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.0491	98
1,2-Dichloroethane-d4	0.05	0.0604	121
Toluene-d8	0.05	0.0513	103

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: RR-20 (3-5') Dup.
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID G128-1277-2A
Lab Project ID: G128-1277
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 03-11-2004
Date Received: 03-15-2004
Matrix: Soil
%Solids: 83.3

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	0.0497	1	03-17-2004
Benzene	BQL	0.00497	1	03-17-2004
Bromobenzene	BQL	0.00497	1	03-17-2004
Bromochloromethane	BQL	0.00497	1	03-17-2004
Bromodichloromethane	BQL	0.00497	1	03-17-2004
Bromoform	BQL	0.00497	1	03-17-2004
Bromomethane	BQL	0.00497	1	03-17-2004
2-Butanone	BQL	0.0248	1	03-17-2004
n-Butylbenzene	BQL	0.00497	1	03-17-2004
sec-Butylbenzene	BQL	0.00497	1	03-17-2004
tert-Butylbenzene	BQL	0.00497	1	03-17-2004
Carbon disulfide	BQL	0.00497	1	03-17-2004
Carbon tetrachloride	BQL	0.00497	1	03-17-2004
Chlorobenzene	BQL	0.00497	1	03-17-2004
Chloroethane	BQL	0.00497	1	03-17-2004
Chloroform	BQL	0.00497	1	03-17-2004
Chloromethane	BQL	0.00497	1	03-17-2004
2-Chlorotoluene	BQL	0.00497	1	03-17-2004
4-Chlorotoluene	BQL	0.00497	1	03-17-2004
Dibromochloromethane	BQL	0.00497	1	03-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.00497	1	03-17-2004
Dibromomethane	BQL	0.00497	1	03-17-2004
1,2-Dibromoethane (EDB)	BQL	0.00497	1	03-17-2004
1,2-Dichlorobenzene	BQL	0.00497	1	03-17-2004
1,3-Dichlorobenzene	BQL	0.00497	1	03-17-2004
1,4-Dichlorobenzene	BQL	0.00497	1	03-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.00497	1	03-17-2004
1,1-Dichloroethane	BQL	0.00497	1	03-17-2004
1,1-Dichloroethene	BQL	0.00497	1	03-17-2004
1,2-Dichloroethane	BQL	0.00497	1	03-17-2004
cis-1,2-Dichloroethene	BQL	0.00497	1	03-17-2004
trans-1,2-dichloroethene	BQL	0.00497	1	03-17-2004
1,2-Dichloropropane	BQL	0.00497	1	03-17-2004
1,3-Dichloropropane	BQL	0.00497	1	03-17-2004
2,2-Dichloropropane	BQL	0.00497	1	03-17-2004
1,1-Dichloropropene	BQL	0.00497	1	03-17-2004
cis-1,3-Dichloropropene	BQL	0.00497	1	03-17-2004
trans-1,3-Dichloropropene	BQL	0.00497	1	03-17-2004
Dichlorodifluoromethane	BQL	0.00497	1	03-17-2004
Diisopropyl ether (DIPE)	BQL	0.00497	1	03-17-2004
Ethylbenzene	BQL	0.00497	1	03-17-2004
Hexachlorobutadiene	BQL	0.00497	1	03-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: RR-20 (3-5') Dup.
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID G128-1277-2A
Lab Project ID: G128-1277
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 03-11-2004
Date Received: 03-15-2004
Matrix: Soil
%Solids: 83.3

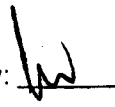
Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00497	1	03-17-2004
Iodomethane	BQL	0.00497	1	03-17-2004
Isopropylbenzene	BQL	0.00497	1	03-17-2004
4-Isopropyltoluene	BQL	0.00497	1	03-17-2004
Methylene chloride	BQL	0.0199	1	03-17-2004
4-Methyl-2-pentanone	BQL	0.00497	1	03-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00497	1	03-17-2004
Naphthalene	BQL	0.00497	1	03-17-2004
n-Propyl benzene	BQL	0.00497	1	03-17-2004
Styrene	BQL	0.00497	1	03-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.00497	1	03-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.00497	1	03-17-2004
Tetrachloroethene	BQL	0.00497	1	03-17-2004
Toluene	BQL	0.00497	1	03-17-2004
1,2,3-Trichlorobenzene	BQL	0.00497	1	03-17-2004
1,2,4-Trichlorobenzene	BQL	0.00497	1	03-17-2004
Trichloroethene	BQL	0.00497	1	03-17-2004
1,1,1-Trichloroethane	BQL	0.00497	1	03-17-2004
1,1,2-Trichloroethane	BQL	0.00497	1	03-17-2004
Trichlorofluoromethane	BQL	0.00497	1	03-17-2004
1,2,3-Trichloropropane	BQL	0.00497	1	03-17-2004
1,2,4-Trimethylbenzene	BQL	0.00497	1	03-17-2004
1,3,5-Trimethylbenzene	BQL	0.00497	1	03-17-2004
Vinyl chloride	BQL	0.00497	1	03-17-2004
m-,p-Xylene	BQL	0.00994	1	03-17-2004
o-Xylene	BQL	0.00497	1	03-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.0502	100
1,2-Dichloroethane-d4	0.05	0.06	120
Toluene-d8	0.05	0.0511	102

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles
by GCMS 8260-5035

Client Sample ID: RR-21 (3-5')
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID G128-1277-3A
Lab Project ID: G128-1277
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 03-11-2004
Date Received: 03-15-2004
Matrix: Soil
%Solids: 81.7

