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NSB NEW LONDON

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**MONTHLY OPERATIONS SUMMARY  
FOR THE NAVAL EXCHANGE (NEX) AND DOLPHIN MART  
AIR SPARGING/SOIL VAPOR EXTRACTION SYSTEMS**

**NEW LONDON NAVAL SUBMARINE BASE  
GROTON, CONNECTICUT**

**Month: July 1998**

**Prepared by:**

**Fluor Daniel GTI, Inc.**  
Prepared by:

  
Barry A. Kline, P.E.  
Project Engineer

**Foster Wheeler Environmental Corp.**  
Reviewed by:



Susan R. Leach, P.E.  
Environmental Site Technical Manager

## OPERATIONAL SUMMARY

### DOLPHIN MART AIR SPARGE/SVE SYSTEM

**System Status** - The remediation system at the site has been operating since June 29, 1996. On July 9 and 10, 1998, the system was adjusted such that eight (8) horizontal vapor extraction trenches (VET-1, VET-2, VET-3, VET-4, VET-5, VET-6, VET-7 and VET-8) and five (5) air sparge points (ASP-A, ASP-B, ASP-C, ASP-D and ASP-E) were operating. VET-9 through VET-17 and air sparge points ASP-F through ASP-Q are currently not operating due to high groundwater conditions and low dissolved volatile organic compound (VOC) concentrations in their vicinity. The soil vapor extraction (SVE) system is currently operating at a flow rate of approximately 294 standard cubic feet per minute (scfm). The air sparge system is currently injecting air at a flow rate of approximately 13 scfm. A site map has been included as **Figure 1**. The site monitoring forms for operation and maintenance (O&M) conducted during the month of July, 1998 are included in **Attachment 1**. A weekly break-down of the month's field activities has been included as **Attachment 2**.

**Mass Removal** - The total hydrocarbon mass removal rate, based on the SVE system influent sample collected on July 13, 1998, was 0.001 lbs/hour. During the period from April 27, 1998 to July 13, 1998, approximately 19 lbs of hydrocarbons were extracted by the remediation system. The total hydrocarbon mass extracted by the remediation system, as of July 13, 1998, was approximately 2,019 lbs. The system database has been included in **Attachment 3**. Mass removal graphs have been included as **Figures 3A, 3B and 4**. Based on the hydrocarbon mass removal rate, no exceedance of Connecticut Department of Environmental Protection (CTDEP) air quality guidelines was observed.

**Carbon Usage** - No carbon change-out occurred during the month of July, 1998. The last vapor phase carbon change-out at the site occurred August 27, 1997. No liquid phase carbon change-out has occurred to date.

**Discharge Monitoring Sampling** - Discharge sampling for the system was conducted on July 13, 1998.

**Monitoring Well Gauging** - The site monitoring wells were gauged on May 11, 1998 during the quarterly groundwater sampling event. Depth to groundwater at the site ranged from 0.31 feet in OBG-8A to 7.91 feet in WE-3. Historical well gauging data has been included in **Attachment 4**.

**Monitoring Well Sampling** - Monitoring well sampling was conducted on May 11, 1998. The May Quarterly Groundwater Sampling Report was issued on June 19, 1998. The historical groundwater sampling results have been summarized in **Attachment 5**.

**Additional Activities** - On July 13, 1998, the heights/depths of the well casings above/below grade at several monitoring wells were measured. These measurements will allow preparation of groundwater contour maps for the site.

### NEX AIR SPARGE/SVE SYSTEM

**System Status** - The remediation system at the site has been operating since July 31, 1997. From July 8 through July 13, 1998, the system was adjusted such that 20 vapor extraction points (VEA-9 through VEA-20 and VEB-8 through VEB-15) were operating and the SVE system was extracting subsurface air at an average flow rate of approximately 154 scfm.

On July 13, 1998, the system was adjusted such that 29 air sparge points (SPA-22 through SPA-37 and SPB-15 through SPB-27) were operating and the air sparge system was injecting at a flow rate of approximately 53 scfm. The system adjustments were made in an attempt to reduce the amount of water extracted by the system. Approximately 100,441 gallons of water have been extracted, treated, and discharged by the NEX system as of July 23, 1998.

A site map has been included as **Figure 2**. The site monitoring forms for O&M conducted during the month of March, 1998 are included in **Attachment 1**. A weekly break-down of the monthly field activities has been included in **Attachment 2**.

**Mass Removal** - The total hydrocarbon mass removal rate, based on the SVE system influent sample collected July 13, 1998, was 0.09 lbs/hour. During the period from April 27, 1998 to July 13, 1998, an estimated 64 lbs of hydrocarbons were extracted by the remediation system. The total hydrocarbon mass extracted by the remediation system, as of July 13, 1998, is approximately 1,615 lbs. The system database has been included in **Attachment 3**. Mass removal graphs have been included as **Figures 5A, 5B and 6**. Based on the hydrocarbon mass removal rate, no exceedance of CTDEP air quality guidelines was observed.

**Carbon Usage** - A liquid-phase carbon change-out occurred on July 8, 1998. The last vapor-phase carbon change-out occurred August 8, 1997.

**Discharge Monitoring Sampling** - Discharge sampling for the system was conducted on July 13, 1998.

**Monitoring Well Gauging** - The site monitoring wells were last gauged on May 12, 1998 during the quarterly groundwater sampling event. Depth to groundwater at the site ranged from 2.09 feet in ERM-5 to 7.90 feet in ERM-12. During the May 12, 1998 well gauging, LNAPL was detected at OBG-1 at a thickness of 0.01 feet and at OBG-9 at a thickness of 0.02 feet. On July 13, 1998, during gauging of wells which have historically contained LNAPL, a sheen was detected at OBG-1, OBG-9 and ERM-16. LNAPL was detected at a thickness of 0.01 feet in ERM-14. Historical well gauging data is included in **Attachment 4**.

**Monitoring Well Sampling** - Monitoring well sampling was last conducted on May 12, 1998. The May Quarterly Groundwater Sampling Report was issued on June 19, 1998. The historical groundwater sampling results have been summarized in **Attachment 5**.

**Additional Activities** - On July 10, 1998, an additional moisture separator (a spare unit taken from the Dolphin Mart site) was added to Blower V-1 to increase the water holding capacity of the system.

**OT-8 PASSIVE FREE PRODUCT RECOVERY SYSTEM**

**System Status** - The OT-8 system has been decommissioned and removed. MW-7 was destroyed during excavation activities at the OT-8 area. The petroleum hydrocarbon impact has been addressed by soil excavation activities conducted by Foster Wheeler Environmental Corporation Inc.

**FIGURES**



REVISIONS			
NO.	DESCRIPTION	PREP BY	DATE APPROVED

HIGHEST RECORDED GROUND WATER ELEVATIONS

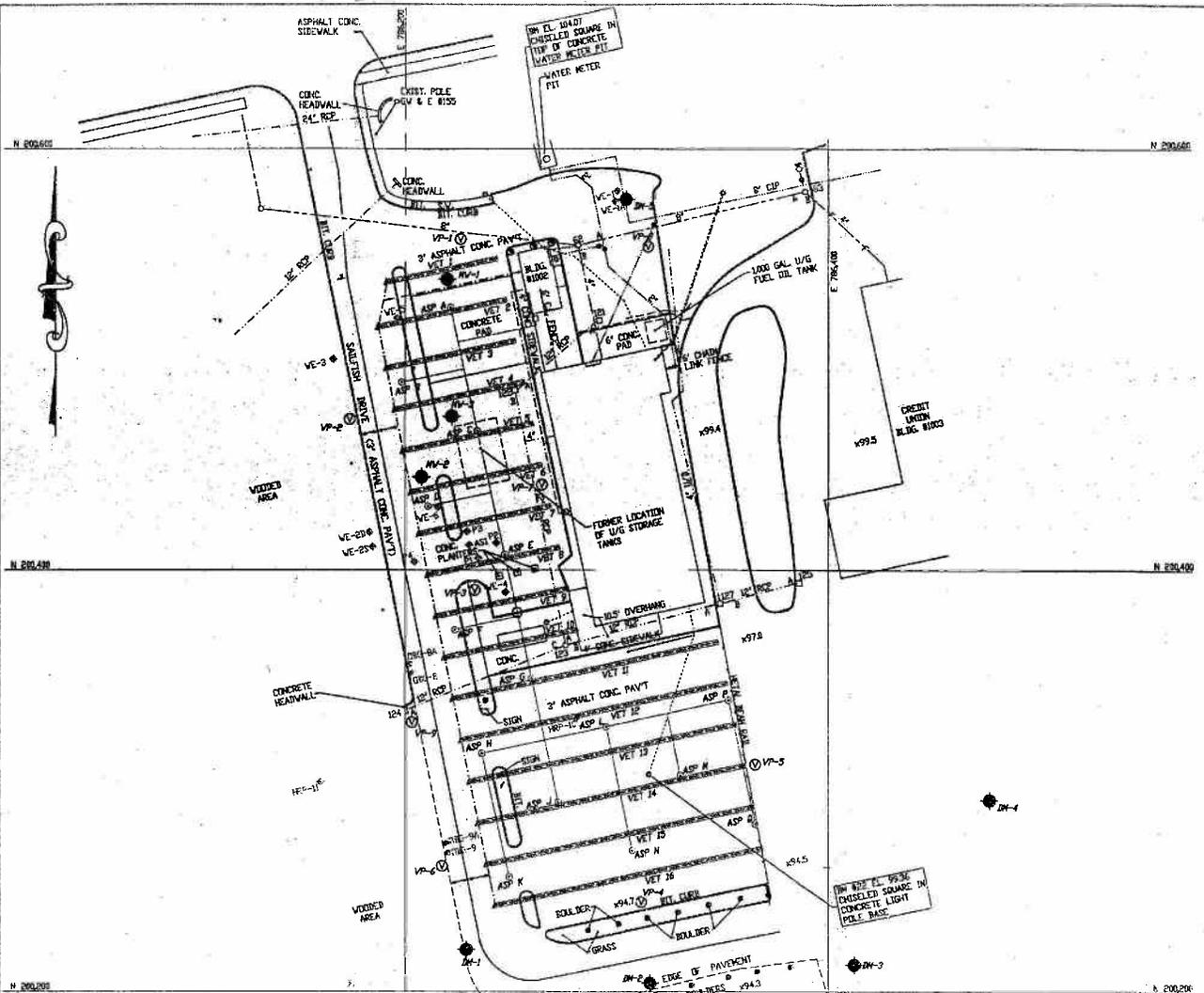
WELL NO.	GROUNDWATER ELEVATION
VE-1A	96.84
VE-25	94.25
VE-20	94.3
VE-3	93.93
VE-4	94.11
VE-5	95.46
VE-6	95.41
DES-8A	93.70
DES-9A	94.80
HP-10	92.5 (ESTIMATED)
HP-11	92.5 (ESTIMATED)

NOTE:  
GROUND WATER DATA SHOWN ON PLANS ARE APPROXIMATELY AS SHOWN FOR BIDDING PURPOSES. ACTUAL WELL ELEVATIONS TO BE DETERMINED IN THE FIELD BY THE CONTRACTOR.

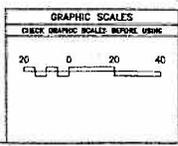
SOIL VAPOR EXTRACTION TRENCH PIPE ELEVATIONS - BUILDING MAT

TRENCH NO.	INV. ELEV. 6" VAPOR COLLECTION PIPE	INV. ELEV. 2" PIPE @ WEST END OF TRENCH	INV. ELEV. 2" PIPE @ EAST END OF TRENCH
VET 1	94.64	95.41	95.46
VET 2	94.64	95.80	95.85
VET 3	94.48	95.19	95.24
VET 4	94.52	97.50	97.52
VET 5	94.46	96.70	97.30
VET 6	94.30	96.20	97.20
VET 7	93.94	95.65	97.00
VET 8	93.68	95.15	96.80
VET 9	93.52	94.62	96.60
VET 10	93.36	93.32	96.40
VET 11	93.20	93.27	95.80
VET 12	93.04	92.23	95.82
VET 13	92.88	93.99	94.64
VET 14	92.72	92.95	94.04
VET 15	92.56	92.80	93.56
VET 16	92.40	92.66	93.08

NOTES  
1. SEE SHEET TP FOR LEGEND, ABBREVIATIONS GENERAL CONSTRUCTION NOTES AND EXISTING MANHOLE AND CATCH BASIN INVERTS.

