

N61165.AR.005021
CNC CHARLESTON
5090.3a

MONITORING WELL INSTALLATION AND SAMPLING AT UNDERGROUND STORAGE
TANK (UST) FOR BUILDING NS-686 CNC CHARLESTON SC
04/01/2000
SOUTH CAROLINA RESEARCH AUTHORITY



1899 North Hobson Avenue
North Charleston, SC 29405-2106
TEL (843) 202-8000
FAX (843) 202-8001
<http://www.eeg-scra.org>

March 22, 2000

Gabriel Magwood
Petroleum (UST) Branch
Southern Division Naval Facilities
Engineering Command

Re: Monitoring Well Installation and Sampling at Building NS686 UST Site ID #
15405

Mr. Magwood:

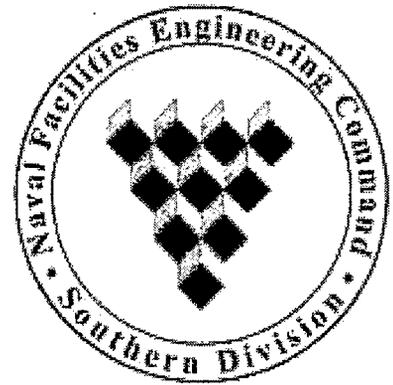
Please find enclosed the Monitoring Well Installation and Sampling report for former Underground Storage Tank (UST) Site 686. The well installation and sampling were performed after questions were raised concerning the analytical results reported for one of the sample points associated with the removed UST. Please see Appendix B of the enclosed report for a copy of the correspondence of October 6, 1998 between The Department of Health and Environmental Control (SCDHEC) and Southern Division Naval Facilities Engineering Command.

Questions concerning this report may be addressed to Heather Hinds at (843) 202-8086 or J. T. Amey at 8030

A handwritten signature in black ink, appearing to read "E. R. Dearhart", with a long horizontal flourish extending to the right.

E. R. Dearhart
Vice President
South Carolina Research Authority
Environmental Enterprise Group

Enc: Monitoring Well 686-A Installation and Sampling Report



**Monitoring Well Installation and Sampling
@
Building NS 686 UST Site ID #15405**

**Contract
PO#CHNP09922**

April 2000

**Submitted by:
South Carolina Research Authority (SCRA)
Environmental Enterprise Group (EEG)
Trident Research Center
5300 International Boulevard
North Charleston, SC 29418**

INVESTIGATION REPORT

In January 1997, an Underground Storage Tank (UST) was removed from the eastside of Building NS-686 on the Charleston Naval Complex (See Appendix A, Site Maps 1,2 & 3). Per the requirements of South Carolina Department of Health Environmental Control (SCHEC) UST Assessments, sampling of the excavation was performed. The UST Assessment Report for the site indicated that no petroleum chemicals of concern (COC's) were found; however, sample SPORT0330-6 (See Appendix A, site map 4) had a high dilution factor which resulted in the detection and reporting limits exceeding Soil Corrective Action Plan (SCAP) levels (See Appendix D). Due to this, the Department of Health and Environmental Control determined that additional endeavors for remedial actions and contaminant characterization were warranted. This additional investigation consisted of installing a ground water monitoring well to resample soil and groundwater in the proximity of sample SPORT0330-6 in order to verify the results generated during UST closure activities (See Appendix B).

On June 16, 1999 groundwater monitoring well (MW) 686-A was installed within the surficial aquifer per the DHEC Control Regulations R.61-71 and adjacent to the location of original sample SPORT0330-6 (See Appendix A, site map 5). The well was drilled utilizing a rotary drilling rig with 4 ¼ inch augers. During drilling operations, samples were taken using a split spoon sampler at approximately 2 foot intervals to determine the highest sample for lab analysis. Each sample was screened using a Flame Ionization Detector (FID). Organic Vapor Analysis (OVA) readings on all samples, except for the 5 foot sample, were indicative of background levels. The sample at 5 feet read approximately 10 ppm OVA above background levels and was sent to the lab for analysis (See Appendix D). Groundwater was encountered at 8 feet 6 inches and the well was overdrilled to a depth of 13.6 feet to allow the maximum intersection of the groundwater with the well screen. A sand pack was then installed and the well grouted (See Appendix C). The well was developed and groundwater sampled and sent for analysis (See Appendix D).