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	0.0566	1	03-17-2004
Benzene	BQL	0.00566	1	03-17-2004
Bromobenzene	BQL	0.00566	1	03-17-2004
Bromochloromethane	BQL	0.00566	1	03-17-2004
Bromodichloromethane	BQL	0.00566	1	03-17-2004
Bromoform	BQL	0.00566	1	03-17-2004
Bromomethane	BQL	0.00566	1	03-17-2004
2-Butanone	BQL	0.0283	1	03-17-2004
n-Butylbenzene	BQL	0.00566	1	03-17-2004
sec-Butylbenzene	BQL	0.00566	1	03-17-2004
tert-Butylbenzene	BQL	0.00566	1	03-17-2004
Carbon disulfide	BQL	0.00566	1	03-17-2004
Carbon tetrachloride	BQL	0.00566	1	03-17-2004
Chlorobenzene	BQL	0.00566	1	03-17-2004
Chloroethane	BQL	0.00566	1	03-17-2004
Chloroform	BQL	0.00566	1	03-17-2004
Chloromethane	BQL	0.00566	1	03-17-2004
2-Chlorotoluene	BQL	0.00566	1	03-17-2004
4-Chlorotoluene	BQL	0.00566	1	03-17-2004
Dibromochloromethane	BQL	0.00566	1	03-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.00566	1	03-17-2004
Dibromomethane	BQL	0.00566	1	03-17-2004
1,2-Dibromoethane (EDB)	BQL	0.00566	1	03-17-2004
1,2-Dichlorobenzene	BQL	0.00566	1	03-17-2004
1,3-Dichlorobenzene	BQL	0.00566	1	03-17-2004
1,4-Dichlorobenzene	BQL	0.00566	1	03-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.00566	1	03-17-2004
1,1-Dichloroethane	BQL	0.00566	1	03-17-2004
1,1-Dichloroethene	BQL	0.00566	1	03-17-2004
1,2-Dichloroethane	BQL	0.00566	1	03-17-2004
cis-1,2-Dichloroethene	BQL	0.00566	1	03-17-2004
trans-1,2-dichloroethene	BQL	0.00566	1	03-17-2004
1,2-Dichloropropane	BQL	0.00566	1	03-17-2004
1,3-Dichloropropane	BQL	0.00566	1	03-17-2004
2,2-Dichloropropane	BQL	0.00566	1	03-17-2004
1,1-Dichloropropene	BQL	0.00566	1	03-17-2004
cis-1,3-Dichloropropene	BQL	0.00566	1	03-17-2004
trans-1,3-Dichloropropene	BQL	0.00566	1	03-17-2004
Dichlorodifluoromethane	BQL	0.00566	1	03-17-2004
Diisopropyl ether (DIPE)	BQL	0.00566	1	03-17-2004
Ethylbenzene	BQL	0.00566	1	03-17-2004
Hexachlorobutadiene	BQL	0.00566	1	03-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles by GCMS 8260-5035

Client Sample ID: RR-21 (3-5')
 Client Project ID: Rapid Refueler 2003 Release
 Lab Sample ID G128-1277-3A
 Lab Project ID: G128-1277
 Report Basis: Dry Weight

Analyzed By: JTF
 Date Collected: 03-11-2004
 Date Received: 03-15-2004
 Matrix: Soil
 %Solids: 81.7

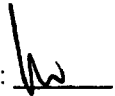
Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00566	1	03-17-2004
Iodomethane	BQL	0.00566	1	03-17-2004
Isopropylbenzene	BQL	0.00566	1	03-17-2004
4-Isopropyltoluene	BQL	0.00566	1	03-17-2004
Methylene chloride	BQL	0.0226	1	03-17-2004
4-Methyl-2-pentanone	BQL	0.00566	1	03-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00566	1	03-17-2004
Naphthalene	BQL	0.00566	1	03-17-2004
n-Propyl benzene	BQL	0.00566	1	03-17-2004
Styrene	BQL	0.00566	1	03-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.00566	1	03-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.00566	1	03-17-2004
Tetrachloroethene	BQL	0.00566	1	03-17-2004
Toluene	BQL	0.00566	1	03-17-2004
1,2,3-Trichlorobenzene	BQL	0.00566	1	03-17-2004
1,2,4-Trichlorobenzene	BQL	0.00566	1	03-17-2004
Trichloroethene	BQL	0.00566	1	03-17-2004
1,1,1-Trichloroethane	BQL	0.00566	1	03-17-2004
1,1,2-Trichloroethane	BQL	0.00566	1	03-17-2004
Trichlorofluoromethane	BQL	0.00566	1	03-17-2004
1,2,3-Trichloropropane	BQL	0.00566	1	03-17-2004
1,2,4-Trimethylbenzene	BQL	0.00566	1	03-17-2004
1,3,5-Trimethylbenzene	BQL	0.00566	1	03-17-2004
Vinyl chloride	BQL	0.00566	1	03-17-2004
m-,p-Xylene	BQL	0.0113	1	03-17-2004
o-Xylene	BQL	0.00566	1	03-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.0471	94
1,2-Dichloroethane-d4	0.05	0.0597	119
Toluene-d8	0.05	0.0502	100

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: RR-23 (4-6')
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-4D
Lab Project ID: G128-1277
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 03-11-2004
Date Received: 03-15-2004
Matrix: Soil
%Solids: 84.9

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	1.03	50	03-17-2004
Benzene	BQL	0.0413	50	03-17-2004
Bromobenzene	BQL	0.0413	50	03-17-2004
Bromochloromethane	BQL	0.0413	50	03-17-2004
Bromodichloromethane	BQL	0.0413	50	03-17-2004
Bromoform	BQL	0.0413	50	03-17-2004
Bromomethane	BQL	0.0413	50	03-17-2004
2-Butanone	BQL	1.03	50	03-17-2004
n-Butylbenzene	BQL	0.0413	50	03-17-2004
sec-Butylbenzene	BQL	0.0413	50	03-17-2004
tert-Butylbenzene	BQL	0.0413	50	03-17-2004
Carbon disulfide	BQL	0.0413	50	03-17-2004
Carbon tetrachloride	BQL	0.0413	50	03-17-2004
Chlorobenzene	BQL	0.0413	50	03-17-2004
Chloroethane	BQL	0.0413	50	03-17-2004
2-Chloroethyl vinyl ether	BQL	0.206	50	03-17-2004
Chloroform	BQL	0.0413	50	03-17-2004
Chloromethane	BQL	0.0413	50	03-17-2004
2-Chlorotoluene	BQL	0.0413	50	03-17-2004
4-Chlorotoluene	BQL	0.0413	50	03-17-2004
Dibromochloromethane	BQL	0.0413	50	03-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.206	50	03-17-2004
Dibromomethane	BQL	0.0413	50	03-17-2004
1,2-Dibromoethane (EDB)	BQL	0.0413	50	03-17-2004
1,2-Dichlorobenzene	BQL	0.0413	50	03-17-2004
1,3-Dichlorobenzene	BQL	0.0413	50	03-17-2004
1,4-Dichlorobenzene	BQL	0.0413	50	03-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.206	50	03-17-2004
1,1-Dichloroethane	BQL	0.0413	50	03-17-2004
1,1-Dichloroethene	BQL	0.0413	50	03-17-2004
1,2-Dichloroethane	BQL	0.0413	50	03-17-2004
cis-1,2-Dichloroethene	BQL	0.0413	50	03-17-2004
trans-1,2-dichloroethene	BQL	0.0413	50	03-17-2004
1,2-Dichloropropane	BQL	0.0413	50	03-17-2004
1,3-Dichloropropane	BQL	0.0413	50	03-17-2004
2,2-Dichloropropane	BQL	0.0413	50	03-17-2004
1,1-Dichloropropene	BQL	0.0413	50	03-17-2004
cis-1,3-Dichloropropene	BQL	0.0413	50	03-17-2004
trans-1,3-Dichloropropene	BQL	0.0413	50	03-17-2004
Dichlorodifluoromethane	BQL	0.206	50	03-17-2004
Diisopropyl ether (DIPE)	BQL	0.0413	50	03-17-2004
Ethylbenzene	BQL	0.0413	50	03-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: RR-23 (4-6')
Client Project ID: Rapid Refueler 2003 Release
Lab Sample ID: G128-1277-4D
Lab Project ID: G128-1277
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 03-11-2004
Date Received: 03-15-2004
Matrix: Soil
%Solids: 84.9