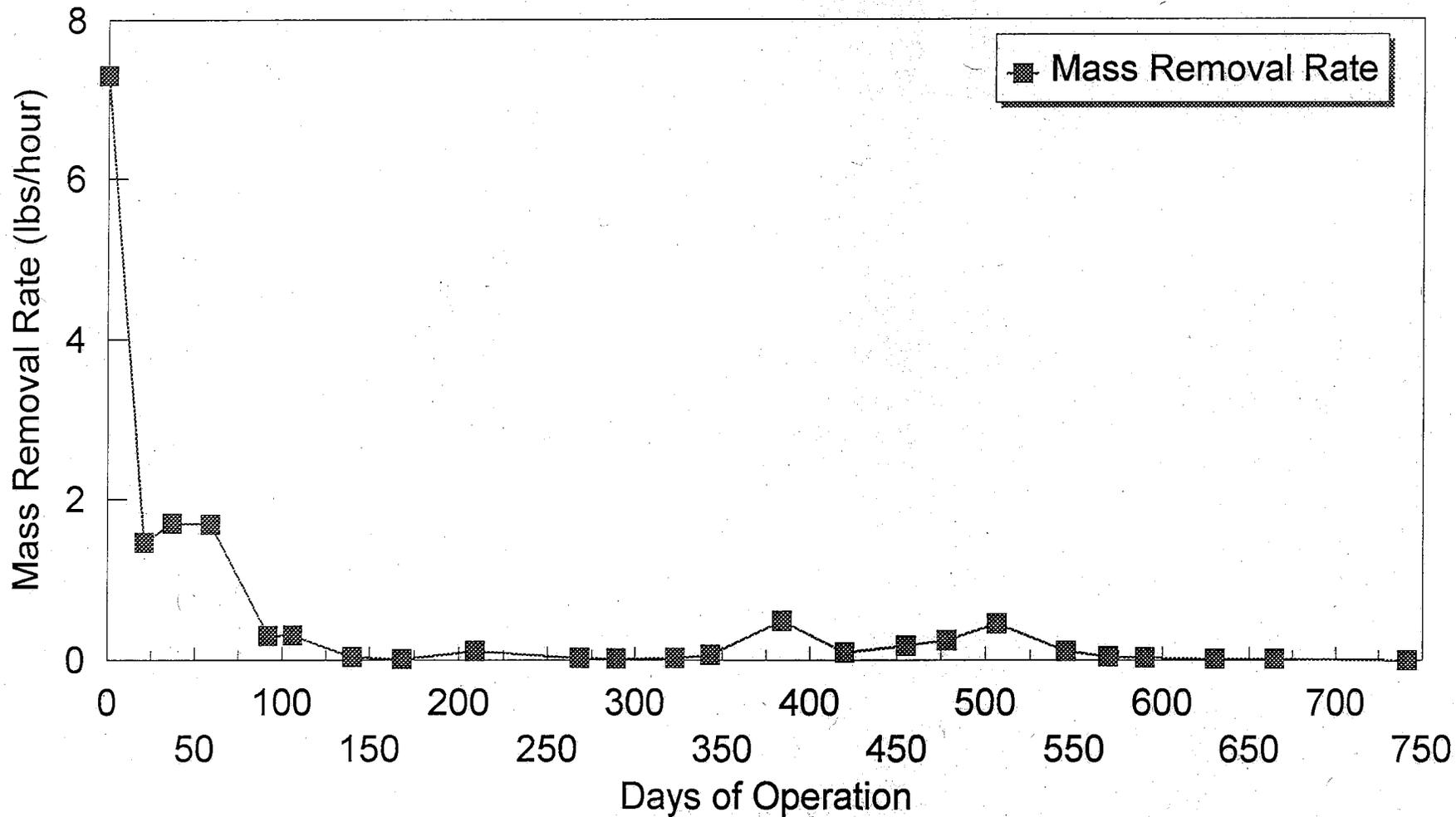


H. 200,200  
THIS MAP WAS PREPARED FROM MAPS LISTED BELOW:  
1. NAUTILUS PARK, GROTON, CONN. EXISTING UTILITIES MAPS PREPARED BY COLLIERMAN ENGINEERING CO., INC. SCALE 1"=40' DATE 3/25/89 INVTAC DRAWING NOS. 204-2353, 204-2353 AND 204-2374.  
2. MONITOR WELL LOCATION AND GROUND WATER CONTOUR MAP OF JANUARY 21, 1992 DOLPHIN MARINE SITE US SUBBASE, GROTON, CT. PREPARED BY DYN-NORTHEAST SCALE 1"=40' APRIL, 1992.  
3. UTILITY DATA FROM AS-BUILT DRAWINGS AND UTILITY MAPS EXACT LOCATIONS MUST BE VERIFIED IN FIELD.  
4. ALL TOPOGRAPHIC FEATURES AND INVERTS SHOWN HEREON SHALL BE FIELD VERIFIED.

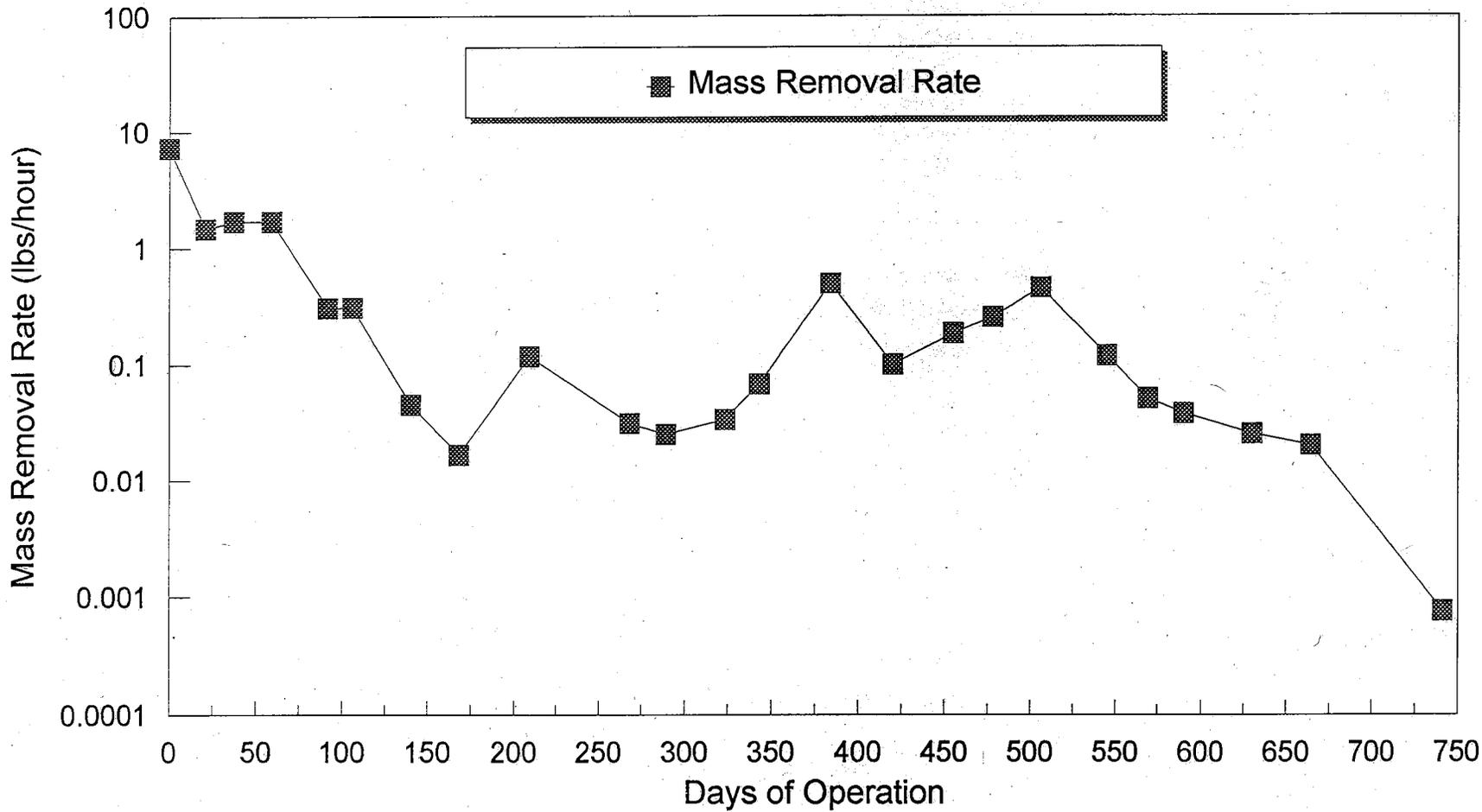


PREPARED BY: [blank] CHECKED BY: [blank] DATE: [blank]	GOVERNMENT OF THE STATE OF CONNECTICUT DEPARTMENT OF CONSTRUCTION DIVISION OF PLANNING AND DESIGN NORTHWEST BRIDGEWAY HARTFORD, CONNECTICUT 06103
PROJECT NO.: [blank] SHEET NO.: [blank] OF [blank]	CONTRACT NO.: [blank] DATE: [blank]
DRAWING NO.: [blank]	SHEET NO.: [blank] OF [blank]
PROJECT TITLE: [blank]	SHEET TITLE: [blank]
CONTRACTOR: [blank]	PROJECT NO.: [blank]
DATE: [blank]	SHEET NO.: [blank] OF [blank]