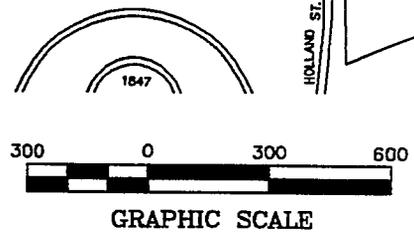
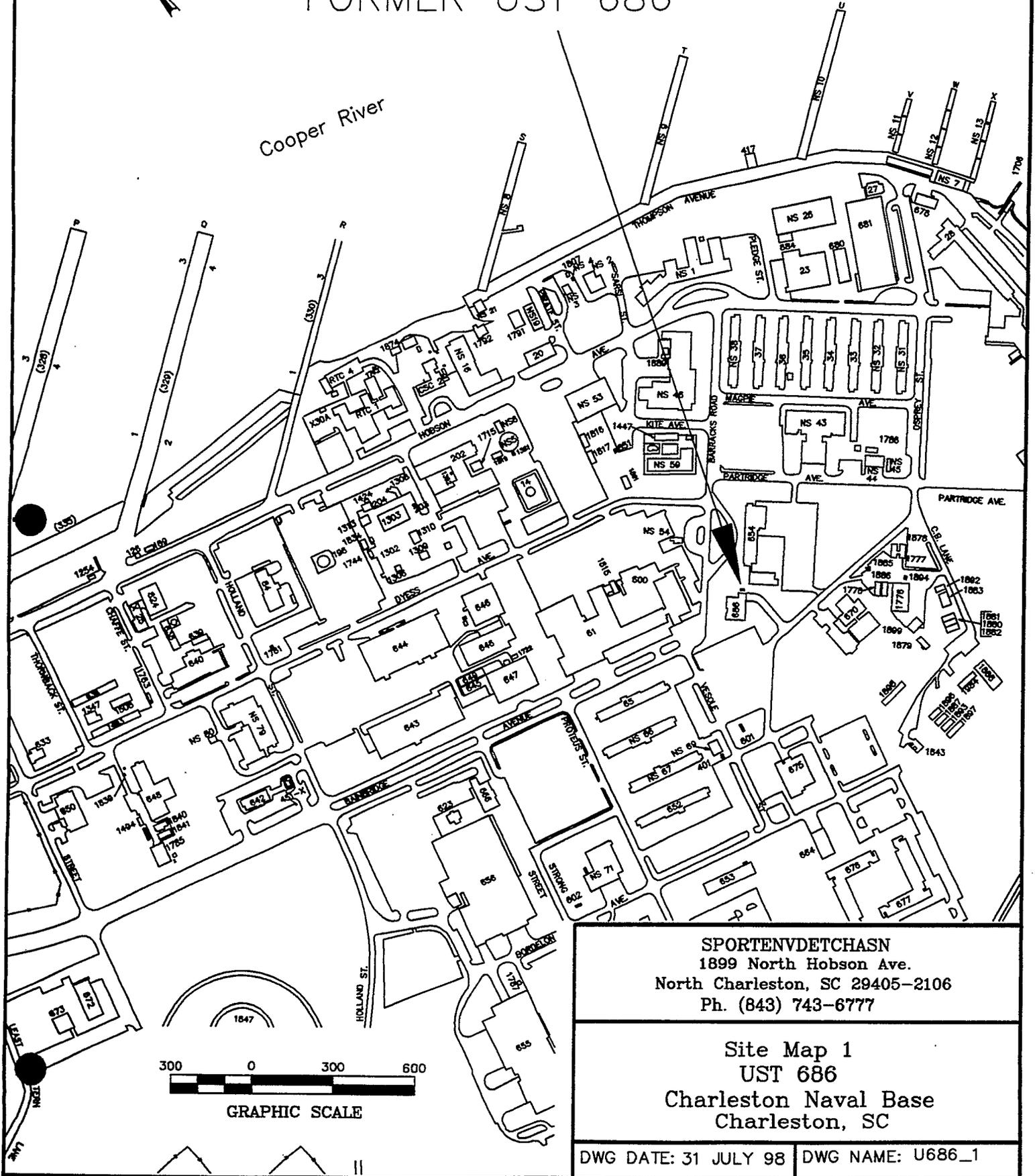
Although the initial sample's high dilution factor resulted in the detection and reporting limits exceeding SCAP levels, soil and groundwater samples performed within four feet of the initial sample did not exceed any limits nor were any COC's detected. The well was properly abandoned by a South Carolina Certified Well Driller. This site should be considered for a clean closure.

APPENDIX A

FIGURES

FORMER UST 686

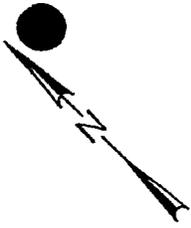
Cooper River



SPORTENVDECHASN
1899 North Hobson Ave.
North Charleston, SC 29405-2106
Ph. (843) 743-6777

Site Map 1
UST 686
Charleston Naval Base
Charleston, SC

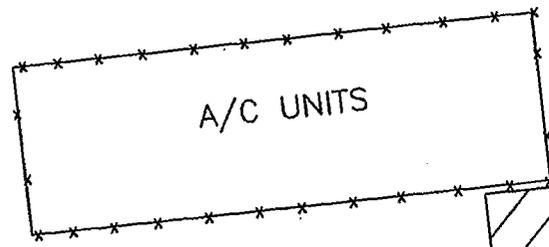
DWG DATE: 31 JULY 98 | DWG NAME: U686_1



BARRACKS ROAD

BLDG 654

FORMER UST 686

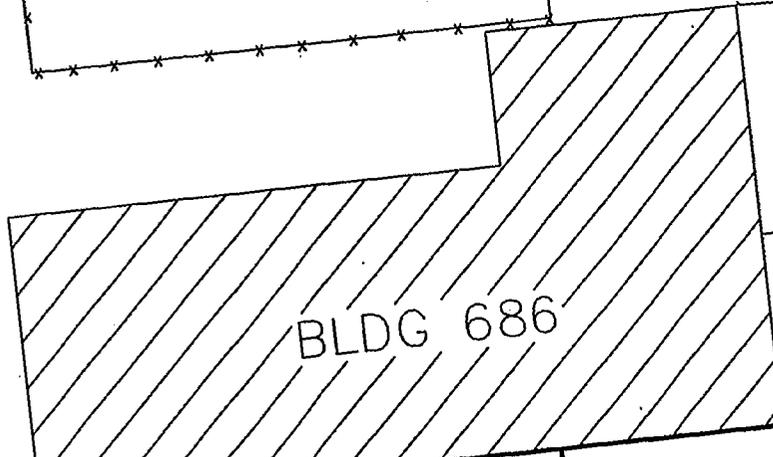


A/C UNITS

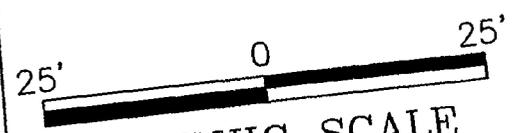


GRASS

ASPHALT DRIVE



BLDG 686

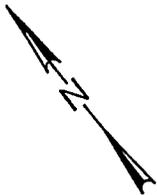


GRAPHIC SCALE

SPORTENVDETHASN
1899 North Hobson Ave.
North Charleston, SC
29405-2106
Ph. (843) 743-6777

