

N00129.AR.001251

NSB NEW LONDON

5090.3a

**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: April 1998

Prepared By:

Fluor Daniel GTI, Inc.

Prepared by:



Barry A. Kline, P.E.
Lead 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. As of April 27, 1998, thirteen (13) horizontal vapor extraction trenches (VET-1, VET-2, VET-3, VET-4, VET-5, VET-6, VET-7, VET-8, VET-9, VET-10, VET-11, VET-12, and VET-17) and seven (7) air sparge points (ASP-A, ASP-B, ASP-C, ASP-D, ASP-E, ASP-F, and ASP-G) were operating. VET-13 through VET-16 and air sparge points ASP-H through ASP-Q are currently not operating due to high groundwater conditions and low dissolved VOC concentrations in their vicinity. The SVE system is currently extracting subsurface air at a flow rate of approximately 215 scfm. The air sparge system is currently injecting air at a flow rate of approximately 30 scfm. A site map has been included as **Figure 1**. The site monitoring forms for O&M conducted during the month of April, 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 April 27, 1998, was 0.02 lbs/hour. During the period from March 27, 1998 to April 27, 1998, approximately 18 lbs of hydrocarbons were extracted by the remediation system. The total hydrocarbon mass extracted by the remediation system, as of April 27, 1998, was approximately 1,999 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 CTDEP air quality guidelines was observed.

Carbon Usage - No carbon change-out occurred during the month of April, 1998. The last carbon change at the site occurred August 27, 1996.

Discharge Monitoring Sampling - Discharge sampling for the system was conducted on April 27, 1998.

Monitoring Well Gauging - The site monitoring wells were last gauged on February 11, 1998 during the quarterly groundwater sampling event. Depth to groundwater at the site ranged from 1.31 feet in OBG-9A to 8.33 feet in WE-3. Historical well gauging data has been included in **Attachment 4**.

Monitoring Well Sampling - Monitoring well sampling was conducted on February 12, 1998 and March 25, 1998. The February Quarterly Groundwater Sampling Report was issued May 4, 1998. The historical groundwater sampling results have been summarized in **Attachment 5**.

Additional Activities - None.

NEX AIR SPARGE/SVE SYSTEM

System Status - The remediation system at the site has been operating since July 31, 1996. As of April 27, 1998, all thirty-five (35) soil vapor extraction wells were operating. The SVE system is currently extracting subsurface air at an average flow rate of approximately 170 scfm. The air sparge system was activated April 17, 1997. As of April 27, 1998, twenty-one (21) air sparge points (SPA-28 through SPA-34, SPA-36, SPA-37, and SPB-15 through SPB-26) were operating. The air sparge system is currently injecting air at a flow rate of approximately 53 scfm. The air sparge system has periodically shut down due to the deactivation of the extraction blowers on moisture trap high liquid level alarms. Approximately 76,853 gallons of water have been extracted, treated, and discharged by the NEX system as of April 27, 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 April 27, 1998, was 0.08 lbs/hour. During the period from March 24, 1998 to April 27, 1998, an estimated 37 lbs of hydrocarbons were extracted by the remediation system. The total hydrocarbon mass extracted by the remediation system, as of April 27, 1998, is approximately 1967 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 - No carbon change-out occurred during the month of April 1998. The last carbon change occurred August 8, 1996.

Discharge Monitoring Sampling - Discharge monitoring sampling at the site was conducted on April 27, 1998.

Monitoring Well Gauging - The site monitoring wells were last gauged on February 12, 1998 during the quarterly groundwater sampling event. Depth to groundwater at the site ranged from 2.54 feet in HNU-17 to 8.19 feet in OBG-1. On March 24, 1998, during a partial round of gauging of select wells (monitoring wells which had historically contained LNAPL), an LNAPL sheen was detected in wells OBG-9 and ERM-14. The product recovered from the petroleum absorbent "socks" previously placed in the wells was approximately 0.1 pint. Historical well gauging data is included in **Attachment 4**.

Monitoring Well Sampling - Monitoring well sampling was last conducted on February 12, 1998. The February Quarterly Groundwater Sampling Report was issued May 4, 1998. The historical groundwater sampling results have been summarized in **Attachment 5**.

Additional Activities - During excavation for a shallow electrical line near the NEX remediation system building, the Public Works Department broke the effluent line from the water treatment system. The line was subsequently repaired by the Public Works Department.