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Hexachlorobutadiene	BQL	0.0413	50	03-17-2004
2-Hexanone	BQL	0.206	50	03-17-2004
Iodomethane	BQL	0.0413	50	03-17-2004
Isopropylbenzene	BQL	0.0413	50	03-17-2004
4-Isopropyltoluene	BQL	0.0413	50	03-17-2004
Methylene chloride	BQL	0.206	50	03-17-2004
4-Methyl-2-pentanone	BQL	0.206	50	03-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.0413	50	03-17-2004
Naphthalene	BQL	0.0413	50	03-17-2004
n-Propyl benzene	BQL	0.0413	50	03-17-2004
Styrene	BQL	0.0413	50	03-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.0413	50	03-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.0413	50	03-17-2004
Tetrachloroethene	BQL	0.0413	50	03-17-2004
Toluene	BQL	0.0413	50	03-17-2004
1,2,3-Trichlorobenzene	BQL	0.0413	50	03-17-2004
1,2,4-Trichlorobenzene	BQL	0.0413	50	03-17-2004
Trichloroethene	BQL	0.0413	50	03-17-2004
1,1,1-Trichloroethane	BQL	0.0413	50	03-17-2004
1,1,2-Trichloroethane	BQL	0.0413	50	03-17-2004
Trichlorofluoromethane	BQL	0.0413	50	03-17-2004
1,2,3-Trichloropropane	BQL	0.0413	50	03-17-2004
1,2,4-Trimethylbenzene	BQL	0.0413	50	03-17-2004
1,3,5-Trimethylbenzene	BQL	0.0413	50	03-17-2004
Vinyl chloride	BQL	0.0413	50	03-17-2004
m-,p-Xylene	BQL	0.0826	50	03-17-2004
o-Xylene	BQL	0.0413	50	03-17-2004

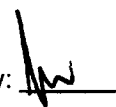
	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.01	0.00989	99
1,2-Dichloroethane-d4	0.01	0.00951	95
Toluene-d8	0.01	0.00976	98

Comments:

Sample diluted due to high concentration of non-target interference.

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles by GCMS 8270

Client Sample ID: RR-20 (3-5')

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-1F

Lab Project ID: G128-1277

Report Basis: Dry Weight

Analyzed By: MRC

Date Collected: 03-11-2004

Date Received: 03-15-2004

Matrix: Soil

%Solids: 88.8

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.338	1	03-19-2004
Acenaphthylene	BQL	0.338	1	03-19-2004
Anthracene	BQL	0.338	1	03-19-2004
Benzo[a]anthracene	BQL	0.338	1	03-19-2004
Benzo[a]pyrene	BQL	0.338	1	03-19-2004
Benzo[b]fluoranthene	BQL	0.338	1	03-19-2004
Benzo[g,h,i]perylene	BQL	0.338	1	03-19-2004
Benzo[k]fluoranthene	BQL	0.338	1	03-19-2004
Benzoic Acid	BQL	0.676	1	03-19-2004
Bis(2-chloroethoxy)methane	BQL	0.338	1	03-19-2004
Bis(2-chloroethyl)ether	BQL	0.338	1	03-19-2004
Bis(2-chloroisopropyl)ether	BQL	0.338	1	03-19-2004
Bis(2-ethylhexyl)phthalate	BQL	0.338	1	03-19-2004
4-bromophenyl phenyl ether	BQL	0.338	1	03-19-2004
Butylbenzylphthalate	BQL	0.338	1	03-19-2004
2-Chloronaphthalene	BQL	0.338	1	03-19-2004
2-Chlorophenol	BQL	0.338	1	03-19-2004
4-Chloro-3-methylphenol	BQL	0.338	1	03-19-2004
4-Chloroaniline	BQL	1.69	1	03-19-2004
4-Chlorophenyl phenyl ether	BQL	0.338	1	03-19-2004
Chrysene	BQL	0.338	1	03-19-2004
Dibenzo[a,h]anthracene	BQL	0.338	1	03-19-2004
Dibenzofuran	BQL	0.338	1	03-19-2004
Di-n-Butylphthalate	BQL	0.338	1	03-19-2004
1,2-Dichlorobenzene	BQL	0.338	1	03-19-2004
1,3-Dichlorobenzene	BQL	0.338	1	03-19-2004
1,4-Dichlorobenzene	BQL	0.338	1	03-19-2004
3,3'-Dichlorobenzidine	BQL	0.676	1	03-19-2004
2,4-Dichlorophenol	BQL	0.338	1	03-19-2004
Diethylphthalate	BQL	0.338	1	03-19-2004
Dimethylphthalate	BQL	0.338	1	03-19-2004
2,4-Dimethylphenol	BQL	0.338	1	03-19-2004
4,6-Dinitro-2-methylphenol	BQL	1.69	1	03-19-2004
2,4-Dinitrophenol	BQL	1.69	1	03-19-2004
2,4-Dinitrotoluene	BQL	0.338	1	03-19-2004
2,6-Dinitrotoluene	BQL	0.338	1	03-19-2004
Di-n-octylphthalate	BQL	0.338	1	03-19-2004
Fluoranthene	BQL	0.338	1	03-19-2004
Fluorene	BQL	0.338	1	03-19-2004
Hexachlorobenzene	BQL	0.338	1	03-19-2004
Hexachlorobutadiene	BQL	0.338	1	03-19-2004
Hexachlorocyclopentadiene	BQL	0.676	1	03-19-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles by GCMS 8270