Site Map 2
UST 686
Charleston Naval Base
Charleston, SC

DWG DATE: 31 JULY 98 | DWG NAME: U686_2



FORMER UST 686

1/4" COPPER
SUPPLY & RETURN

UST EXCAVATION

A/C UNITS

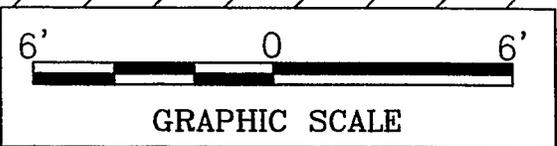
MANWAY

FILL

DIRT PILE

2" STEEL VENT

BLDG 686



SPORTENVDETHASN
1899 North Hobson Ave.
North Charleston, SC
29405-2106
Ph. (843) 743-6777

Site Map 3
UST 686
Charleston Naval Base
Charleston, SC

DWG DATE: 3 AUG 98 | DWG NAME: U686_3

NOTE:
ALL SOIL SAMPLES WERE CHARACTERIZED AS
DARK, SANDY, NO ODOR, OVA - 0 ppm

KEY
GW - GROUNDWATER SAMPLE
SS - SOIL SAMPLE

FORMER UST 686
EXCAVATION

GROUNDWATER @ 6' 2" BELOW GSL

GW SPORT 0330-1
(NO SHEEN OR FILM NOTED)

SS SPORT 0330-2

SS SPORT 0330-6

SS SPORT 0330-5

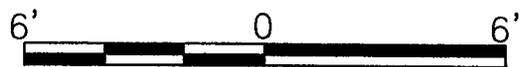
SS SPORT 0330-7

SS SPORT 0330-3
(BENEATH S & R PPG)

DIRT PILE

SS SPORT 0330-4

BLDG 686



GRAPHIC SCALE

SPORTENVDETCHASN
1899 North Hobson Ave.
North Charleston, SC
29405-2106
Ph. (843) 743-6777

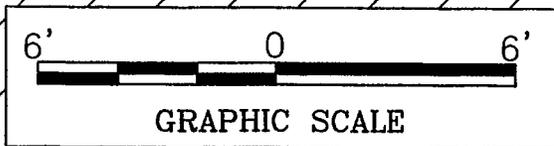
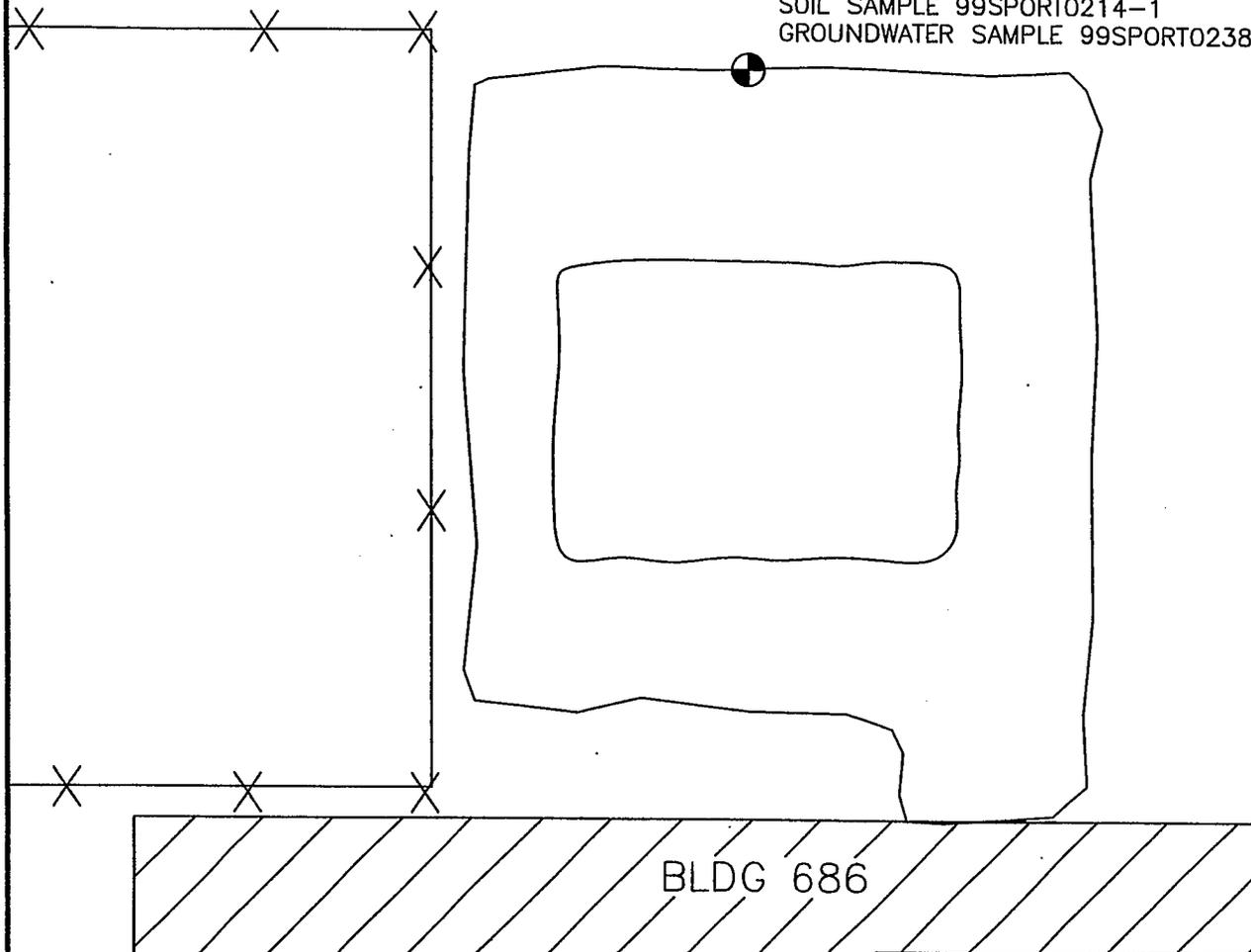
Site Map 4
UST 686
Charleston Naval Base
Charleston, SC