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			
LTN	DESCRIPTION	PREP'D BY	DATE APPROVED

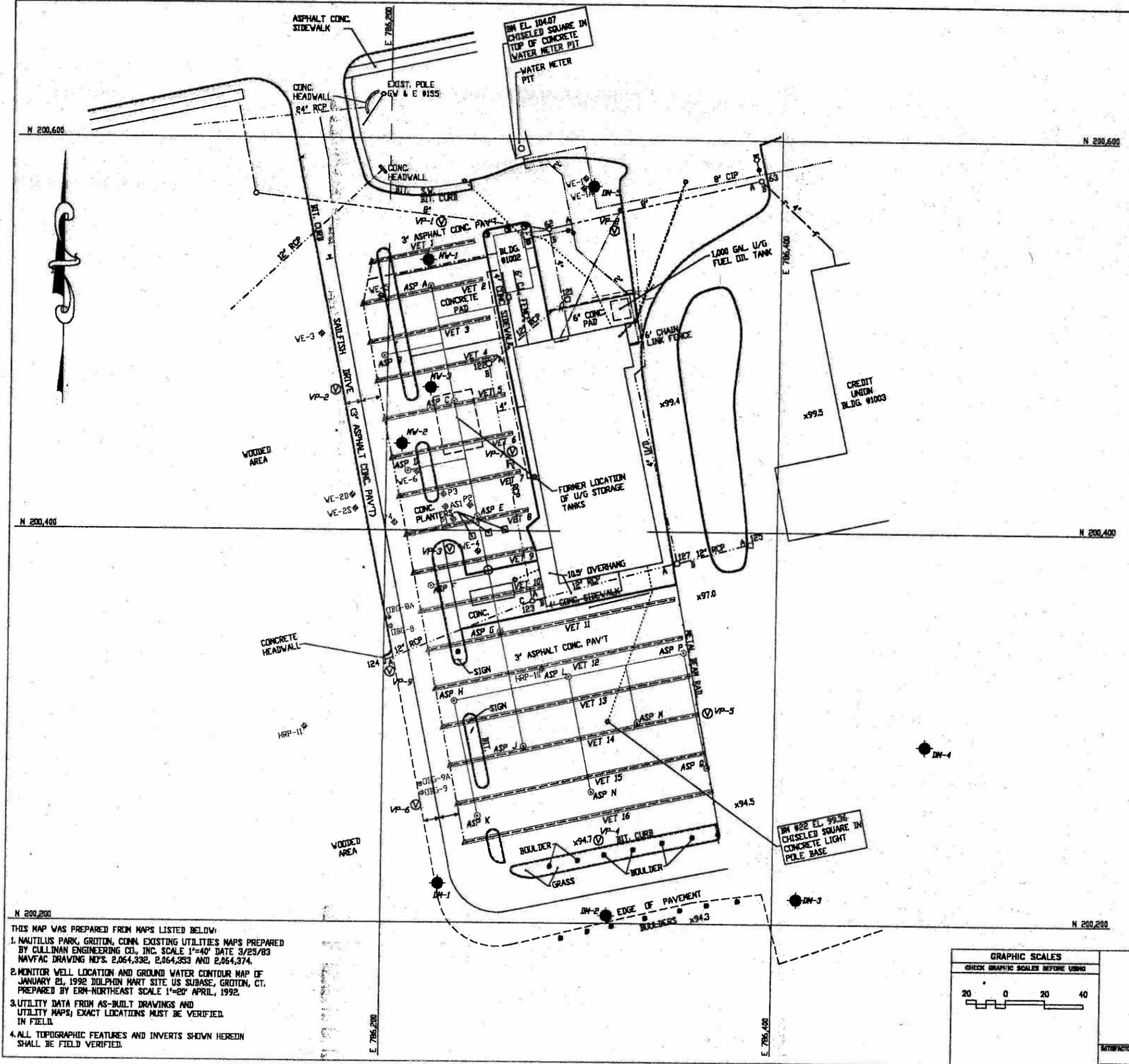
HIGHEST RECORDED GROUND WATER ELEVATIONS

WELL NO.	GROUNDWATER ELEVATION
VE-1A	96.84
VE-2S	94.25
VE-2D	94.31
VE-3	93.93
VE-4	94.11
VE-5	95.40
VE-6	95.41
DBG-8A	93.70
DBG-9A	94.80
HRP-10	93.5 (ESTIMATED)
HRP-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.