Client Sample ID: RR-20 (3-5')

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-1F

Lab Project ID: G128-1277

Report Basis: Dry Weight

Analyzed By: MRC

Date Collected: 03-11-2004

Date Received: 03-15-2004

Matrix: Soil

%Solids: 88.8

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.338	1	03-19-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.338	1	03-19-2004
Isophorone	BQL	0.338	1	03-19-2004
2-Methylnaphthalene	BQL	0.338	1	03-19-2004
2-Methylphenol	BQL	0.338	1	03-19-2004
3- & 4-Methylphenol	BQL	0.338	1	03-19-2004
2-Nitroaniline	BQL	0.338	1	03-19-2004
3-Nitroaniline	BQL	1.69	1	03-19-2004
4-Nitroaniline	BQL	1.69	1	03-19-2004
2-Nitrophenol	BQL	0.338	1	03-19-2004
4-Nitrophenol	BQL	1.69	1	03-19-2004
N-Nitrosodiphenylamine	BQL	0.338	1	03-19-2004
N-Nitrosodi-n-propylamine	BQL	0.338	1	03-19-2004
Naphthalene	BQL	0.338	1	03-19-2004
Nitrobenzene	BQL	0.338	1	03-19-2004
Pentachlorophenol	BQL	1.69	1	03-19-2004
Phenanthrene	BQL	0.338	1	03-19-2004
Phenol	BQL	0.338	1	03-19-2004
Pyrene	BQL	0.338	1	03-19-2004
1,2,4-Trichlorobenzene	BQL	0.338	1	03-19-2004
2,4,5-Trichlorophenol	BQL	0.338	1	03-19-2004
2,4,6-Trichlorophenol	BQL	0.338	1	03-19-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.2	82
2-Fluorophenol	10	8.6	86
Nitrobenzene-d5	10	8.1	81
Phenol-d6	10	8	80
2,4,6-Tribromophenol	10	8	80
4-Terphenyl-d14	10	10.4	104

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles
by GCMS 8270

Client Sample ID: RR-21 (3-5')

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-3G

Lab Project ID: G128-1277

Report Basis: Dry Weight

Analyzed By: MRC

Date Collected: 03-11-2004

Date Received: 03-15-2004

Matrix: Soil

%Solids: 81.7

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.383	1	03-19-2004
Acenaphthylene	BQL	0.383	1	03-19-2004
Anthracene	BQL	0.383	1	03-19-2004
Benzo[a]anthracene	BQL	0.383	1	03-19-2004
Benzo[a]pyrene	BQL	0.383	1	03-19-2004
Benzo[b]fluoranthene	BQL	0.383	1	03-19-2004
Benzo[g,h,i]perylene	BQL	0.383	1	03-19-2004
Benzo[k]fluoranthene	BQL	0.383	1	03-19-2004
Benzoic Acid	BQL	0.766	1	03-19-2004
Bis(2-chloroethoxy)methane	BQL	0.383	1	03-19-2004
Bis(2-chloroethyl)ether	BQL	0.383	1	03-19-2004
Bis(2-chloroisopropyl)ether	BQL	0.383	1	03-19-2004
Bis(2-ethylhexyl)phthalate	BQL	0.383	1	03-19-2004
4-bromophenyl phenyl ether	BQL	0.383	1	03-19-2004
Butylbenzylphthalate	BQL	0.383	1	03-19-2004
2-Chloronaphthalene	BQL	0.383	1	03-19-2004
2-Chlorophenol	BQL	0.383	1	03-19-2004
4-Chloro-3-methylphenol	BQL	0.383	1	03-19-2004
4-Chloroaniline	BQL	1.91	1	03-19-2004
4-Chlorophenyl phenyl ether	BQL	0.383	1	03-19-2004
Chrysene	BQL	0.383	1	03-19-2004
Dibenzo[a,h]anthracene	BQL	0.383	1	03-19-2004
Dibenzofuran	BQL	0.383	1	03-19-2004
Di-n-Butylphthalate	BQL	0.383	1	03-19-2004
1,2-Dichlorobenzene	BQL	0.383	1	03-19-2004
1,3-Dichlorobenzene	BQL	0.383	1	03-19-2004
1,4-Dichlorobenzene	BQL	0.383	1	03-19-2004
3,3'-Dichlorobenzidine	BQL	0.766	1	03-19-2004
2,4-Dichlorophenol	BQL	0.383	1	03-19-2004
Diethylphthalate	BQL	0.383	1	03-19-2004
Dimethylphthalate	BQL	0.383	1	03-19-2004
2,4-Dimethylphenol	BQL	0.383	1	03-19-2004
4,6-Dinitro-2-methylphenol	BQL	1.91	1	03-19-2004
2,4-Dinitrophenol	BQL	1.91	1	03-19-2004
2,4-Dinitrotoluene	BQL	0.383	1	03-19-2004
2,6-Dinitrotoluene	BQL	0.383	1	03-19-2004
Di-n-octylphthalate	BQL	0.383	1	03-19-2004
Fluoranthene	BQL	0.383	1	03-19-2004
Fluorene	BQL	0.383	1	03-19-2004
Hexachlorobenzene	BQL	0.383	1	03-19-2004
Hexachlorobutadiene	BQL	0.383	1	03-19-2004
Hexachlorocyclopentadiene	BQL	0.766	1	03-19-2004

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: RR-21 (3-5')
 Client Project ID: Rapid Refueler 2003 Release
 Lab Sample ID: G128-1277-3G
 Lab Project ID: G128-1277
 Report Basis: Dry Weight

Analyzed By: MRC
 Date Collected: 03-11-2004
 Date Received: 03-15-2004
 Matrix: Soil
 %Solids: 81.7