DWG DATE: 3 AUG 98

DWG NAME: U686_4

SITE OF MONITORING WELL AT
UST 686 EXCAVATION

SOIL SAMPLE 99SPORT0214-1
GROUNDWATER SAMPLE 99SPORT0238-01



SPORTENVDETHASN
1899 North Hobson Ave.
North Charleston, SC
29405-2108
Ph. (843) 743-6777

Site Map 5
Monitoring Well at UST 686
Charleston Naval Base
Charleston, SC

DWG DATE: 23 AUG 99	DWG NAME: U686_5
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APPENDIX B

CORRESPONDENCE



6 October 1998

600 Bull Street
Columbia, SC 29201-1708

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Brian K. Smith

Rodney L. Grandy

Department of the Navy
Southern Division NFEC
P.O. Box 190010
North Charleston, SC 29419-9010
Attn.: Mr. Gabriel Magwood

Re: Underground Storage Tank Assessment Report dated 9 September 1998
Building 686 (UST NS 686) (Site Identification # 15405-General File)
Charleston Naval Complex/Charleston Naval Base
Charleston, SC
Charleston County

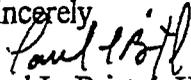
Dear Mr. Magwood:

The author has completed technical review of the referenced document. As submitted, the report provides a narrative describing closure activities and analytical results of environmental sampling to determine if releases have occurred as a result of operation of the referenced vessel and/or associated piping system. Although all soil sample results obtained during closure are reported as BDL (below detection limits), the detection limits for several samples were elevated due to matrix interference. As noted in previous correspondence (Bristol to Amey, 2 September 1997), when contaminant concentrations are reported as zero (0) or BDL it will be assumed that the chemical constituent is equal to the elevated detection limit. With this consideration, the reported concentrations approach or exceed levels proposed in the SCAP (Soil Corrective Action Plan amended July 1997) for the Charleston Naval Complex and appear to indicate that additional endeavors for remedial actions and contaminant characterization are warranted at the referenced site. In this regard, it appears appropriate to resample soil and groundwater in the proximity of sample SPORT0330-6 to verify results generated during closure activities. The employed activities should be technically sufficient and reasonable to determine the extent and severity of suspected contamination. Please be reminded that groundwater sampling will require construction of sampling points and will need to be submitted for prior review and approval, as appropriate.

Charleston Naval Complex/Charleston Naval Base
6 October 1998
page 2

Should you have any questions please contact me at (803) 734-5328.

Sincerely,



Paul L. Bristol, Hydrogeologist
Groundwater Quality Section
Bureau of Water

cc: Trident District EQC



DEPARTMENT OF THE NAVY

SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN
PORTSMOUTH, VIRGINIA, ENVIRONMENTAL DETACHMENT CHARLESTON
1889 NORTH HOBSON AVENUE, BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

IN REPLY REFER TO:
MAY 19 1999

Ser 408

South Carolina Department of Health
and Environmental Control
Bureau of Water
Groundwater Assessment and Development Section
2600 Bull Street
Columbia, South Carolina 29201
Attn: Tom Knight

Re: Resampling at Building 686 Underground Storage Tank (UST 686)
Site Identification #15405-General File

Dear Mr. Knight,

The Environmental Detachment Charleston requests approval for the installation of a single monitoring well at the referenced tank site. This well installation and sampling is being undertaken in response to correspondence between Mr. Bristol and Mr. Magwood in an October 6, 1998 letter concerning the laboratory analysis of samples taken at this site .

The UST Assessment Report for the site indicated that no detectable petroleum chemicals of concern were found, but sample SPORT0330-6 had a high dilution factor resulting in the detection and reporting limits exceeding Soil Corrective Action Plan (SCAP) levels. This monitoring well and the accompanying soil sample will be taken to verify the absence of contamination and not as part of a Standard Limited Assessment. A ground water sample taken from the tank pit during the tank removal, resulted in no detectable quantification of petroleum constituents within the current detection parameters. If petroleum contamination is found during this sampling event, further site characterization will be taken as appropriate after consultation with SCDHEC.