**Figure 3A- Mass Removal Rate**  
Dolphin Mart Site, New London Naval Submarine Base, Groton, CT

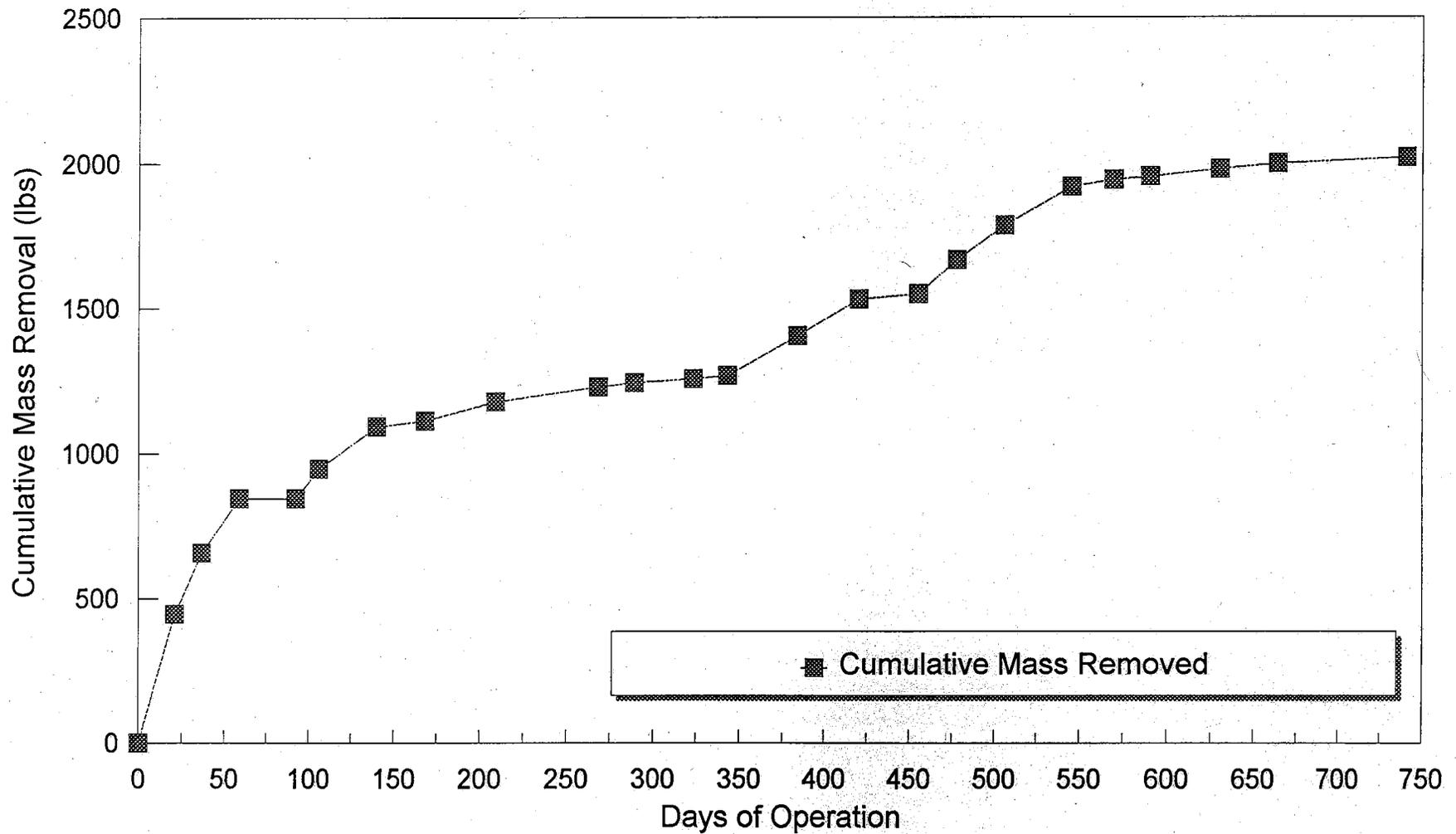


**Figure 3B- Mass Removal Rate**  
Dolphin Mart Site, New London Naval Submarine Base, Groton, CT



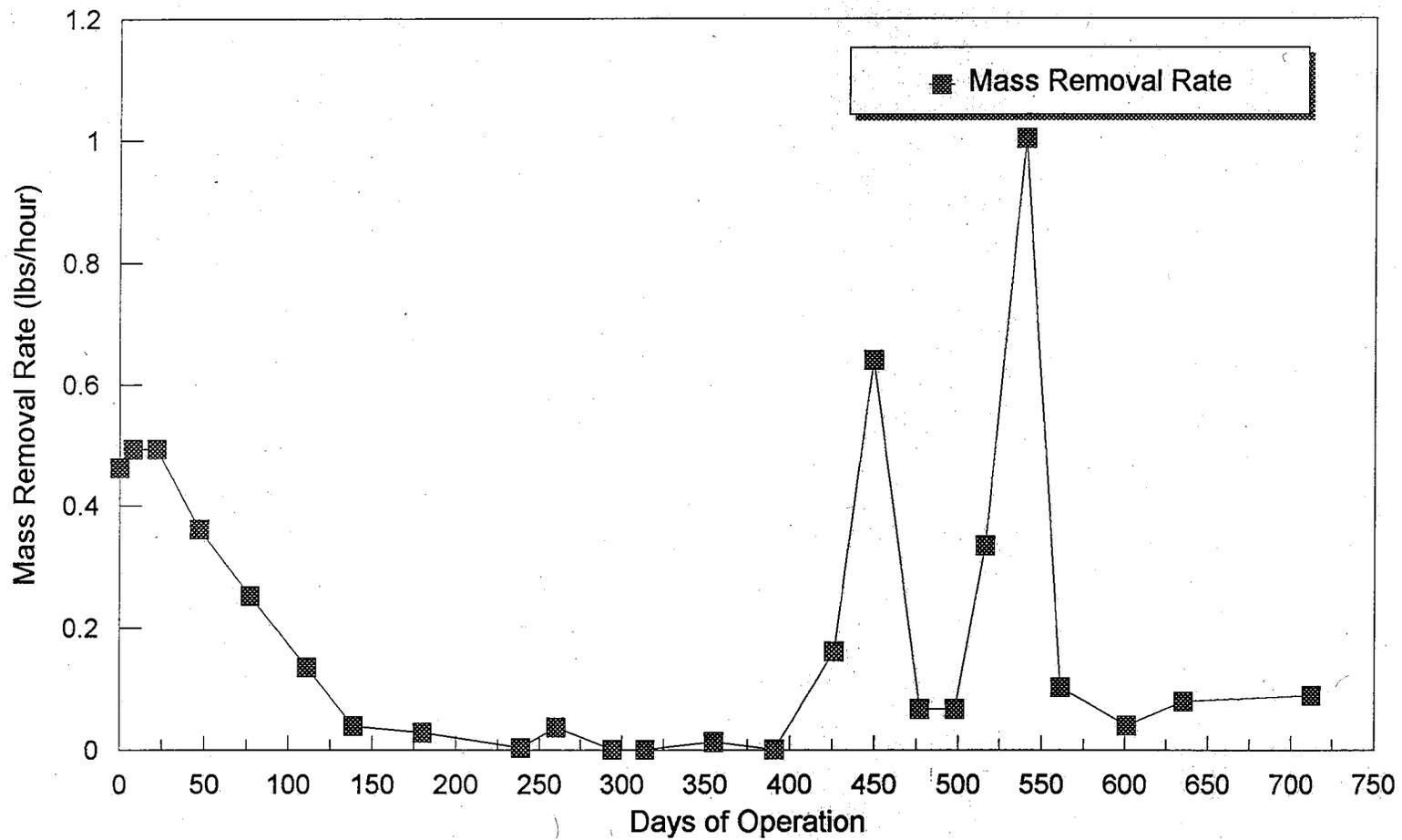
# Figure 4 - Cumulative Mass Removed versus Time