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.383	1	03-19-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.383	1	03-19-2004
Isophorone	BQL	0.383	1	03-19-2004
2-Methylnaphthalene	BQL	0.383	1	03-19-2004
2-Methylphenol	BQL	0.383	1	03-19-2004
3- & 4-Methylphenol	BQL	0.383	1	03-19-2004
2-Nitroaniline	BQL	0.383	1	03-19-2004
3-Nitroaniline	BQL	1.91	1	03-19-2004
4-Nitroaniline	BQL	1.91	1	03-19-2004
2-Nitrophenol	BQL	0.383	1	03-19-2004
4-Nitrophenol	BQL	1.91	1	03-19-2004
N-Nitrosodiphenylamine	BQL	0.383	1	03-19-2004
N-Nitrosodi-n-propylamine	BQL	0.383	1	03-19-2004
Naphthalene	BQL	0.383	1	03-19-2004
Nitrobenzene	BQL	0.383	1	03-19-2004
Pentachlorophenol	BQL	1.91	1	03-19-2004
Phenanthrene	BQL	0.383	1	03-19-2004
Phenol	BQL	0.383	1	03-19-2004
Pyrene	BQL	0.383	1	03-19-2004
1,2,4-Trichlorobenzene	BQL	0.383	1	03-19-2004
2,4,5-Trichlorophenol	BQL	0.383	1	03-19-2004
2,4,6-Trichlorophenol	BQL	0.383	1	03-19-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8.2	82
2-Fluorophenol	10	8.6	86
Nitrobenzene-d5	10	8.1	81
Phenol-d6	10	7.9	79
2,4,6-Tribromophenol	10	7.7	77
4-Terphenyl-d14	10	10	100

Comments:**Flags:**

BQL = Below Quantitation Limits.

Reviewed By: 

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: RR-23 (4-6')

Client Project ID: Rapid Refueler 2003 Release

Lab Sample ID: G128-1277-4G

Lab Project ID: G128-1277

Report Basis: Dry Weight

Analyzed By: MRC

Date Collected: 03-11-2004

Date Received: 03-15-2004

Matrix: Soil

%Solids: 84.9

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.360	1	03-19-2004
Acenaphthylene	BQL	0.360	1	03-19-2004
Anthracene	BQL	0.360	1	03-19-2004
Benzo[a]anthracene	BQL	0.360	1	03-19-2004
Benzo[a]pyrene	BQL	0.360	1	03-19-2004
Benzo[b]fluoranthene	BQL	0.360	1	03-19-2004
Benzo[g,h,i]perylene	BQL	0.360	1	03-19-2004
Benzo[k]fluoranthene	BQL	0.360	1	03-19-2004
Benzoic Acid	BQL	0.721	1	03-19-2004
Bis(2-chloroethoxy)methane	BQL	0.360	1	03-19-2004
Bis(2-chloroethyl)ether	BQL	0.360	1	03-19-2004
Bis(2-chloroisopropyl)ether	BQL	0.360	1	03-19-2004
Bis(2-ethylhexyl)phthalate	BQL	0.360	1	03-19-2004
4-bromophenyl phenyl ether	BQL	0.360	1	03-19-2004
Butylbenzylphthalate	BQL	0.360	1	03-19-2004
2-Chloronaphthalene	BQL	0.360	1	03-19-2004
2-Chlorophenol	BQL	0.360	1	03-19-2004
4-Chloro-3-methylphenol	BQL	0.360	1	03-19-2004
4-Chloroaniline	BQL	1.80	1	03-19-2004
4-Chlorophenyl phenyl ether	BQL	0.360	1	03-19-2004
Chrysene	BQL	0.360	1	03-19-2004
Dibenzo[a,h]anthracene	BQL	0.360	1	03-19-2004
Dibenzofuran	BQL	0.360	1	03-19-2004
Di-n-Butylphthalate	BQL	0.360	1	03-19-2004
1,2-Dichlorobenzene	BQL	0.360	1	03-19-2004
1,3-Dichlorobenzene	BQL	0.360	1	03-19-2004
1,4-Dichlorobenzene	BQL	0.360	1	03-19-2004
3,3'-Dichlorobenzidine	BQL	0.721	1	03-19-2004
2,4-Dichlorophenol	BQL	0.360	1	03-19-2004
Diethylphthalate	BQL	0.360	1	03-19-2004
Dimethylphthalate	BQL	0.360	1	03-19-2004
2,4-Dimethylphenol	1.88	0.360	1	03-19-2004
4,6-Dinitro-2-methylphenol	BQL	1.80	1	03-19-2004
2,4-Dinitrophenol	BQL	1.80	1	03-19-2004
2,4-Dinitrotoluene	BQL	0.360	1	03-19-2004
2,6-Dinitrotoluene	BQL	0.360	1	03-19-2004
Di-n-octylphthalate	BQL	0.360	1	03-19-2004
Fluoranthene	BQL	0.360	1	03-19-2004
Fluorene	BQL	0.360	1	03-19-2004
Hexachlorobenzene	BQL	0.360	1	03-19-2004
Hexachlorobutadiene	BQL	0.360	1	03-19-2004
Hexachlorocyclopentadiene	BQL	0.721	1	03-19-2004

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: RR-23 (4-6')
 Client Project ID: Rapid Refueler 2003 Release
 Lab Sample ID: G128-1277-4G
 Lab Project ID: G128-1277
 Report Basis: Dry Weight

Analyzed By: MRC
 Date Collected: 03-11-2004
 Date Received: 03-15-2004
 Matrix: Soil
 %Solids: 84.9

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.360	1	03-19-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.360	1	03-19-2004
Isophorone	BQL	0.360	1	03-19-2004
2-Methylnaphthalene	13.5	0.360	1	03-19-2004
2-Methylphenol	BQL	0.360	1	03-19-2004
3- & 4-Methylphenol	BQL	0.360	1	03-19-2004
2-Nitroaniline	BQL	0.360	1	03-19-2004
3-Nitroaniline	BQL	1.80	1	03-19-2004
4-Nitroaniline	BQL	1.80	1	03-19-2004
2-Nitrophenol	BQL	0.360	1	03-19-2004
4-Nitrophenol	BQL	1.80	1	03-19-2004
N-Nitrosodiphenylamine	BQL	0.360	1	03-19-2004
N-Nitrosodi-n-propylamine	BQL	0.360	1	03-19-2004
Naphthalene	9.24	0.360	1	03-19-2004
Nitrobenzene	BQL	0.360	1	03-19-2004
Pentachlorophenol	BQL	1.80	1	03-19-2004
Phenanthrene	BQL	0.360	1	03-19-2004
Phenol	BQL	0.360	1	03-19-2004
Pyrene	BQL	0.360	1	03-19-2004
1,2,4-Trichlorobenzene	BQL	0.360	1	03-19-2004
2,4,5-Trichlorophenol	BQL	0.360	1	03-19-2004
2,4,6-Trichlorophenol	BQL	0.360	1	03-19-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	6.3	63
2-Fluorophenol	10	7.7	77
Nitrobenzene-d5	10	8	80
Phenol-d6	10	7.2	72
2,4,6-Tribromophenol	10	6.8	68
4-Terphenyl-d14	10	9.7	97

Comments:**Flags:**

BQL = Below Quantitation Limits.