Proper well drilling and sampling protocols will be followed during the monitoring well installation and subsequent sampling. The following actions and material are listed for clarification of the well installation and sampling event:

- Expected depth to groundwater between 6 – 8 feet.
- Expected depth of the monitoring well approximately 14 feet.
- Two-inch PVC well screen with 0.010 slots and 10 feet long will be used.
- The well screen will be placed such that groundwater will intersect the mid-point of the screen.
- The well sand pack will be approximately 12 feet using #2 sand.

- The sand pack will be completed with 2 feet of Bentonite, any remaining space shall be finished with cement grout to a flush finish mount if the well is made permanent.
- The well location will be at Building 686 in the approximate location of Sample SPORT0330-6, as shown in the UST Assessment Report.
- Soil samples will be taken starting at 2' and every 2' thereafter until groundwater is reached. The samples will be screened using an FID, the sample with the highest OVA reading or deepest sample, if no reading are noted, will be sent to the laboratory for analysis of petroleum constituents: BTEX naphthalene, and PAH.
- After well development, groundwater will be sampled for BTEX, naphthalene, MTBE, and PAH.
- A report of the well installation and a report of sample results and recommendations will be forwarded to SCDHEC through Southern Division Engineering Command within 60 days of the well installation.

If there are any questions or if more information is needed, please contact Tommy Hardin at (843) 743-6777 ext. 222 or Jack Amey ext 217.

Sincerely,



E. R. Dearhart
Director

Supervisor of Shipbuilding, Conversion and Repair, USN,
Portsmouth VA, Environmental Detachment Charleston, SC

cc: Gabriel Magwood, Southern Division

MAY 19 '99 10:44AM



2600 Bull Street
Columbia, SC 29201-1708

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Mark B. Kent

Cyndi C. Mosteller

Brian K. Smith

Rodney L. Grandy

Date of Issue: May 18, 1999
Approval No: 476

Monitoring Well Installation Approval

Approval is hereby granted to: Department of the Navy
Southern Division NFEC
Post Office Box 190010
North Charleston, South Carolina 29419-9010
Attn.: Mr. Gabriel Magwood

Site ID#: Building 686 (UST NS 686), #15405-General File
County: Charleston

This approval is for the construction of monitoring wells designated 686-A in accordance with the construction plans and technical specifications submitted to the Department on May 19, 1999. The well(s) are to be constructed within the surficial aquifer for the intended purpose of monitoring groundwater quality and/or water level(s) at the referenced facility. Approval is provided with the following conditions:

1. The surveyed elevations, boring and/or geologist logs and actual (as built) construction details for each well be submitted to within thirty (30) days of completion (of last well(s) installed).
2. Well construction and sampling derived waste including, but not necessarily limited to, drill cuttings, drilling fluids, development and purge water should be managed properly and in compliance with applicable requirements. If containerized, each vessel should be clearly labeled with regard to contents, source, and date of activity.
3. A minimum of forty-eight (48) hours prior to initiation of drilling activities, please provide notice to Christine Sanford Coker, Trident District, EQC Office (843-740-1590).
4. Please provide groundwater quality analytical data (chemical analyses and/or water level(s)) and associated measurements (i.e., *in-situ* field measurements) to Tom Knight within thirty (30) days of receipt from laboratory.
5. Monitoring wells shall be installed by a well driller certified by the State of South Carolina.
6. Each well shall be labeled with an identification plate constructed of a durable material affixed to the casing or surface pad where it is readily visible. The plate shall provide monitoring well I.D.#, date of construction, static water level, and driller name and state certification number.
7. Wells shall be abandoned per R.61-71.10.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and the Department of Health and Environmental Control Regulations R.61-71.

Approved by: _____

Tom Knight
B. Thomas Knight, D.G., Manager
Groundwater Quality Section
Bureau of Water

TK

MAY 19 '99 10:45AM



PROMOTE PROTECT PROSPER

2600 Bull Street
Columbia, SC 29201-1708

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Secretary

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Cyndi C. Mosteller

Brian K. Smith

Rodney L. Grandy

Department of the Navy
Southern Division NFEC
Post Office Box 190010
North Charleston, South Carolina 29419-9010
Attn.: Mr. Gabriel Magwood

May 18, 1999

Re: Building 686 (UST NS 686), Site ID #15405-General File
Monitoring Well Permit Request
Charleston County

Dear Mr. Magwood:

The South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed and approved the referenced monitoring well approval request and Scope of Work. The evaluation report should be submitted to Mr. Paul Bristol by July 31, 1999.

If you have any questions, please contact me at (803) 898-4251.

Sincerely,

Tom Knight, PG, Manager
Groundwater Quality Section
Water Monitoring, Assessment
and Protection Division

enc: Monitor well approval

cc: Trident District EQC

TK
cab686.wpv



DEPARTMENT OF THE NAVY
SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN
PORTSMOUTH, VIRGINIA, ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE, BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

IN REPLY REFER TO:

Ser 660
August 20, 1999

South Carolina Department of Health
and Environmental Control
Groundwater Quality Section
Attn: Thomas Knight
2600 Bull Street
Columbia, South Carolina 29201

Re: Monitoring Well Installation At Building NS 686 UST Site ID #15405

Mr. Knight:

The Environmental Detachment, Charleston has installed a groundwater monitoring well at Building NS-686. Please find attached a copy of the Water Well Record, Boring Log, and the soil and groundwater analytical data. This data is being provided per your request in the Monitoring Well Installation Approval letter dated May 18, 1999. A copy of this data along with a brief report of the actions taken will be sent to Mr. Gabe Magwood (the site owner's representative) for forwarding to Mr. Paul Bristol for further decisions on the site.