Dolphin Mart Site, New London Naval Submarine Base, Groton, CT



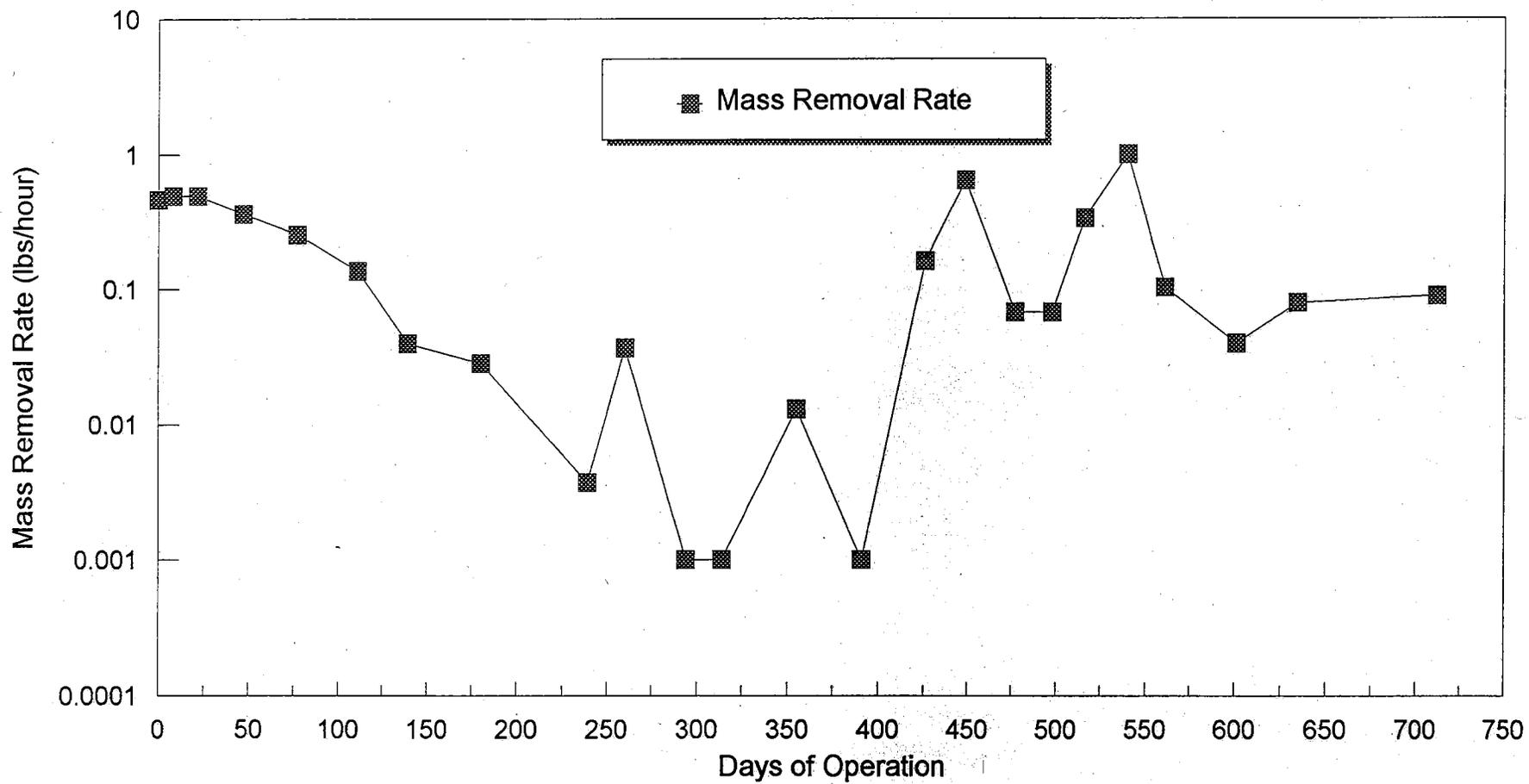
# Figure 5A - Mass Removal Rate

NEX Site, New London Naval Submarine Base, Groton, CT



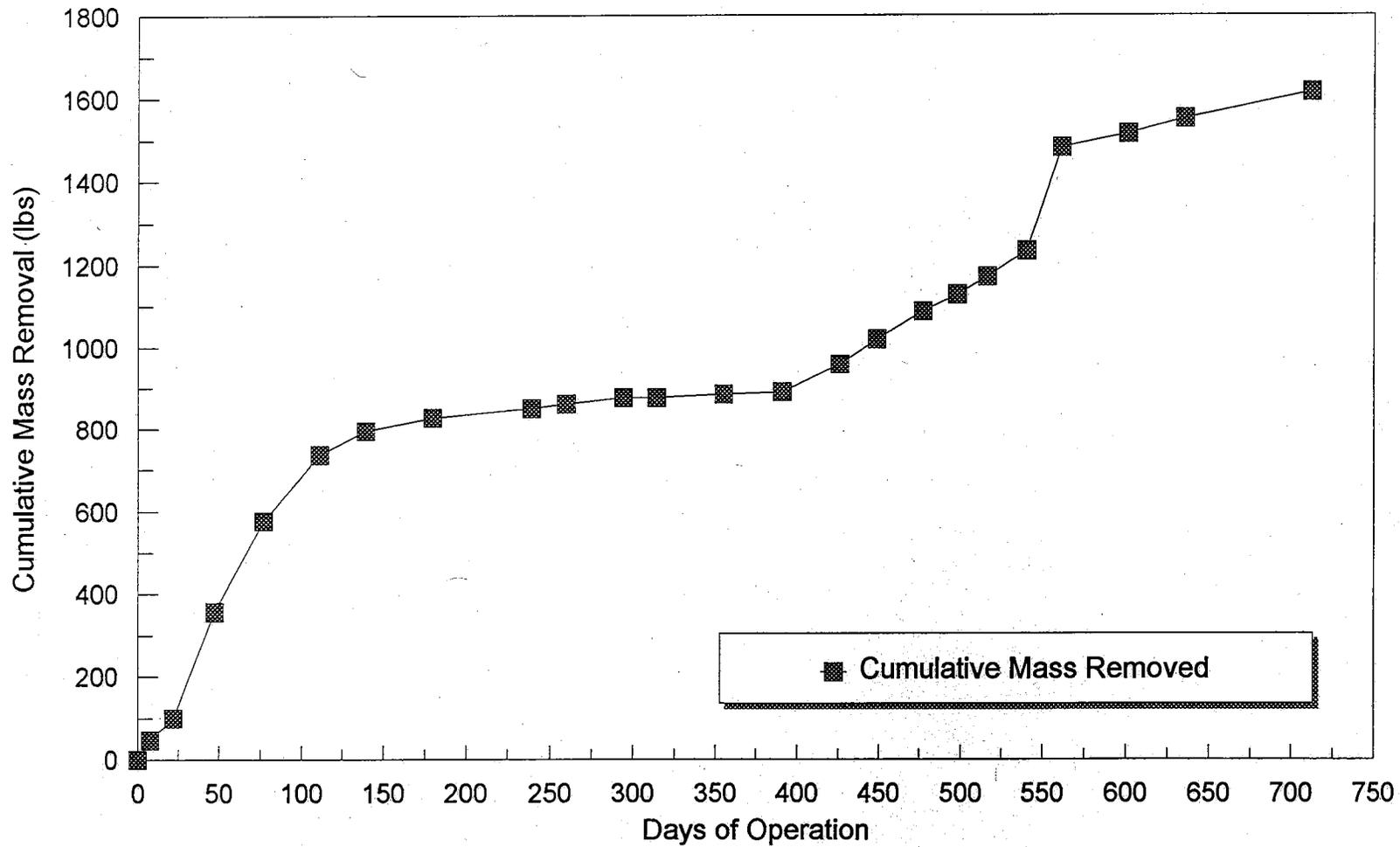
# Figure 5B - Mass Removal Rate

NEX Site, New London Naval Submarine Base, Groton, CT



# Figure 6 - Cumulative Mass Removed versus Time

NEX Site, New London Naval Submarine Base, Groton, CT



**ATTACHMENT 1**  
**SITE VISIT FORMS**

**OPERATIONAL DATA FORM**  
 Air Sparging/Soil Vapor Extraction System  
 Dolphin Mart  
 Naval Submarine Base -Groton, CT  
 Project #83001-9999

Date: 7/2/98  
 Time: 16:50  
 Technician: John Kezun, Jr

**AIR COMPRESSOR SYSTEM**

Flow Rate <u>19</u> SCFM	Total Flow <u>6324989</u> SCFM
<b>Air Compressor C-1</b> Pressure <u>10</u> psi Temperature <u>214</u> °F Flow Control Valve Setting <u>100%</u> Bleed Valve <u>50%</u> Radiator <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	<b>Air Compressor C-2</b> Pressure <u>NA</u> psi Temperature _____ °F Flow Control Valve Setting _____ Bleed Valve _____ Radiator <input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

**SOIL VAPOR EXTRACTION SYSTEM**

Flow Rate <u>1100</u> SCFM	(use anemometer in hole in pipe near Hersey flowmeter)
<b>Vacuum Pump V-1</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____	<b>Vacuum Pump V-2</b> Vacuum <u>6.25</u> "Hg Temperature <u>124</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>OK</u>
<b>Vacuum Pump V-3</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____	<b>Vacuum Pump V-4</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____

**ACTIVATED CARBON ADSORPTION SYSTEM**

<b>Carbon Adsorber A/B</b> Pressure <u>NA</u> psi Inf. VOC Level _____ ppm Mid. VOC Level _____ ppm Eff. VOC Level _____ ppm Change out Date <u>NA</u>	<b>Carbon Adsorber C/D</b> Pressure <u>30</u> psi Inf. VOC Level <u>32</u> ppm Mid. VOC Level <u>28</u> ppm Eff. VOC Level <u>42</u> ppm Change out Date <u>8-22-96</u>
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**WATER TREATMENT**

Flowmeter Reading 4004.6 Gallons (arrival reading)      Flowmeter Reading 4004.6 Gallons (departure reading)

**COMMENTS**

Calibrated f.i.d to 57 ppm.

<b>OPERATIONAL DATA FORM</b> Air Sparging/Soil Vapor Extraction System Naval Exchange Naval Submarine Base -Groton, CT Project #83001-9999	Date: <u>7-8-98</u> Time: <u>10:00</u> Technician: <u>John Kaluzum, Jr</u>
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**AIR COMPRESSOR SYSTEM**

Flow Rate <u>28 to 45</u> SCFM	Total Flow <u>2801452</u> SCFM
<b>Air Compressor C-1</b> Pressure <u>10</u> psi Temperature <u>246</u> °F Flow Control Valve Setting <u>100%</u> Bleed Valve <u>25%</u> Radiator <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	<b>Air Compressor C-2</b> Pressure <u>NA</u> psi Temperature _____ °F Flow Control Valve Setting _____ Bleed Valve _____ Radiator <input type="checkbox"/> ON <input type="checkbox"/> OFF

**SOIL VAPOR EXTRACTION SYSTEM**

Eastern Flow Rate <u>291-344</u> SCFM	Total Flow <u>91178530</u> SCFM
Western Flow Rate <u>0</u> SCFM	Total Flow <u>23405685</u> SCFM
<b>Vacuum Pump V-1</b> Vacuum <u>8</u> "Hg Temperature <u>184</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>0</u> Liquid Level <u>OK</u>	<b>Vacuum Pump V-2</b> Vacuum <u>7.5</u> "Hg Temperature <u>178</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>OK</u>
<b>Vacuum Pump V-3</b> Vacuum <u>8</u> "Hg Temperature <u>210</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>OK</u>	<b>Vacuum Pump V-4</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____

**ACTIVATED CARBON ADSORPTION SYSTEM**

<b>Carbon Adsorber A/B</b> Pressure <u>22</u> psi Inf. VOC Level <u>108</u> ppm Mid. VOC Level <u>60</u> ppm Eff. VOC Level <u>54</u> ppm Change out Date <u>NA</u>	<b>Carbon Adsorber C/D</b> Pressure <u>27.5</u> psi Inf. VOC Level <u>112</u> ppm Mid. VOC Level <u>NA</u> ppm Eff. VOC Level <u>112</u> ppm Change out Date <u>8-22-96</u>
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**WATER TREATMENT**

Flowmeter Reading <u>77021.8</u> Gallons (arrival reading)	Flowmeter Reading <u>79028.0</u> Gallons (departure reading)
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**COMMENTS**

\* FILL IN ALL SPACES WITH THE APPROPRIATE READING OR "NA".

calibrated Fid to 97 PPM with  
Esobutylene

**OPERATIONAL DATA FORM**  
 Air Sparging/Soil Vapor Extraction System  
 Dolphin Mart  
 Naval Submarine Base -Groton, CT  
 Project #83001-9999

Date: 7-13-98  
 Time: 9:30  
 Technician: John Kazun, JR.

**AIR COMPRESSOR SYSTEM**

Flow Rate <u>6379521</u> SCFM	Total Flow <u>0</u> SCFM
<b>Air Compressor C-1</b> Pressure <u>14</u> psi Temperature <u>180</u> °F Flow Control Valve Setting <u>100%</u> Bleed Valve <u>50%</u> Radiator <input checked="" type="radio"/> ON <input type="radio"/> OFF	<b>Air Compressor C-2</b> Pressure <u>NA</u> psi Temperature _____ °F Flow Control Valve Setting _____ Bleed Valve _____ Radiator <input type="radio"/> ON <input checked="" type="radio"/> OFF

**SOIL VAPOR EXTRACTION SYSTEM**

Flow Rate <u>1250</u> SCFM	(use anemometer in hole in pipe near Hersey flowmeter)
<b>Vacuum Pump V-1</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____	<b>Vacuum Pump V-2</b> Vacuum <u>8</u> "Hg Temperature <u>130</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>OK</u>
<b>Vacuum Pump V-3</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____	<b>Vacuum Pump V-4</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____

**ACTIVATED CARBON ADSORPTION SYSTEM**

<b>Carbon Adsorber A/B</b> Pressure <u>NA</u> psi Inf. VOC Level _____ ppm Mid. VOC Level _____ ppm Eff. VOC Level _____ ppm Change out Date <u>NA</u>	<b>Carbon Adsorber C/D</b> Pressure <u>30</u> psi Inf. VOC Level <u>3.6</u> ppm Mid. VOC Level <u>4.0</u> ppm Eff. VOC Level <u>4.8</u> ppm Change out Date <u>8/22/96</u>
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**WATER TREATMENT**

Flowmeter Reading 4032.8 Gallons (arrival reading)      Flowmeter Reading 4073.9 Gallons (departure reading)

**COMMENTS**

Spurge down upon arrival  
V-2 Blower was on upon arrival

**OPERATIONAL DATA FORM**  
 Air Sparging/Soil Vapor Extraction System  
 Naval Exchange  
 Naval Submarine Base -Groton, CT  
 Project #83001-9999

Date: 7-13-98  
 Time: 12:15  
 Technician: John Kowzun, SR.

**AIR COMPRESSOR SYSTEM**

Flow Rate <u>0</u> SCFM	Total Flow <u>2807224</u> SCFM
<b>Air Compressor C-1</b> Pressure _____ psi Temperature _____ °F Flow Control Valve Setting _____ Bleed Valve _____ Radiator <input checked="" type="radio"/> ON / OFF	<b>Air Compressor C-2</b> Pressure <u>NA</u> psi Temperature _____ °F Flow Control Valve Setting _____ Bleed Valve _____ Radiator <input checked="" type="radio"/> ON / OFF

**SOIL VAPOR EXTRACTION SYSTEM**

Eastern Flow Rate <u>90 to 260</u> SCFM	Total Flow <u>93393091</u> SCFM
Western Flow Rate <u>0</u> SCFM	Total Flow <u>23744790</u> SCFM
<b>Vacuum Pump V-1</b> Vacuum <u>6.25</u> "Hg Temperature <u>182</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%0</u> Bleed Air Valve Setting <u>25%0</u> Liquid Level <u>OK</u>	<b>Vacuum Pump V-2</b> Vacuum <u>9</u> "Hg Temperature <u>180</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%0</u> Bleed Air Valve Setting <u>25%0</u> Liquid Level <u>OK</u>
<b>Vacuum Pump V-3</b> Vacuum <u>7</u> "Hg Temperature <u>204</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%0</u> Bleed Air Valve Setting <u>25%0</u> Liquid Level <u>OK</u>	<b>Vacuum Pump V-4</b> Vacuum <u>NA</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____

**ACTIVATED CARBON ADSORPTION SYSTEM**

<b>Carbon Adsorber A/B</b> Pressure <u>22</u> psi Inf. VOC Level <u>20</u> ppm Mid. VOC Level <u>18</u> ppm Eff. VOC Level <u>30</u> ppm Change out Date <u>NA</u>	<b>Carbon Adsorber C/D</b> Pressure _____ psi Inf. VOC Level <u>63</u> ppm Mid. VOC Level <u>NA</u> ppm Eff. VOC Level <u>63</u> ppm Change out Date <u>8/22/96</u>
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**WATER TREATMENT**

Flowmeter Reading 98347.1 Gallons (arrival reading)      Flowmeter Reading 99812.4 Gallons (departure reading)

**COMMENTS**

\* FILL IN ALL SPACES WITH THE APPROPRIATE READING OR "NA".