Reviewed By: 

List of Reporting Abbreviations
and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

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

% 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.

PARADIGM ANALYTICAL LABORATORIES, INC.

5500 Business Drive, Wilmington, NC 28405

Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 34153

Page 1 of 2

Client: Catlin Project ID: 203-108 Date: 3-13-04 Report To: Steve Hudson
 Address: 220 Old Dairy Rd. Contact: Steve Hudson Turnaround: Standard
 Address: Wilmington, NC 28405 Phone: 910-452-5861 Job Number: 203-108
 Quote #: DOD 101 Fax: 910-452-7563 P.O. Number: 210225-4 Invoice To: Shaila Catlin

Sample ID	IC	HCl	Methanol	Sodium Bicarb	EPA 602 + Hydrazine	EPA 625 + TICS	MADER EPH	MADER VPH	EPA 8260/ 5035-106 + MIBK	EPA 8270	Notes
RR-20 (3-5')	✓		✓	✓			✓	✓	✓	✓	-leucine and sumary EDD
RR-20 (3-5') Dup	✓			✓					✓		format
RR-21 (3-5')	✓		✓	✓			✓	✓	✓	✓	- report low rms
RR-23 (4-6')	✓		✓	✓			✓	✓	✓	✓	G128-1277
RR-21	✓	✓			✓	✓	✓	✓			
RR-23	✓	✓			✓	✓	✓	✓			
RR-23 Dup	✓	✓			✓						
RR-11	✓	✓			✓	✓	✓	✓			
RR-14	✓	✓			✓	✓	✓	✓			
AS511-1	✓	✓			✓	✓	✓	✓			

<u>Tam Stet</u>	<u>3-15</u>	<u>10:45</u>	<u>Julie Johnson</u>	<u>3/15/04</u>	<u>1045</u>	<u>andee</u>	NC ☒ SC ☐ Other ☐
						<u>3.5, 5.8</u>	SEE REVERSE FOR TERMS AND CONDITIONS
						<u>4.84</u>	

ORIGINAL

Chain-of Custody Record & Analytical Request

Phone: (910)-350-1903 FAX: (910)-350-1557

COC# 34154

Client: Catlin Project ID: Rapid Refractor 2003 Release Date: 3-15-04 Report To: Steve Hudson @
Address: 220 Old Dairy Rd. Contact: Steve Hudson Turnaround: standard Catlin
Address: Wilmington NC 28405 Phone: 910-452-5861 Job Number: 203-108
Quote #: DOD 101 Fax: 910-452-7563 P.O. Number: 240225-4 Invoice To: Sheila @ Catlin

N.C. Certification #481 S.C. Certification #99029

[illegible]

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 release

RR-19

Sample Information and Analytical Results	
Sample Identification	MW-16 (3-5')
Sample Matrix	Soil
Date Collected	01/09/04
Date Received	01/12/04
Date Extracted	01/14/04
Date Analyzed	01/16/04
Dry Weight	77.4
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	500 (mg/Kg)
C ₁₉ -C ₃₆ Aliphatics*	< 10 (mg/Kg)
C ₁₁ -C ₂₂ Aromatics*	240 (mg/Kg)
Aliphatic Surrogate % Recovery	62
Aromatic Surrogate % Recovery	82
Fractionation Surrogate 1 % Recovery	140

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G128-1239-86238

Reviewed By: MR

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 12/17/03

Calibration Ranges and Limits

Range	MDL (mg/Kg)	(µg/L)	ML (mg/Kg)	(µg/L)	RL (mg/Kg)	(µg/L)
C ₉ -C ₁₈ Aliphatics	0.1	0.8	0.3	2.6	100	10
C ₁₉ -C ₃₆ Aliphatics	0.1	1.6	0.3	5	100	10
C ₁₁ -C ₂₂ Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels (µg/L) (mg/Kg)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	0.06 1	1.90	Calibration Factor
	0.15 2.5		
	0.3 5		
	0.6 10		
	1.2 20		
C ₁₉ -C ₃₆ Aliphatics	0.08 1.33	7.2	Calibration Factor
	0.2 3.33		
	0.4 6.67		
	0.8 13.3		
	1.6 26.7		
C ₁₁ -C ₂₂ Aromatics	0.17 2.83	7.5	Calibration Factor
	0.425 7.08		
	0.85 14.2		
	1.7 28.3		
	3.4 56.7		

Calibration Check Date: 01/16/04

Calibration Check

Range	Levels (µg/mL) (mg/Kg)	RPD
C ₉ -C ₁₈ Aliphatics	0.6 10	-4.8
C ₁₉ -C ₃₆ Aliphatics	0.8 13.3	5.4
C ₁₁ -C ₂₂ Aromatics	1.7 28.3	-5.5

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & AssociatesProject Name: Rapid Refueler 2003 release

RR-19

Sample Information and Analytical Results	
Sample Identification	MW-16 (3-5')
Sample Matrix	Soil
Collection Option (for Soil)*	3
Date Collected	01/09/04
Date Received	01/12/04
Date Extracted	01/09/04
Date Analyzed	01/16/04
Dry Weight	77
Dilution Factor	50
C ₅ -C ₈ Aliphatics**	< 500 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	1500 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	< 500 (mg/Kg)
Surrogate % Recovery - PID	98
Surrogate % Recovery - FID	180***

* = 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.

*** = High surrogate recovery due to matrix interference

Lab Info: G128-1239-86238

Reviewed By: ml

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/23/03PID Initial Calibration Date: 12/23/03

Calibration Ranges and Limits

Range	MDL		ML		RL	
	($\mu\text{g/L}$)	(mg/Kg)	($\mu\text{g/L}$)	(mg/Kg)	($\mu\text{g/L}$)	(mg/Kg)
C ₅ -C ₈ Aliphatics	9.3	0.41	29.4	1.3	100	10
C ₉ -C ₁₂ Aliphatics	7.9	0.3	25.2	0.97	100	10
C ₉ -C ₁₀ Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	($\mu\text{g/L}$)	(mg/Kg)		
C ₅ -C ₈ Aliphatics	20	2	16.8	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C ₉ -C ₁₂ Aliphatics	15	1.5	15	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C ₉ -C ₁₀ Aromatics	32.5	3.25	15.1	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 01/15/04