If there are any questions or if more information is needed, please contact Jack Amey at (843) 743-6777 ext. 217 or John T. Hardin at ext. 222.

Sincerely,

J. N. K. Tunstall
Engineering and Planning Manager
Supervisor of Shipbuilding, Conversion and Repair, USN,
Portsmouth VA, Environmental Detachment Charleston, SC

cc: Gabe Magwood

APPENDIX C

WELL LOGS

BORING LOG

Drill Rig: MOBILE B-59

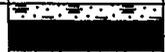
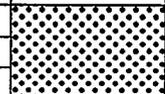
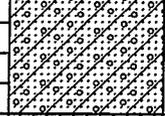
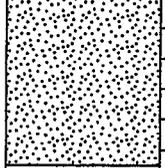
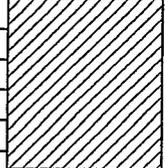
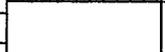
Date Drilled 6/17/99

Logged By:

Boring Diameter: 6.25 Inches

Boring Number: NS686A

H. Hinds

Sample	Blow Counts	Completion	Depth Feet	Lithology	Description
					Dark brown topsoil, pea gravel mix
					Dark brown, sandy soil with large gravel
			5		Dark gray, moist, f/m sandy, clay, med, density - fuel odor at 5'
			10		Dark gray, clay/marl, saturated
			15		
			20		
			25		
			30		
			35		

Environmental Detachment Charleston
1899 North Hobson Avenue
North Charleston, SC
29405

Site:

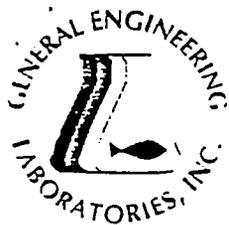
UST LOCATION 686-A

Driller: John T. Hardin

Page 1

APPENDIX D

SAMPLE ANALYSIS



GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

TANK CLOSURE SAMPLE
 WITH HIGH DILUTION
 FACTOR

cc: NPWC00196

Report Date: February 14, 1997

Page 1 of 3

Sample ID : SPORT0330-6
 Lab ID : 9702097-06
 Matrix : Soil
 Date Collected : 02/05/97
 Date Received : 02/05/97
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX - 4 items</i>											
Benzene	U	0.00	1.00	2.00	ug/kg	1.0	SHJ	02/11/97	1204	97652	1
Ethylbenzene	U	0.00	1.00	2.00	ug/kg	1.0					
Toluene	U	0.00	1.00	2.00	ug/kg	1.0					
Xylenes (TOTAL)	U	0.00	1.00	4.00	ug/kg	1.0					
Naphthalene	U	0.00	1.00	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	0.00	1620	3240	ug/kg	10.	BDG	02/11/97	2236	97475	2
Acenaphthylene	U	0.00	1620	3240	ug/kg	10.					
Anthracene	U	0.00	1620	3240	ug/kg	10.					
Benzo(a)anthracene	U	0.00	1620	3240	ug/kg	10.					
Benzo(a)pyrene	U	0.00	1620	3240	ug/kg	10.					
Benzo(b)fluoranthene	U	0.00	1620	3240	ug/kg	10.					
Benzo(ghi)perylene	U	0.00	1620	3240	ug/kg	10.					
Benzo(k)fluoranthene	U	0.00	1620	3240	ug/kg	10.					
Chrysene	U	0.00	1620	3240	ug/kg	10.					
Dibenzo(a,h)anthracene	U	0.00	1620	3240	ug/kg	10.					
Fluoranthene	U	0.00	1620	3240	ug/kg	10.					
Fluorene	U	0.00	1620	3240	ug/kg	10.					
Indeno(1,2,3-c,d)pyrene	U	0.00	1620	3240	ug/kg	10.					
Naphthalene	U	0.00	1620	3240	ug/kg	10.					
Phenanthrene	U	0.00	1620	3240	ug/kg	10.					
Pyrene	U	0.00	1620	3240	ug/kg	10.					

The following prep procedures were performed:
 GC/MS Base/Neutral Compounds

MS 02/06/97 1500 97475 3

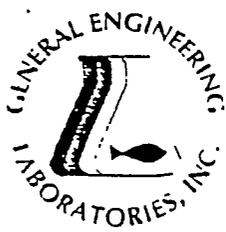
PO Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407



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9702097-06

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GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: February 14, 1997

Page 2 of 3

Sample ID : SPORT0330-6

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	---

Comments:

The sample failed internal standards when analyzed at a lower dilution.

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610	0.00*	(30.0 - 115.)
Nitrobenzene-d5	M610	0.00*	(23.0 - 120.)
p-Terphenyl-d14	M610	0.00*	(37.3 - 128.)
Bromofluorobenzene	BTEX-8260	133.	(53.5 - 154.)
Bromofluorobenzene	BTEX-8260	133.	(53.5 - 154.)
Dibromofluoromethane	BTEX-8260	102.	(63.4 - 136.)
Dibromofluoromethane	BTEX-8260	102.	(63.4 - 136.)
Toluene-d8	BTEX-8260	112.	(72.1 - 137.)
Toluene-d8	BTEX-8260	112.	(72.1 - 137.)
Bromofluorobenzene	NAP-8260	133.	(53.5 - 154.)
Bromofluorobenzene	NAP-8260	133.	(53.5 - 154.)
Dibromofluoromethane	NAP-8260	102.	(63.4 - 136.)
Dibromofluoromethane	NAP-8260	102.	(63.4 - 136.)
Toluene-d8	NAP-8260	112.	(72.1 - 137.)
Toluene-d8	NAP-8260	112.	(72.1 - 137.)