**OPERATIONAL DATA FORM**  
 Air Sparging/Soil Vapor Extraction System  
 Dolphin Mart  
 Naval Submarine Base -Groton, CT  
 Project #83001-9999

Date: 7-23-98  
 Time: 14:45  
 Technician: J. K. Su

**AIR COMPRESSOR SYSTEM**

Flow Rate 13.0 SCFM      Total Flow 6379549 SCFM

**Air Compressor C-1**  
 Pressure 15.7 psi  
 Temperature 840 °F  
 Flow Control Valve Setting 100 %  
 Bleed Valve Setting 50 %  
 Radiator  ON  OFF

**Air Compressor C-2**  
 Pressure N/A psi  
 Temperature \_\_\_\_\_ °F  
 Flow Control Valve Setting \_\_\_\_\_  
 Bleed Valve Setting \_\_\_\_\_  
 Radiator  ON  OFF

**SOIL VAPOR EXTRACTION SYSTEM**

Flow Rate 1500 SCFM      (use anemometer in hole in pipe near Hersey flowmeter)

**Vacuum Pump V-1**  
 Vacuum N/A "Hg  
 Temperature \_\_\_\_\_ °F  
 Particulate Filter \_\_\_\_\_  
 Flow Control Valve Setting \_\_\_\_\_  
 Bleed Air Valve Setting \_\_\_\_\_  
 Liquid Level \_\_\_\_\_

**Vacuum Pump V-2**  
 Vacuum 9.5 "Hg  
 Temperature 140 °F  
 Particulate Filter OK  
 Flow Control Valve Setting 100 %  
 Bleed Air Valve Setting 25 %  
 Liquid Level OK

**Vacuum Pump V-3**  
 Vacuum N/A "Hg  
 Temperature \_\_\_\_\_ °F  
 Particulate Filter \_\_\_\_\_  
 Flow Control Valve Setting \_\_\_\_\_  
 Bleed Air Valve Setting \_\_\_\_\_  
 Liquid Level \_\_\_\_\_

**Vacuum Pump V-4**  
 Vacuum N/A "Hg  
 Temperature \_\_\_\_\_ °F  
 Particulate Filter \_\_\_\_\_  
 Flow Control Valve Setting \_\_\_\_\_  
 Bleed Air Valve Setting \_\_\_\_\_  
 Liquid Level \_\_\_\_\_

**ACTIVATED CARBON ADSORPTION SYSTEM**

**Carbon Adsorber A/B**  
 Pressure N/A psi  
 Inf. VOC Level \_\_\_\_\_ ppm  
 Mid. VOC Level \_\_\_\_\_ ppm  
 Eff. VOC Level \_\_\_\_\_ ppm  
 Change out Date N/A

**Carbon Adsorber C/D**  
 Pressure 29 psi  
 Inf. VOC Level 22 ppm  
 Mid. VOC Level 13 ppm  
 Eff. VOC Level 10 ppm  
 Change out Date 8-22-96

**WATER TREATMENT**

Flowmeter Reading 4073.0 Gallons

**COMMENTS**

**OPERATIONAL DATA FORM**  
 Air Sparging/Soil Vapor Extraction System  
 Naval Exchange  
 Naval Submarine Base -Groton, CT  
 Project #83001-9999

Date: 7-23-98  
 Time: 16:10  
 Technician: J.K.JR

**AIR COMPRESSOR SYSTEM**

Flow Rate <u>0</u> SCFM	Total Flow <u>2807264</u> SCFM
<b>Air Compressor C-1</b> Pressure <u>8.5</u> psi Temperature <u>164</u> °F Flow Control Valve Setting <u>100%</u> Bleed Valve <u>10%</u> Radiator <input checked="" type="radio"/> ON <input type="radio"/> OFF	<b>Air Compressor C-2</b> Pressure <u>NA</u> psi Temperature <u>NA</u> °F Flow Control Valve Setting <u>NA</u> Bleed Valve <u>NA</u> Radiator <input checked="" type="radio"/> ON <input type="radio"/> OFF

**SOIL VAPOR EXTRACTION SYSTEM**

Eastern Flow Rate <u>510259</u> SCFM	Total Flow <u>94792975</u> SCFM
Western Flow Rate <u>0</u> SCFM	Total Flow <u>23913250</u> SCFM
<b>Vacuum Pump V-1</b> Vacuum <u>16</u> "Hg Temperature <u>230</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>05%</u> Liquid Level <u>OK</u>	<b>Vacuum Pump V-2</b> Vacuum <u>9</u> "Hg Temperature <u>162</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>OK</u>
<b>Vacuum Pump V-3</b> Vacuum <u>10.5</u> "Hg Temperature <u>202</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>OK</u>	<b>Vacuum Pump V-4</b> Vacuum <u>NA</u> "Hg Temperature <u>NA</u> °F Particulate Filter <u>NA</u> Flow Control Valve Setting <u>NA</u> Bleed Air Valve Setting <u>NA</u> Liquid Level <u>NA</u>

**ACTIVATED CARBON ADSORPTION SYSTEM**

<b>Carbon Adsorber A/B</b> Pressure <u>14</u> psi Inf. VOC Level <u>28</u> ppm Mid. VOC Level <u>12</u> ppm Eff. VOC Level <u>20</u> ppm Change out Date <u>NA</u>	<b>Carbon Adsorber C/D</b> Pressure <u>30</u> psi Inf. VOC Level <u>59</u> ppm Mid. VOC Level <u>NA</u> ppm Eff. VOC Level <u>59</u> ppm Change out Date <u>8-22-96</u>
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**WATER TREATMENT**

Flowmeter Reading 100075.0 Gallons (prior to discharge)      Flowmeter Reading 100441.0 Gallons (after discharge)

**COMMENTS**

\* FILL IN ALL SPACES WITH THE APPROPRIATE READING OR "NA".

10 gpm Per Minute

**ATTACHMENT 2**  
**MONTHLY FIELD ACTIVITY SUMMARY**

**Field Activity Summary  
July 1998**

**New London Naval Submarine Base  
Groton, Connecticut**

<b>Week Ending</b>	<b>Site</b>	<b>Period</b>	<b>Field Activities</b>	<b>Comments</b>
7/10/98	Dolphin Mart	Monthly Monitoring	Conducted system monitoring and maintenance. Adjusted operating SVE and air sparge points.	SVE blower V-2 and air sparge compressor C-1 down upon arrival.
	NEX		Conducted system monitoring and maintenance. Conducted liquid-phase carbon changeout. Adjusted operating SVE and air sparge points. Added additional moisture separator to V-1.	System shutting down periodically due to high levels of water in moisture separators.
7/17/98	Dolphin Mart	Monthly Monitoring	Conducted system monitoring and maintenance, and discharge monitoring sampling.	System operating normally.
	NEX		Conducted system monitoring and maintenance, and discharge monitoring sampling. Adjusted operating SVE and air sparge points.	System shutting down periodically due to high levels of water in moisture separators.
7/24/98	Dolphin Mart	Monthly Monitoring	Conducted system monitoring and maintenance.	Air sparge compressor C-1 down upon arrival.
	NEX		Conducted system monitoring and maintenance.	Air sparge compressor C-1 down upon arrival.

**ATTACHMENT 3**

**AIR SPARGE/SVE SYSTEM DATABASES**

**SYSTEM MONITORING DATA  
SOIL VAPOR EXTRACTION/AIR SPARGE SYSTEM**

New London Naval Submarine Base  
Dolphin Mart Site  
Groton, CT

Date	Air Sparge Flowrate (scfm)	Extraction Flowrate (scfm)	Influent Concentration BTEX (ppmv)	Removal Rate BTEX (lb/hr)	Influent Concentration MTBE (ppmv)	Removal Rate MTBE (lb/hr)	Influent Concentration Aliphatics (ppmv)	Removal Rate Aliphatics (lb/hr)	Influent Concentration Aromatics (ppmv)	Removal Rate Aromatics (lb/hr)	Influent Concentration TVPH (mg/m3)	Removal Rate TVPH (lb/hr)	Total Mass Removal Rate (lbs/hr)	Period Mass Removed (lbs)	Cumulative Mass Removed (lbs)	Comments
07/02/96	25	450	24.00	0.187	33.00	0.232	1000.00	6.876	0.00	0.000	—	0.000	7.295	0.00	0.00	
07/23/96	20	449	11.40	0.091	0.00	0.000	200.00	1.372	0.00	0.000	—	0.000	1.463	446.70	446.70	system operated approx. 102 hrs between 7/2 and 7/23
08/08/96	32	454	18.00	0.143	—	0.000	210.00	1.457	12.00	0.103	—	0.000	1.702	210.53	657.23	system operated approx. 133 hrs between 7/23 and 8/8
08/30/96	0	450	18.00	0.142	—	0.000	210.00	1.444	12.00	0.102	—	0.000	1.687	188.14	845.37	system operated approx. 111 hrs between 8/8 and 8/30
10/02/96	30	448	2.30	0.019	0.00	0.000	—	0.000	—	0.000	NA	0.286	0.305	0.00	845.37	system not in operation from 8/30 to 10/2 due to flow meter problem
10/16/96	30	450	2.30	0.019	0.00	0.000	—	0.000	—	0.000	NA	0.287	0.306	102.58	947.95	system reactivated 10/2/96
11/19/96	30	450	0.38	0.003	0.00	0.000	—	0.000	—	0.000	22.00	0.042	0.045	143.33	1091.28	
12/17/96	30	450	0.12	0.001	0.00	0.000	—	0.000	—	0.000	8.20	0.016	0.017	20.84	1112.12	
01/27/97	30	450	1.35	0.011	0.00	0.000	—	0.000	—	0.000	55.00	0.106	0.117	65.56	1177.68	
03/27/97	30	450	0.00	0.000	0.00	0.000	—	0.000	—	0.000	0.00	0.031	0.031	104.53	1229.95	assume 50% up-time, blowers shutting down due to influent water
04/17/97	30	450	0.00	0.000	0.00	0.000	—	0.000	—	0.000	13.00	0.025	0.025	14.13	1244.08	
05/21/97	15	329	0.00	0.000	0.00	0.000	—	0.000	—	0.000	24.00	0.034	0.034	11.96	1256.03	assume 50% up-time, blowers shutting down due to influent water
06/10/97	15	329	0.25	0.002	0.00	0.000	—	0.000	—	0.000	47.00	0.066	0.067	12.14	1268.17	assume 50% up-time, blowers shutting down due to influent water
07/21/97	15	329	1.89	0.011	0.00	0.000	—	0.000	—	0.000	340.00	0.477	0.488	136.76	1404.93	assume 50% up-time, blowers shutting down due to influent water
08/26/97	15	482	0.73	0.007	0.00	0.000	—	0.000	—	0.000	45.00	0.092	0.099	126.91	1531.85	assume 50% up-time, blowers shutting down due to influent water
09/30/97	15	482	0.34	0.003	0.00	0.000	—	0.000	—	0.000	88.00	0.181	0.184	17.84	1549.68	assume ~15% up-time, blowers shutting down due to influent water
10/23/97	14	589	0.00	0.000	0.00	0.000	—	0.000	—	0.000	100.00	0.251	0.251	120.10	1669.78	
11/20/97	32	590	0.00	0.000	5.45	0.050	—	0.000	—	0.000	160.00	0.403	0.453	118.28	1788.06	assume 50% up-time, blowers shutting down due to influent water
12/29/97	28	590	0.45	0.005	0.00	0.000	—	0.000	—	0.000	45.00	0.113	0.118	133.65	1921.71	assume 50% up-time, blowers shutting down due to influent water
01/22/98	27	471	0.32	0.003	0.00	0.000	—	0.000	—	0.000	24.00	0.048	0.051	24.38	1946.09	assume 50% up-time, blowers shutting down due to influent water
02/12/98	23	295	0.23	0.001	0.00	0.000	—	0.000	—	0.000	29.00	0.036	0.038	11.19	1957.28	assume 50% up-time, blowers shutting down due to influent water
03/24/98	30	245	0.45	0.002	0.00	0.000	—	0.000	—	0.000	22.00	0.023	0.025	24.89	1982.16	system down for approximately one week due to influent water
04/27/98	30	215	0.00	0.000	0.00	0.000	—	0.000	—	0.000	22.00	0.020	0.020	18.47	2000.63	
07/13/98	13	294	0.14	0.001	0.00	0.000	—	0.000	—	0.000	0.00	0.000	0.001	19.34	2019.97	assume 50% up-time, blowers shutting down due to influent water

- Notes:
- 1) Aliphatics are weighted using a response factor of hexane. (MW = 86.2)
  - 2) Aromatics are weighted using a response factor of o-xylene. (MW=106.16)
  - 3) Analytical data for 8/30/96 is assumed based on results of sampling conducted 8/8/96. System was deactivated 8/30/96 due to flow meter failure.
  - 4) Flow rate of 10/16/96 through 4/17/97, 6/10/97 and 7/21/97 is assumed. Air flow meter not in operation.
  - 5) Analytical data for 10/2 is assumed based on data from 10/16/96.
  - 6) Beginning 10/16/96 lab analysis was performed by Mitkem Laboratory. Prior to 10/16/96 air analysis performed by NEI/GTEL
  - 7) Mitkem results report total volatile petroleum hydrocarbons, not misc. aromatics and aliphatics.  
Total Volatile Petroleum Hydrocarbons are weighted to molecular weight of 100.
  - 8) Laboratory results from 11/19/96 to present are reported in mg/m3.