Calibration Check

Range	Levels		RPD
	($\mu\text{g/L}$)	(mg/Kg)	
C ₅ -C ₈ Aliphatics	200	20	-10.4
C ₉ -C ₁₂ Aliphatics	150	15	-6.8
C ₉ -C ₁₀ Aromatics	325	32.5	6.8

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles by GCMS 8260B/5035

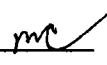
RR-19

Client Sample ID: ~~DA-16~~ (3-5')
 Client Project ID: Rapid Refueler 2003 release
 Lab Sample ID: 86238
 Lab Project ID: G128-1239
 Matrix: Soil

Date Analyzed: 1/16/04
 Analyzed By: JTF
 Date Collected: 1/9/04
 Date Received: 1/12/04
 Dilution: 50

%Solids: 77.4

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Acetone	1.4	BQL
Benzene	0.056	BQL
Bromobenzene	0.056	BQL
Bromochloromethane	0.056	BQL
Bromodichloromethane	0.056	BQL
Bromoform	0.056	BQL
Bromomethane	0.056	BQL
2-Butanone	1.4	BQL
n-Butylbenzene	0.056	see 3200:1 run
sec-Butylbenzene	0.056	see 3200:1 run
tert-Butylbenzene	0.056	BQL
Carbon disulfide	0.056	BQL
Carbon tetrachloride	0.056	BQL
Chlorobenzene	0.056	BQL
Chloroethane	0.056	BQL
2-Chloroethyl vinyl ether	0.28	BQL
Chloroform	0.056	BQL
Chloromethane	0.056	BQL
2-Chlorotoluene	0.056	0.13
4-Chlorotoluene	0.056	BQL
Dibromochloromethane	0.056	BQL
1,2-Dibromo-3-chloropropane	0.28	BQL
Dibromomethane	0.056	BQL
1,2-Dibromoethane (EDB)	0.056	BQL
1,2-Dichlorobenzene	0.056	BQL
1,3-Dichlorobenzene	0.056	BQL
1,4-Dichlorobenzene	0.056	BQL
trans-1,4-Dichloro-2-butene	0.28	BQL
1,1-Dichloroethane	0.056	BQL
1,1-Dichloroethene	0.056	BQL
1,2-Dichloroethane	0.056	BQL
cis-1,2-Dichloroethene	0.056	BQL
trans-1,2-dichloroethene	0.056	BQL
1,2-Dichloropropane	0.056	BQL
1,3-Dichloropropane	0.056	BQL
2,2-Dichloropropane	0.056	BQL
1,1-Dichloropropene	0.056	BQL
cis-1,3-Dichloropropene	0.056	BQL
trans-1,3-Dichloropropene	0.056	BQL
Dichlorodifluoromethane	0.28	BQL
Diisopropyl ether (DIPE)	0.056	BQL
Ethylbenzene	0.056	2.2
Hexachlorobutadiene	0.056	BQL
2-Hexanone	0.28	BQL
Iodomethane	0.056	BQL

Reviewed by: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles by GCMS 8260B/5035

RR-19
 Client Sample ID: ~~MAK~~16 (3-5')
 Client Project ID: Rapid Refueler 2003 release
 Lab Sample ID: 86238
 Lab Project ID: G128-1239
 Matrix: Soil

Date Analyzed: 1/15/04
 Analyzed By: JTF
 Date Collected: 1/9/04
 Date Received: 1/12/04
 Dilution: 3200

%Solids: 77.4

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
n-Butylbenzene	3.6	14
sec-Butylbenzene	3.6	11
Isopropylbenzene	1.8	3.4
4-Isopropyltoluene	3.6	5.7
Naphthalene	3.6	21
n-Propyl benzene	3.6	7.9
1,2,4-Trimethylbenzene	3.6	38
1,3,5-Trimethylbenzene	3.6	6

Surrogate Spike Recoveries		Spike Added	Surrogate Result	%Rec
Compound		(mg/KG)	(mg/KG)	
Bromofluorobenzene		0.0100	0.0103	103
1,2-Dichloroethane-d4		0.0100	0.0102	102
Toluene-d8		0.0100	0.0100	100

Comments:

All results are corrected for dilution.

Reviewed by: MR

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles by GCMS 8260B/5035

RR-19

Client Sample ID: ~~MA-46~~ (3-5')
 Client Project ID: Rapid Refueler 2003 release
 Lab Sample ID: 86238
 Lab Project ID: G128-1239
 Matrix: Soil

Date Analyzed: 1/16/04
 Analyzed By: JTF
 Date Collected: 1/9/04
 Date Received: 1/12/04
 Dilution: 50

%Solids: 77.4

Compound	Quantitation Limit (mg/KG)	Result (mg/KG)
Isopropylbenzene	0.028	see 3200:1 run
4-Isopropyltoluene	0.056	see 3200:1 run
Methylene chloride	0.28	BQL
4-Methyl-2-pentanone	0.28	BQL
Methyl-tert-butyl ether (MTBE)	0.056	BQL
Naphthalene	0.056	see 3200:1 run
n-Propyl benzene	0.056	see 3200:1 run
Styrene	0.056	BQL
1,1,1,2-Tetrachloroethane	0.056	BQL
1,1,2,2-Tetrachloroethane	0.056	BQL
Tetrachloroethene	0.056	BQL
Toluene	0.056	BQL
1,2,3-Trichlorobenzene	0.056	BQL
1,2,4-Trichlorobenzene	0.056	BQL
Trichloroethene	0.056	BQL
1,1,1-Trichloroethane	0.056	BQL
1,1,2-Trichloroethane	0.056	BQL
Trichlorofluoromethane	0.056	BQL
1,2,3-Trichloropropane	0.056	BQL
1,2,4-Trimethylbenzene	0.056	see 3200:1 run
1,3,5-Trimethylbenzene	0.056	see 3200:1 run
Vinyl chloride	0.056	BQL
m-,p-Xylene	0.11	2.9
o-Xylene	0.056	BQL

Surrogate Spike Recoveries	Spike Added (mg/KG)	Surrogate Result (mg/KG)	%Rec
Compound			
Bromofluorobenzene	0.0100	0.0092	92
1,2-Dichloroethane-d4	0.0100	0.0097	97
Toluene-d8	0.0100	0.0101	101

Comments:

All results are corrected for dilution.