M = Method	Method-Description
M 1	EPA 8260
M 2	EPA 8270
M 3	EPA 3550

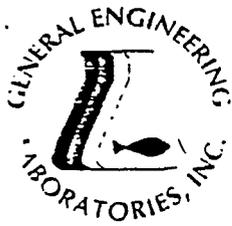
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Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00196

Report Date: February 14, 1997

Page 3 of 3

Sample ID : SPORT0330-6

M = Method

Method-Description

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

'1' indicates that the analyte was not detected at a concentration greater than the detection limit.

' indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Karen Blakeney at (803) 769-7386.



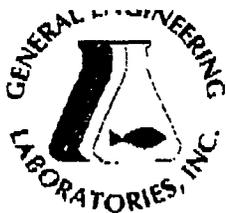
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686 Well
INSTL Soil Sample

Laboratory Certifications

STATE	GEL	EPI
FL	ER7156/87294	ER7472/87458
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: June 24, 1999

Page 1 of 2

Sample ID : 99SPORT0214-1
 Lab ID : 9906610-01
 Matrix : Soil
 Date Collected : 06/17/99
 Date Received : 06/17/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX + NAPTH. - 5 items</i>											
Benzene	U	ND	0.500	1.00	ug/kg	1.0	JEB	06/18/99	1500	151801	1
Ethylbenzene	U	ND	0.300	1.00	ug/kg	1.0					
Naphthalene	U	ND	0.600	1.00	ug/kg	1.0					
Toluene	U	ND	0.900	1.00	ug/kg	1.0					
Xylenes (TOTAL)	U	ND	0.700	2.00	ug/kg	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 15 items</i>											
Acenaphthene	U	ND	6.66	33.3	ug/kg	1.0	JPA	06/22/99	1659	151768	2
Acenaphthylene	U	ND	6.66	33.3	ug/kg	1.0					
Anthracene	U	ND	6.66	33.3	ug/kg	1.0					
Benzo(a)anthracene	U	ND	6.66	33.3	ug/kg	1.0					
Benzo(a)pyrene	U	ND	6.66	33.3	ug/kg	1.0					
Benzo(b)fluoranthene	U	ND	6.66	33.3	ug/kg	1.0					
Benzo(ghi)perylene	U	ND	6.66	33.3	ug/kg	1.0					
Benzo(k)fluoranthene	U	ND	6.66	33.3	ug/kg	1.0					
Chrysene	U	ND	6.66	33.3	ug/kg	1.0					
Dibenzo(a,h)anthracene	U	ND	26.6	33.3	ug/kg	1.0					
Fluoranthene	U	ND	6.66	33.3	ug/kg	1.0					
Fluorene	U	ND	6.66	33.3	ug/kg	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	23.3	33.3	ug/kg	1.0					
Naphthalene	U	ND	6.66	33.3	ug/kg	1.0					
Phenanthrene	U	ND	6.66	33.3	ug/kg	1.0					
Pyrene	U	ND	6.66	33.3	ug/kg	1.0					

The following prep procedures were performed:
 Volatiles 8260 High Level

JEB 06/18/99 0800 151801 3

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STATE	GEL	EPI
FL	FB7156/87294	FB7472/87458
NC	333	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
 SUPSHIP-Portsmouth Detachment-Env.
 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: June 24, 1999

Page 2 of 2

Sample ID : 99SPORT0214-1

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
GC/MS Base/Neutral Compounds							RDH	06/21/99	0800	151768	3

Surrogate Recovery	Test	Percent%	Acceptable Limits
2-Fluorobiphenyl	M610-NPWC	49.3	(44.7 - 110.)
Nitrobenzene-d5	M610-NPWC	47.7	(42.4 - 107.)
p-Terphenyl-d14	M610-NPWC	72.9	(45.5 - 104.)
Bromofluorobenzene	BTEX+NAP-8260B	122.	(73.0 - 129.)
Dibromofluoromethane	BTEX+NAP-8260B	106.	(66.0 - 117.)
Toluene-d8	BTEX+NAP-8260B	114.	(73.0 - 122.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 8270
M 3	EPA 3550

Notes:

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

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9906610-01



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Well 686
GW

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Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: August 09, 1999