**SYSTEM MONITORING DATA  
SOIL VAPOR EXTRACTION/AIR SPARGE SYSTEM**

New London Naval Submarine Base  
NEX Site  
Groton, CT

Date	Air Sparge Flowrate (scfm)	Extraction Flowrate (total) (scfm)	Influent Concentration BTEX (ppmv)	Removal Rate BTEX (lb/hr)	Influent Concentration MTBE (mg/m3)	Removal Rate MTBE (lb/hr)	Influent Concentration Aliphatics (ppmv)	Removal Rate Aliphatics (lb/hr)	Influent Concentration Aromatics (ppmv)	Removal Rate Aromatics (lb/hr)	Influent Concentration TVPH (mg/m3)	Removal Rate TVPH (lb/hr)	Total Mass Removal Rate (lb/hr)	Period Mass Removed (lbs)	Cumulative Mass Removed (lbs)	Comments
07/31/96	NA*	253	1.80	0.007	NA	0.000	130.00	0.455	0.00	0.000	—	0.000	0.463	0.00	0.00	
08/08/96	NA*	270	1.80	0.008	NA	0.000	130.00	0.486	0.00	0.000	—	0.000	0.494	46.93	46.93	system operated approx. 92 hrs between 7/31 and 8/8
08/22/96	NA*	270	1.80	0.008	NA	0.000	130.00	0.486	0.00	0.000	—	0.000	0.494	52.85	99.78	24-hour per day system operation began 8/8
09/16/96	NA*	320	2.70	0.015	NA	0.000	—	0.000	—	0.000	—	0.346	0.361	256.56	356.34	
10/16/96	NA*	320	2.50	0.014	NA	0.000	—	0.000	—	0.000	—	0.238	0.253	220.98	577.32	
11/19/96	NA*	324	0.95	0.006	0.00	0.000	—	0.000	—	0.000	94.00	0.130	0.135	158.31	735.63	
12/17/96	NA*	310	0.18	0.001	0.24	0.000	—	0.000	—	0.000	29.00	0.038	0.040	58.83	794.47	
01/27/97	NA*	321	0.14	0.001	0.00	0.000	—	0.000	—	0.000	20.00	0.027	0.028	33.39	827.85	
03/27/97	NA**	384	0.00	0.000	NA	0.000	—	0.000	—	0.000	—	0.004	0.004	22.62	850.47	
04/17/97	NA**	721	0.00	0.000	0.00	0.000	—	0.000	—	0.000	12.00	0.037	0.037	10.24	860.71	
05/21/97	6***	360	0.00	0.000	0.00	0.000	—	0.000	—	0.000	0.00	0.000	0.00	15.46	876.17	
06/10/97	2***	300	0.00	0.000	0.00	0.000	—	0.000	—	0.000	0.00	0.000	0.00	0.48	876.65	
07/21/97	36***	358	0.00	0.000	0.00	0.000	—	0.000	—	0.000	8.50	0.013	0.013	6.88	883.53	
08/26/97	28***	223	0.00	0.000	0.00	0.000	—	0.000	—	0.000	0.00	0.000	0.00	6.04	889.57	One blower down due to high water level in moisture trap.
09/30/97	27***	221	2.37	0.009	22.00	0.021	—	0.000	—	0.000	140.00	0.132	0.161	68.15	957.72	One blower down due to high water level in moisture trap.
10/23/97	47***	322	2.47	0.013	62.50	0.086	—	0.000	—	0.000	395.00	0.542	0.641	60.12	1017.84	Two blowers down due to high water level in moisture trap.
11/20/97	47***	213	0.50	0.002	4.10	0.004	—	0.000	—	0.000	68.00	0.062	0.067	69.68	1087.51	One blower down due to high water level in moisture trap.
12/11/97	47	213	0.50	0.002	4.10	0.004	—	0.000	—	0.000	68.00	0.062	0.067	40.27	1127.78	
12/29/97	47	520	0.78	0.007	8.00	0.018	—	0.000	—	0.000	140.00	0.310	0.335	42.29	1170.07	
01/22/98	53	479	2.46	0.020	16.50	0.034	—	0.000	—	0.000	465.00	0.949	1.003	63.09	1233.15	
02/12/98	NA****	324	0.77	0.004	3.85	0.005	—	0.000	—	0.000	67.50	0.093	0.103	248.54	1481.70	
03/24/98	53	249	0.44	0.002	3.00	0.003	—	0.000	—	0.000	33.00	0.035	0.040	32.99	1514.68	
04/27/98	53	170	0.57	0.002	30.50	0.022	—	0.000	—	0.000	76.50	0.055	0.079	36.71	1551.39	
07/13/98	NA****	154	1.96	0.005	0.00	0.000	39.42	0.084	0.00	0.000	—	0.000	0.089	63.76	1615.16	

- Notes:
- \* Air sparge compressor not activated due to elevated SVE influent concentrations.
  - \*\* Air sparge compressor not activated due to improperly sized pressure switch
  - \*\*\* Air sparge compressor activated, but high water levels in the moisture separators cause frequent compressor shut-down.
  - \*\*\*\* Air sparge compressor deactivated on 1/28/98 due to lack of vapor recovery from western portion of site.
- 1) Aliphatics are weighted using a response factor of hexane. (MW = 86.2)
  - 2) Aromatics are weighted using a response factor of o-xylene. (MW=106.16)
  - 3) Analytical data for 7/31/96 is assumed based on results of sampling conducted 8/8/96.
  - 4) Analytical data for 8/22/96 is assumed based on results of sampling conducted 8/8/96.
  - 5) Air flow rate from 10/16/96 assumed for 9/16/96, due to a broken flow meter
  - 6) Beginning 9/16/96 lab analysis was performed by Mitkem Laboratory. Prior to 9/16/96 air analysis performed by NEI/GTEL
  - 7) Mitkem results report total volatile petroleum hydrocarbons, not misc. aromatics and aliphatics.  
Total Volatile Petroleum Hydrocarbons are weighted to molecular weight of 100.
  - 8) System modifications to allow continuous dewatering were conducted on December 11, 1997.  
The data for this date was assumed to be the same as November that for November 20, 1997.  
Flow rates for this date have been interpolated from 11/20/97 and 12/29/97 data.
  - 9) 4/27/98 TVPH results reported as C5-C12 Aliphatics and C9-C10 Aromatics. Ppmv equivalents have been estimated.

**ATTACHMENT 4**

**HISTORICAL WELL GAUGING DATA**

Well Gauging Data  
Dolphin Mart Site  
Groton Naval Submarine Base  
Groton, Connecticut

Date	Depth to Water (ft)																			
	Well ID																			
	DM-1	DM-2	DM-3	DM-4	DM-5	HRP-10	HRP-11	MW-1	MW-2	MW-3	OBG8A	OBG9A	WE-1	WE-1A	WE-2D	WE-2S	WE-3	WE-4	WE-5	WE-6
07/02/96	6.37	NG	NG	NG	NG	4.65	NG	4.65	3.55	3.12	NG	0.82	DRY	DRY	6.56	6.78	8.67	4.24	4.80	3.40
07/03/96	NG	NG	NG	NG	NG	5.19	NG	4.63	2.86	0.00	NG	0.89	NG	NG	6.35	6.58	8.69	6.38	4.33	2.30
07/12/96	NG	NG	NG	NG	NG	5.81	NG	5.01	3.82	1.95	NG	1.85	NG	NG	6.83	6.96	8.93	6.38	4.98	3.60
07/16/96	NG	NG	NG	NG	NG	4.33	NG	4.55	2.89	0.74	NG	0.69	NG	NG	6.24	6.47	8.50	6.27	4.08	2.76
07/17/96	NG	NG	NG	NG	NG	2.73	NG	4.94	1.63	2.79	NG	0.00	NG	NG	5.88	6.30	8.62	6.47	3.62	1.72
07/19/96	NG	NG	NG	NG	NG	4.38	NG	5.21	0.61	0.00	NG	0.00	NG	NG	5.53	6.18	8.45	NG	3.19	1.08
07/22/96	NG	NG	NG	NG	NG	4.54	NG	4.82	1.95	1.17	NG	0.00	NG	NG	6.42	6.45	8.64	3.68	3.73	1.96
07/23/96	NG	NG	NG	NG	NG	4.55	NG	4.75	3.33	0.00	NG	0.20	NG	NG	6.33	6.70	8.72	8.72	4.49	2.40
07/24/96	NG	NG	NG	NG	NG	4.33	NG	5.22	1.18	0.00	NG	0.00	NG	NG	5.67	6.31	8.45	3.38	3.33	1.49
07/25/96	NG	NG	NG	NG	NG	4.46	NG	5.31	NG	NG	NG	0.16	NG	NG	NG	NG	NG	NG	NG	2.12
07/26/96	NG	NG	NG	NG	NG	4.43	NG	4.79	NG	NG	NG	0.00	NG	NG	NG	NG	NG	NG	NG	2.95
08/01/96	NG	NG	NG	NG	NG	3.93	NG	4.96	2.20	1.28	NG	NG	NG	NG	6.09	6.39	8.55	3.22	4.06	1.15
08/02/96	NG	NG	NG	NG	NG	4.08	NG	5.24	1.82	1.31	NG	0.00	NG	NG	5.73	6.30	8.56	2.96	3.76	0.86
08/05/96	NG	NG	NG	NG	NG	4.35	NG	5.08	NG	1.08	NG	0.00	NG	NG	NG	NG	NG	NG	NG	1.28
09/04/96	NG	NG	NG	NG	NG	5.43	NG	6.07	4.59	DRY	NG	NG	NG	NG	7.51	7.39	9.73	5.11	6.23	4.59
10/02/96	NG	NG	NG	NG	NG	3.53	NG	5.43	NG	3.86	NG	NG	NG	NG	5.82	6.41	8.41	3.11	3.96	1.60
10/21/96	NG	NG	NG	NG	NG	3.98	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	2.43
11/19/96	1.90	NG	2.06	2.68	5.37	4.15	NG	3.85	3.00	DRY	NG	NG	NG	NG	5.89	6.46	8.32	3.53	3.87	2.90
12/17/96	2.53	NG	1.60	NG	3.67	NG	NG	3.85	2.17	NG	NG	NG	NG	NG	NG	6.10	7.92	2.17	2.96	2.10
01/27/97	1.91	NG	1.89	NG	4.26	3.29	NG	2.53	2.13	NG	NG	NG	NG	NG	5.73	6.24	7.94	3.08	3.26	1.53
02/18/97	1.93	NG	1.90	2.04	NG	4.04	NG	2.98	2.56	2.28	NG	NG	NG	NG	5.84	6.32	7.95	3.49	3.21	2.55
03/27/97	1.89	2.27	1.86	2.41	4.60	4.04	3.21	2.91	1.86	1.27	NG	NG	5.03	DRY	5.45	6.21	8.08	1.66	3.51	1.15
04/17/97	NG	NG	NG	NG	NG	5.25	NG	3.48	1.94	1.39	NG	NG	NG	NG	NG	NG	NG	3.00	3.18	1.30
05/21/97	2.04	2.39	2.08	3.08	5.19	4.11	3.43	3.14	2.93	2.44	NG	NG	DRY	DRY	6.11	NG	8.20	3.73	4.07	2.84
08/27/97	NG	NG	NG	NG	NG	5.01	4.10	3.60	4.28	DRY	NG	2.46	NG	NG	7.03	NG	9.54	4.69	5.77	4.07
11/21/97	2.26	3.20	2.56	3.33	6.83	4.43	3.77	5.33	3.84	3.06	2.26	0.95	DRY	DRY	6.66	6.97	8.86	7.53	5.29	3.56
02/11/98	1.79	2.63	1.61	1.84	3.87	3.64	3.08	3.23	1.34	1.88	1.47	1.31	NG	NG	5.49	6.29	8.33	2.14	2.87	1.35
05/11/98	1.80	1.85	1.50	2.34	2.41	3.65	3.16	1.81	1.99	4.08	0.31	0.98	NG	NG	5.16	6.18	7.91	7.51	2.50	2.02