Reviewed by: 

Results for Semivolatiles
by GCMS 8270

RR-19

Client Sample ID: ~~RAW-46~~ (3-5')

Client Project ID: Rapid Refueler 2003 release

Lab Sample ID: 86238

Lab Project ID: G128-1239

Analyzed By: MRC

Date Collected: 01-09-2004

Date Received: 01-12-2004

Matrix: Soil

Report Basis: Dry Weight

%

Solids: 22.5

Compound	Result mg/KG	Quantitation Limit mg/KG	Dilution Factor	Date Analyzed
Acenaphthene	BQL	4.13	10	01-21-2004
Acenaphthylene	BQL	4.13	10	01-21-2004
Anthracene	BQL	4.13	10	01-21-2004
Benzo[a]anthracene	BQL	4.13	10	01-21-2004
Benzo[a]pyrene	BQL	4.13	10	01-21-2004
Benzo[b]fluoranthene	BQL	4.13	10	01-21-2004
Benzo[g,h,i]perylene	BQL	4.13	10	01-21-2004
Benzo[k]fluoranthene	BQL	4.13	10	01-21-2004
Benzoic Acid	BQL	4.13	10	01-21-2004
Bis(2-chloroethoxy)methane	BQL	8.26	10	01-21-2004
Bis(2-chloroethyl)ether	BQL	4.13	10	01-21-2004
Bis(2-chloroisopropyl)ether	BQL	4.13	10	01-21-2004
Bis(2-ethylhexyl)phthalate	BQL	4.13	10	01-21-2004
4-bromophenyl phenyl ether	BQL	4.13	10	01-21-2004
Butylbenzylphthalate	BQL	4.13	10	01-21-2004
2-Chloronaphthalene	BQL	4.13	10	01-21-2004
2-Chlorophenol	BQL	4.13	10	01-21-2004
4-Chloro-3-methylphenol	BQL	4.13	10	01-21-2004
4-Chloroaniline	BQL	20.6	10	01-21-2004
4-Chlorophenyl phenyl ether	BQL	4.13	10	01-21-2004
Chrysene	BQL	4.13	10	01-21-2004
Dibenzo[a,h]anthracene	BQL	4.13	10	01-21-2004
Dibenzofuran	BQL	4.13	10	01-21-2004
Di-n-Butylphthalate	BQL	4.13	10	01-21-2004
1,2-Dichlorobenzene	BQL	4.13	10	01-21-2004
1,3-Dichlorobenzene	BQL	4.13	10	01-21-2004
1,4-Dichlorobenzene	BQL	4.13	10	01-21-2004
3,3'-Dichlorobenzidine	BQL	8.26	10	01-21-2004
2,4-Dichlorophenol	BQL	4.13	10	01-21-2004
Diethylphthalate	BQL	4.13	10	01-21-2004
Dimethylphthalate	BQL	4.13	10	01-21-2004
2,4-Dimethylphenol	BQL	4.13	10	01-21-2004
4,6-Dinitro-2-methylphenol	BQL	20.6	10	01-21-2004
2,4-Dinitrophenol	BQL	20.6	10	01-21-2004
2,4-Dinitrotoluene	BQL	4.13	10	01-21-2004
2,6-Dinitrotoluene	BQL	4.13	10	01-21-2004
Di-n-octylphthalate	BQL	4.13	10	01-21-2004
Fluoranthene	BQL	4.13	10	01-21-2004
Fluorene	BQL	4.13	10	01-21-2004
Hexachlorobenzene	BQL	4.13	10	01-21-2004
Hexachlorobutadiene	BQL	4.13	10	01-21-2004
Hexachlorocyclopentadiene	BQL	8.26	10	01-21-2004

504

RR-19

Results for Semivolatiles
by GCMS 8270Client Sample ID: ~~MD-16~~ (3-5')

Client Project ID: Rapid Refueler 2003 release

Lab Sample ID: 86238

Lab Project ID: G128-1239

Report Basis: Dry Weight

Analyzed By: MRC

Date Collected: 01-09-2004

Date Received: 01-12-2004

Matrix: Soil

%Solids: 77.5

Compound	Result mg/KG	Quantitation Limit mg/KG	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	4.13	10	01-21-2004
Indeno(1,2,3-c,d)pyrene	BQL	4.13	10	01-21-2004
Isophorone	BQL	4.13	10	01-21-2004
2-Methylnaphthalene	44.3	4.13	10	01-21-2004
2-Methylphenol	BQL	4.13	10	01-21-2004
3- & 4-Methylphenol	BQL	4.13	10	01-21-2004
2-Nitroaniline	BQL	4.13	10	01-21-2004
3-Nitroaniline	BQL	20.6	10	01-21-2004
4-Nitroaniline	BQL	20.6	10	01-21-2004
2-Nitrophenol	BQL	4.13	10	01-21-2004
4-Nitrophenol	BQL	20.6	10	01-21-2004
N-Nitrosodiphenylamine	BQL	4.13	10	01-21-2004
N-Nitrosodi-n-propylamine	BQL	4.13	10	01-21-2004
Naphthalene	25.0	4.13	10	01-21-2004
Nitrobenzene	BQL	4.13	10	01-21-2004
Pentachlorophenol	BQL	20.6	10	01-21-2004
Phenanthrene	BQL	4.13	10	01-21-2004
Phenol	BQL	4.13	10	01-21-2004
Pyrene	BQL	4.13	10	01-21-2004
1,2,4-Trichlorobenzene	BQL	4.13	10	01-21-2004
2,4,5-Trichlorophenol	BQL	4.13	10	01-21-2004
2,4,6-Trichlorophenol	BQL	4.13	10	01-21-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	NA	NA
2-Fluorophenol	10	NA	NA
Nitrobenzene-d5	10	NA	NA
Phenol-d6	10	NA	NA
2,4,6-Tribromophenol	10	NA	NA
4-Terphenyl-d14	10	NA	NA

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

**List of Reporting Abbreviations
and Data Qualifiers**

B = Compound also detected in batch blank

BQL = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

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

% 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.

Chain-of Custody Record & Analytical Request

Phone: (910)-350-1903 FAX: (910)-350-1557

COC# 40887

Page 1 of 1

Client: Catlin

Cutlin

Project ID: Rapid Re-focus 2003 release Date: 1-12-04

Project ID:

Address: 220 Old Dairy Rd

220 Old Dairy Rd

Contact: Mike E. Mason

Turnaround: Standard

@Cath:

Address: Wilmington NC 28405

Wilmington NC 28405

Phone: 910-452-5861

Job Number: 203-108

Quote #: DoD 101

DoD 101

Fax: 910-452-7563

P.O. Number: 231126-

Invoice To: Sheila @ Catlin

[illegible]