Page 1 of 2

Sample ID : 99SPORT0238-01
 Lab ID : 9907E38-01
 Matrix : GroundH2O
 Date Collected : 07/30/99
 Date Received : 07/30/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX + MTBE + NAP - 6 items</i>											
Benzene	U	ND	0.300	1.00	ug/l	1.0	JEB	08/02/99	1439	154965	1
Ethylbenzene	U	ND	0.300	1.00	ug/l	1.0					
Methyl Tert Butyl Ether	U	ND	3.60	5.00	ug/l	1.0					
Naphthalene	U	ND	0.600	1.00	ug/l	1.0					
Toluene	U	ND	0.500	1.00	ug/l	1.0					
Xylenes (TOTAL)	U	ND	1.10	2.00	ug/l	1.0					
Extractable Organics											
<i>Polynuclear Aromatic Hydrocarbons - 16 items</i>											
Acenaphthene	U	ND	0.448	1.12	ug/l	1.0	GWL	08/03/99	2031	155010	2
Acenaphthylene	U	ND	0.560	1.12	ug/l	1.0					
Anthracene	U	ND	0.448	1.12	ug/l	1.0					
Benzo(a)anthracene	U	ND	0.448	1.12	ug/l	1.0					
Benzo(a)pyrene	U	ND	0.224	1.12	ug/l	1.0					
Benzo(b)fluoranthene	U	ND	0.336	1.12	ug/l	1.0					
Benzo(ghi)perylene	U	ND	0.448	1.12	ug/l	1.0					
Benzo(k)fluoranthene	U	ND	0.336	1.12	ug/l	1.0					
Chrysene	U	ND	0.560	1.12	ug/l	1.0					
Dibenzo(a,h)anthracene	U	ND	0.448	1.12	ug/l	1.0					
Fluoranthene	U	ND	0.560	1.12	ug/l	1.0					
Fluorene	U	ND	0.448	1.12	ug/l	1.0					
Indeno(1,2,3-c,d)pyrene	U	ND	6.94	6.94	ug/l	1.0					
Naphthalene	U	ND	0.672	1.12	ug/l	1.0					
Phenanthrene	U	ND	0.448	1.12	ug/l	1.0					
Pyrene	U	ND	0.448	1.12	ug/l	1.0					

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9907E38-01



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 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: August 09, 1999

Page 2 of 2

Sample ID : 99SPORT0238-01

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
-----------	-----------	--------	----	----	-------	----	---------	------	------	-------	---

The following prep procedures were performed:
 GC/MS Base/Neutral Compounds

AEJ 08/02/99 1700 155010 3

Surrogate Recovery	Test	Percent %	Acceptable Limits
2-Fluorobiphenyl	M610-NPWC	63.7	(41.2 - 107.)
Nitrobenzene-d5	M610-NPWC	63.5	(35.3 - 108.)
p-Terphenyl-d14	M610-NPWC	56.2	(36.6 - 110.)
Bromofluorobenzene	BTEX+NAP+MTBE-8260B	87.0	(73.0 - 129.)
Dibromofluoromethane	BTEX+NAP+MTBE-8260B	93.0	(66.0 - 117.)
Toluene-d8	BTEX+NAP+MTBE-8260B	91.5	(73.0 - 122.)

M = Method	Method-Description
M 1	SW846 8260B
M 2	EPA 8270C
M 3	EPA 3510

Notes:

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* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

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 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: August 09, 1999

Page 1 of 2

Sample ID : 99SPORT0238-02
 Lab ID : 9907E38-02
 Matrix : GroundH2O
 Date Collected : 07/30/99
 Date Received : 07/30/99
 Priority : Routine
 Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Volatile Organics											
<i>BTEX + MTBE + NAP - 6 items</i>											
Benzene	U	ND	0.300	1.00	ug/l	1.0	JEB	08/02/99	1508	154965	1
Ethylbenzene	U	ND	0.300	1.00	ug/l	1.0					
Methyl Teri Butyl Ether	U	ND	3.60	5.00	ug/l	1.0					
Naphthalene	U	ND	0.600	1.00	ug/l	1.0					
Toluene	U	ND	0.500	1.00	ug/l	1.0					
Xylenes (TOTAL)	U	ND	1.10	2.00	ug/l	1.0					

Surrogate Recovery	Test	Percent %	Acceptable Limits
Bromofluorobenzene	BTEX+NAP+MTBE-8260B	86.9	(73.0 - 129.)
Dibromofluoromethane	BTEX+NAP+MTBE-8260B	94.6	(66.0 - 117.)
Toluene-d8	BTEX+NAP+MTBE-8260B	93.0	(73.0 - 122.)

M = Method	Method-Description
M 1	SW846 8260B

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

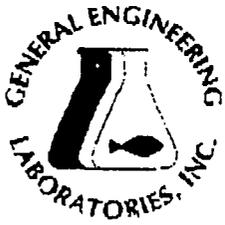
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

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9907E38-02



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 1899 North Hobson Ave.
 North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: August 09, 1999

Page 2 of 2

Sample ID : 99SPORT0238-02

M = Method	Method-Description
------------	--------------------

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Eise Hanson at 843-556-8171

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GEN. ENGINEERING (MON) 14:55 AUG.-09.99

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client Name/Facility Name				SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods															Remarks								
SPORTENUDETCHASN				pH, conductivity	TOC/DOC	tox-PAH	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type		BTX, NAP, MTBE	P						
Collected by/Company				# OF CONTAINERS	WELL	SOIL	COMP	GRAB	pH, conductivity	TOC/DOC	tox-PAH	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	BTX, NAP, MTBE	P	Remarks	
SPORTENUDETCHASN																											
SAMPLE ID	DATE	TIME																									
99SPORT0238-01	7/30/99	0940	X	X	5				X														X		NS-686		
99SPORT0238-02	7/30/99	0835		X	3																		X		Trip		
<i>[Handwritten signature]</i>																											
Relinquished by: <i>[Signature]</i>				Date: 7/30/99	Time: 1035	Received by:										Relinquished by:				Date:	Time:	Received by:					
Relinquished by:				Date:	Time:	Received by lab by: <i>[Signature]</i>										Date: 7/30/99	Time: 1035	Remarks:									

White = sample collector Yellow = file Pink = with report