Notes: WE-2D, WE-2S, and WE-3 are covered by stand pipes.  
NG = Not Gauged

Sampling Data  
Site  
New London Naval Submarine Base  
Groton, Connecticut

Date	Depth to Water/Depth to Product (ft)																									
	Well ID																									
	ERM-5	ERM-6	ERM-7	ERM-8	ERM-9	ERM-10	ERM-11	ERM-12	ERM-13	ERM-14	ERM-15	ERM-16	ERM-17	ERM-18	ERM-19	NEX-1	OBG-1	OBG-2	OBG-4	OBG-6	OBG-7	OBG-8	OBG-9	MW-4	MW-6	
09/16/96	3.82	5.14	5.27	NG	NG	NG	NG	8.38	7.01	6.89	4.30	8.51	5.62	3.65	5.28	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	
10/16/96	NG	4.82	4.75	NG	NG	NG	6.4	8.13	7.15	6.92	3.94	8.49	5.56	3.96	5.17	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	
11/18/96	3.72	4.64	4.93	NG	NG	NG	6.36	8.09	7.13	7.10/6.91	4.03	8.43	5.53	NG	5.19	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	
12/16/96	3.10	4.08	4.21	NG	NG	NG	5.02	7.83	6.55	6.35	NG	7.8	3.73	NG	4.23	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	
02/17/97	3.00	4.34	4.29	NG	NG	NG	4.89	7.65	6.03	5.89	NG	7.85	4.53	NG	4.18	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	
03/27/97	2.89	4.28	4.19	NG	NG	NG	5.19	7.63	5.98	5.82	NG	7.79	4.87	NG	4.06	5.81	8.12	7.95	7.75	7.95	5.61	NG	5.54	4.91	4.49	
04/15/97	NG	NG	NG	NG	NG	NG	NG	NG	5.86	5.7	3.39	7.84	4.84	NG	NG	5.74	NG	7.92	7.75	NG	NG	NG	5.54	NG	NG	
04/17/97	2.73	NG	NG	NG	NG	NG	NG	NG	NG	5.66	3.31	NG	4.67	NG	3.91	NG	NG	7.91	7.78	NG	NG	NG	5.58	NG	NG	
04/24/97	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	NG	7.74	NG	NG	NG	NG	NG	NG	NG	
05/21/97	NG	4.72	4.61	NG	NG	NG	6.27	7.81/7.80	6.15	6.04/5.99	NG	8.16	5.26	NG	4.46	5.80	7.98	7.81	7.64	NG	5.79	5.60	5.84/5.31	NG	4.85	
08/28/97	NG	5.29	6.49	NG	NG	NG	7.65	NG	7.24	7.24/7.01	NG	sheen/8.63	5.77	NG	5.41	6.15	8.22	8.03	7.9	NG	6.49	NG	6.56/6.45	NG	5.34	
11/20/97	4.35	5.24	5.35	NG	NG	NG	6.89	8.23	7.84	7.63	4.46	8.77	5.77	NG	5.79	6.45	8.43	8.23	8.07	NG	7.09	NG	7.06	NG	5.33	
02/12/98	3.59	4.68	4.71	NG	NG	NG	5.04	7.99	6.71	6.59	3.54	8.18	5.14	NG	4.44	5.28	8.19	8.01	7.84	NG	5.84	NG	NG	NG	4.92	
05/12/98	2.09	2.69	3.32	NG	NG	NG	4.39	7.90	5.23	6.09	2.63	7.32	2.98	NG	3.43	5.20	7.88/7.87	7.71	7.51	NG	4.56	NG	4.60/4.58	4.16	3.74	

Notes: NG = Not Gauged

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**ATTACHMENT 5**

**HISTORICAL GROUNDWATER SAMPLING RESULTS**

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 1 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
DM-1	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	4.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	5	1,000	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	3	<1.0	3	<1.0	<500	6	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 2 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
DM-2	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	4.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	8	<500	8	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	5	<500	5	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	2	1,500	2	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Table 1

**Historical Groundwater Sampling Results  
Dolphin Mart - March 1995 - May 1998  
Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 3 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
DM-3	3/95	<1.0	<1.0	<1.0	<1.0	7.90	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	7	<500	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)

Bold numbers indicate an exceedance of State of CT Clean-up Standards

B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range

DRO=Diesel Range Organics, GRO=Gasoline Range Organics

<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 4 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
DM-4	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	5	600	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<b>2</b>	<1.0	<1.0	<1.0	<b>3</b>	<500	<b>5</b>	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>800</b>	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>700</b>	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)

Bold numbers indicate an exceedance of State of CT Clean-up Standards

B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range

DRO=Diesel Range Organics, GRO=Gasoline Range Organics

<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 5 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
DM-5	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	6	<500	<500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	700	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	1,200	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 6 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
HRP-10	3/95	<b>304</b>	35.2	257	<b>1140</b>	<50	<b>6,080</b>	NS	NS	NS
	5/96	<b>125</b>	21	54	329	<20	<b>1,740</b>	NS	NS	NS
	11/96	<b>9</b>	<1.0	65	<1.0	<b>7</b>	<1,000	81	600	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<b>3</b>	<500	3	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<b>3.0</b>	<b>800</b>	3.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>700</b>	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
**Bold numbers indicate an exceedance of State of CT Clean-up Standards**  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Page 1  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 7 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
HRP-11	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	1.0	<1.0	<1.0	3.0	<2.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Table 1  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 8 of 16

Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
MW-1	11/96	<b>3</b>	<1.0	5	<1.0	<1.0	<1,000	11	1,000	<500
	2/97	<1.0	<1.0	4	<1.0	<1.0	<500	4	<500	600
	5/97	<1.0	<1.0	4	<1.0	<1.0	<500	6	700	760
	8/97	<1.0	<1.0	16	2B	<1.0	1,000	18	800	600
	11/97	2	<1.0	9	<1.0	<1.0	<500	11	NS	NS
	2/98	<1.0	1	4	<1.0	<1.0	800	5	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
**Bold numbers indicate an exceedance of State of CT Clean-up Standards**  
**B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range**  
**DRO=Diesel Range Organics, GRO=Gasoline Range Organics**  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 9 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
MW-2	11/96	<b>4</b>	<1.0	14	<1.0	<b>4</b>	<b>&lt;1,000</b>	28	1,200	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<b>1,000</b>	1 B	1,200	1,200
	5/97	<1.0	<1.0	3	<1.0	<1.0	<500	3	500	580
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<b>2</b>	<1.0	3	1	<b>3</b>	<500	9	NS	NS
	2/98	<b>2</b>	1	6	<1.0	<1.0	<b>700</b>	9	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<b>3</b>	<b>500</b>	3	NS	NS
MW-3	2/97	<b>36</b>	23	72	500	<b>5</b>	<b>2,000</b>	645 B	3,300	1,600
	5/97	<b>60</b>	38	69	<b>730D</b>	<1.0	<b>5,000</b>	897D	7,900	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	2	3	56	<1.0	<500	61	NS	NS
	2/98	<1.0	<1.0	<1.0	1.0	<1.0	<b>21,000</b>	1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 10 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	630	100	500	NA	NA	NA	
Well	Date									
OBG-8A	3/95	<b>72</b>	24.6	25.9	62.4	9.29	<473	NS	NS	NS
	5/96	<b>12.0</b>	<1.0	9.0	4.0	<2.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<b>3</b>	25	5	5	<1.0	<500	38	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	9,300	<1.0	NS	NS
	5/98	<1.0	2	<1.0	2	<1.0	3,800	4	NS	NS

Notes: NS = Not sampled (NS results have been shaded)

Bold numbers indicate an exceedance of State of CT Clean-up Standards

B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range

DRO=Diesel Range Organics, GRO=Gasoline Range Organics

<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Table 1

**Historical Groundwater Sampling Results  
Dolphin Mart - March 1995 - May 1998  
Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 11 of 16

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
OBG-9A	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<b>3,000</b>	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	3.0	<b>11,000</b>	3.0	2,200	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>3,100</b>	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>2,100</b>	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)

Bold numbers indicate an exceedance of State of CT Clean-up Standards

B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range

DRO=Diesel Range Organics, GRO=Gasoline Range Organics

<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 412.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
WE-2D(B)	11/96	1	<1.0	<1.0	<1.0	<1,000	3	<500	<500	
	2/97	2	<1.0	<1.0	<1.0	3	5	<500	<500	
	5/97	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500	
	8/97	<1.0	<1.0	<1.0	<1.0	4.0	11,000	4.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	1,000	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	3	1,500	3	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Table 1  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		1.0	1,000	700	530	100	500	NA	NA	NA
Well	Date									
WE-2S	3/95	<b>37.9</b>	24.2	60.3	126.4	21.3	<b>725</b>	NS	NS	NS
	5/96	<b>50</b>	22	101	144	<10	<b>1,570</b>	NS	NS	NS
	11/96	<b>7</b>	<1.0	9	4	14	<b>&lt;1,000</b>	34	<500	<500
	2/97	<b>5</b>	<1.0	14	3	10	<b>&lt;500</b>	32	500	600
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<b>&lt;500</b>	<1.0	NS	NS
	2/98	<b>4</b>	<1.0	<1.0	15	7	<b>&lt;500</b>	26	NS	NS
	5/98	<b>2</b>	<1.0	10	<1.0	7	<b>1,200</b>	19	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Table 1  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
WE-3	3/95	<1.0	<1.0	<1.0	<1.0	8.70	<473	NS	NS	NS
	5/96	<b>2.0</b>	<1.0	<1.0	<1.0	14.0	<473	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	<1.0	<1.0	<1.0	<1.0	6	<500	6	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	220	3,000	220	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	38	<500	38	NS	NS
	2/98	<b>2</b>	<1.0	<1.0	<1.0	160D	<500	162	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	2	<500	2	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Page 1  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
WE-4	3/95	267	29.8	392	712	<40	5,180	NS	NS	NS
	5/96	160	16	301	617	<40	3,680	NS	NS	NS
	11/96	41	1.0	100	2	19	<1,000	166	1,100	500
	2/97	21	<1	27	1	17	<500	66	500	700
	5/97	13	<1.0	13	<1.0	19	<500	45	700	540
	8/97	7.0	<1.0	19	3B	3B	700	44	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	1,300	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	600	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

**Table 1**  
**Historical Groundwater Sampling Results**  
**Dolphin Mart - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8100M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	530	100	500	NA	NA	NA	
Well	Date									
WE-5	11/96	<b>240D</b>	410D	<b>720D</b>	<b>4,300E</b>	27	<b>9,000</b>	5,697	12,000	8,900
	2/97	<b>42D</b>	10	89D	490D	6	<b>2,000</b>	637	2,000	1,200
	5/97	<b>370</b>	190	<b>840</b>	<b>3,900D</b>	<1.0	<b>4,000</b>	5,300	11,000	16,000
	8/97	<b>210D</b>	<1.0	210D	470DB	63D	<b>5,000</b>	953	3,900	2,500
	11/97	<b>11</b>	<1.0	2	6	27	<b>1,100</b>	46	NS	NS
	2/98	<b>11</b>	<1.0	10	14	3	<b>1,800</b>	38	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>1,400</b>	<1.0	NS	NS
WE-6	11/96	<b>5</b>	210D	<b>71D</b>	<b>630D</b>	<1.0	<1,000	916	2,000	1,400
	2/97	<b>3</b>	4	8	12	2	<500	29	800	700
	5/97	<b>3</b>	1.0	12	<1.0	<1.0	<500	15	1,200	1,200
	8/97	<1.0	1.0	<1.0	28	<1.0	<b>1,000</b>	29	<500	<500
	11/97	<b>2</b>	<1.0	3	2	4	<500	11	NS	NS
	2/98	<b>2</b>	<1.0	5	3	4	500	14	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<b>1,000</b>	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
B = Analyte detected in method blank, D = Analyte concentration was obtained from a diluted analysis, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
<sup>1</sup> = TPH on 5/98 was analyzed using EPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l).  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1)	Total Volatiles (by EPA Method 8010/B020)	DRO	GRO	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	215	23,500	21,300	50,000	50,000	NA	NA	NA	NA	
Well	Date									
ERM-5	3/95	967	431	390	1,340	<100	NS	3,295.1	430	8,250
	5/96	112	6	34	28	<10	NS	196	159	554
	11/96	370D	14	33	61D	<1.0	3,000	480	1,100	1,600
	2/97	1,100	1,100	580	1,600	<50	3,000	4,440 B	3,900	9,100
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	730	250	870	620	<10	2,300	2,470	NS	NS
	2/98	310	460	300	710	<10	5,400	1,780	NS	NS
	5/98	790	280	1,200	4,900	<100	9,200	7,170	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	58,000	NA	NA	NA	NA
Well	Date									
ERM-6	5/96	15	<1.0	<1.0	<1.0	<2.0	NS	35	63	<473
	11/96	<b>610</b>	230	770	2,400E	<40	5,000	4,054	500	7,800
	2/97	<b>430D</b>	21	300	1,000D	<10	2,000	1,763 B	2,200	4,800
	5/97	<b>430D</b>	21	640D	2,300D	<1.0	1,000	3,391D	1,500	6,700
	8/97	<b>470</b>	90	650	2,000	<1.0	2,000	3,210	3,500	6,200
	11/97	<b>250D</b>	23	260D	530D	<1.0	<500	1,063	NS	NS
	2/98	<b>97D</b>	13	110D	240D	<1.0	<500	460	NS	NS
	5/98	21	4	28	78	<1.0	<500	131	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-7	5/96	5	<1.0	<1.0	<1.0	<2.0	NS	8	38	<473
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	4	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	1	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M.

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-8 (destroyed)	3/95	109	11.5	272	157	<50	NS	665.4	464	2,350
	5/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Historical Groundwater Sampling Results  
NEX - March 1995 - May 1998  
Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 5 of 18

Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	215	23,500	21,300	50,000	50,000	NA	NA	NA	NA	
Well	Date									
ERM-9 (destroyed)	5/96	<1.0	<1.0	<1.0	<1.0	2	NS	4	3,310	<473
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes: NS = Not sampled (NS results have been shaded)

Bold numbers indicate an exceedance of State of CT Clean-up Standards

D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range

DRO=Diesel Range Organics, GRO=Gasoline Range Organics

L P = Liquid-phase petroleum present; well could not be sampled

<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-11	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	3	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	2	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-12	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	NS	1	27	<473
	5/96	1	2	7	14	<2.0	NS	61	4,300	1,390
	11/96	<1.0	2	<1.0	9	<1.0	3,000	16	7,300	6,700
	2/97	<1.0	1	2	9	<1.0	15,000	13	4,800	1,300
	5/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	<1.0	<1.0	<1.0	4	<1.0	7,100	4	NS	NS
	2/98	<1.0	<1.0	<1.0	1	<1.0	23,000	1	NS	NS
	5/98	<1.0	<1.0	2	2	<1.0	5,400	4	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
page 8 of 18

Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (By EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-13	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	NS	534	50	<473
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	NS	9	<100	<473
	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	2	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-14	3/95	292	4,880	8,190	6,020	<2.0	NS	19,995	4,840	3,670
	5/96	305	5,670	1,250	8,350	<2.0	NS	22,543	7,290	3,890
	11/96	270	8,300D	1,700D	11,000D	<25	7,000	21,270	12,000	30,000
	2/97	140	4,500D	980	7,100	<100	60,000	12,840	20,000	20,000
	5/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	8/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	11/97	40	2,300D	700D	2,500D	<1.0	4,600	5,540	NS	NS
	2/98	<1.0	930	210	2,800	<1.0	28,000	3,940	NS	NS
	5/98	80	2,200	690	5,400	<1.0	11,000	8,370	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.3) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,560	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-15	11/96	280	760	330	1,100	<40	1,000	2,517	2,300	4,500
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	210	630	240	120	<10	<500	1,200	NS	NS
	2/98	8	9	4	25	<1.0	600	46	NS	NS
	5/98	1,100	2,700	810	3,200	<50	11,000	7,810	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-16	11/96	37	<2.0	13	16	30	<1,000	68	4,400	2,000
	2/97	56D	<1.0	16	34	27	6,000	136	11,000	1,400
	5/97	34	<1.0	20	42	11	26,000	107	60,000	2,000
	8/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	11/97	5	<1.0	7	30	<1.0	15,000	42	NS	NS
	2/98	8	<1.0	3	15	6	25,000	32	NS	NS
	5/98	25	<1.0	9	18	13	4,800	65	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-17	11/96	10	<1.0	<1.0	<1.0	9	<1,000	11	600	600
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	1,000	<1.0	500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	1,500	<500
	8/97	12	<1.0	<1.0	<1.0	<1.0	1,000	12	1,000	500
	11/97	2	<1.0	<1.0	<1.0	<1.0	<500	2	NS	NS
	2/98	3	<1.0	<1.0	<1.0	<1.0	<500	3	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

Table 2  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
ERM-19	11/96	<1.0	<1.0	<1.0	<1.0	<1.0	<1,000	1	<500	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
FD-1	5/98	210	3	140	29	66	48,000	448	NS	NS
FD-2	5/98	63	<1.0	<1.0	3	31	14,000	97	NS	NS
FD-3	5/98	<1.0	<1.0	<1.0	<1.0	9	<500	9	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	215	23,500	21,300	50,000	50,000	NA	NA	NA	NA	
Well	Date									
MW-4	2/97	29	1	<1.0	3	<1.0	NS	33	NS	NS
	5/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	15	2	<1.0	<1.0	<1.0	1,000	17	NS	NS
MW-6	2/97	<1.0	9	<1.0	<1.0	<1.0	NS	9	NS	NS
	5/97	18	<1.0	2	8.0	<1.0	<500	28	<500	<500
	8/97	35D	1.0	<1.0	8.0	<1.0	<500	46	<500	<500
	11/97	6	<1.0	<1.0	3	<1.0	<500	9	NS	NS
	2/98	8	<1.0	<1.0	3	<1.0	<500	11	NS	NS
	5/98	1	<1.0	<1.0	<1.0	<1.0	<500	1	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	215	23,500	21,300	50,000	50,000	NA	NA	NA	NA	
Well	Date									
NEX-1	3/95	<1.0	<1.0	<1.0	<1.0	<2.0	NS	7	35	<143
	5/96	<1.0	<1.0	<1.0	<1.0	<2.0	NS	8	<122	<143
	11/96	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/97	2	11	4	34	<1.0	<500	57	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	3.0	<500	<500
	11/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
OBG-1	5/97	480	3,300D	1,100D	10,000D	540	110,000	15,420	260,000	49,000
	8/97	1,600	6,200	1,700	12,000	810	220,000	22,310	580,000	56,000
	11/97	1,600	8,800	2,300	16,000	38,000	21,000	66,700	NS	NS
	2/98	1,400	7,100D	2,200	15,000D	24,000D	160,000	49,700	NS	NS
	5/98	LP	LP	LP	LP	LP	LP	LP	LP	LP
OBG-2	5/97	77	280	530	9,800D	290	87,000	10,977	120,000	44,000
	8/97	470	410	1,100	11,000	830	180,000	13,990	99,000	75,000
	11/97	370	380	960	9,200	40,000	23,000	50,910	NS	NS
	2/98	410	340	680	7,900	26,000D	120,000	35,330	NS	NS
	5/98	570	<1.0	650	6,300	15,000	33,000	22,520	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound	BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8016/8020)	DRO	GRO	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	215	23,500	21,300	50,000	50,000	NA	NA	NA	NA	
Well	Date									
OBG-4	2/97	<1.0	<1.0	<1.0	<1.0	NS	<1.0	NS	NS	
	5/97	<1.0	<1.0	<1.0	2	<1.0	6,000	2	3,100	<500
	8/97	<1.0	<1.0	<1.0	<1.0	4.0	1,000	4.0	3,500	<500
	11/97	<1.0	3	<1.0	7	8	NS	18	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	<1.0	<1.0	<1.0	<1.0	5	4,100	5	NS	NS
OBG-7	5/97	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500	
	8/97	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500	
	11/97	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS	
	2/98	<1.0	<1.0	<1.0	<1.0	<500	<1.0	NS	NS	
	5/98	<1.0	<1.0	<1.0	<1.0	<1.0	900	<1.0	NS	NS

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
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DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
L P = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M

**Table 2**  
**Historical Groundwater Sampling Results**  
**NEX - March 1995 - May 1998**  
**Naval Submarine Base, Groton, CT**

(analytical results in µg/l)  
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Compound		BTEX				MTBE	TPH (By EPA Method 418.1) <sup>1</sup>	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		215	23,500	21,300	50,000	50,000	NA	NA	NA	NA
Well	Date									
OBG-8 (destroyed)	5/97	<1.0	<1.0	<1.0	<1.0	<1.0	<500	<1.0	<500	<500
	8/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	11/97	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
OBG-9	5/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	8/97	LP	LP	LP	LP	LP	LP	LP	LP	LP
	11/97	490	4,800	2,100	16,000	<200	24,000	23,390	NS	NS
	2/98	NS	NS	NS	NS	NS	NS	NS	NS	NS
	5/98	LP	LP	LP	LP	LP	LP	LP	LP	LP

Notes: NS = Not sampled (NS results have been shaded)  
Bold numbers indicate an exceedance of State of CT Clean-up Standards  
D = Analyte concentration was obtained from a diluted analysis, B = Analyte detected in method blank, E = Analyte concentration exceeded the calibration range  
DRO=Diesel Range Organics, GRO=Gasoline Range Organics  
LP = Liquid-phase petroleum present; well could not be sampled  
<sup>1</sup> = TPH on 5/98 was analyzed using GPA Method 8100M