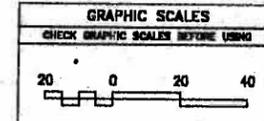
SOIL VAPOR EXTRACTION TRENCH PIPE ELEVATIONS - DOLPHIN MART

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	99.41	99.46
VET 2	94.64	98.80	98.85
VET 3	94.48	98.19	98.24
VET 4	94.32	97.50	97.62
VET 5	94.16	96.78	97.30
VET 6	94.00	96.20	97.20
VET 7	93.84	95.65	97.00
VET 8	93.68	95.13	96.80
VET 9	93.52	94.62	96.60
VET 10	93.36	93.52	96.40
VET 11	93.20	93.37	95.80
VET 12	93.04	93.23	95.22
VET 13	92.88	93.09	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

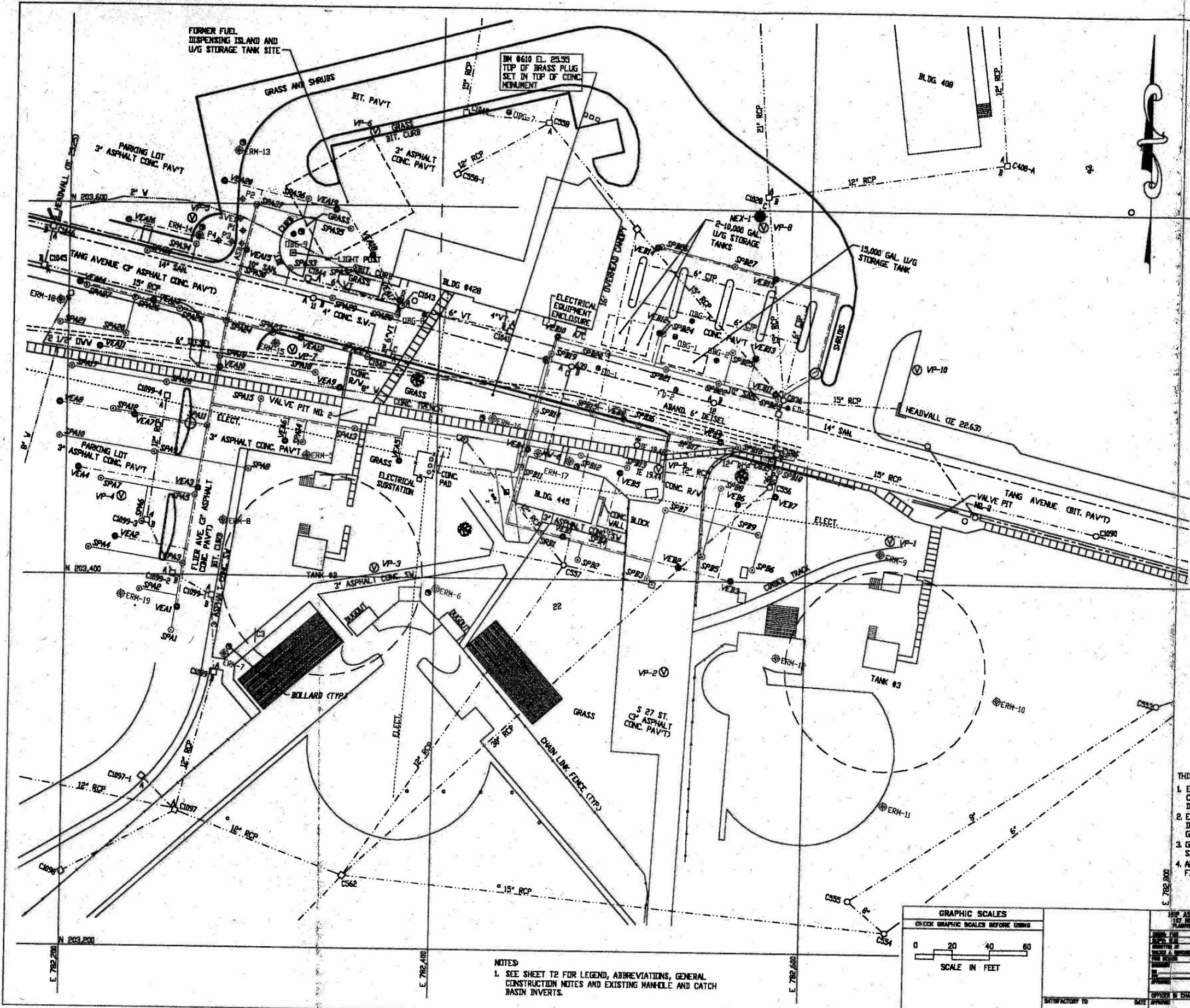


THIS MAP WAS PREPARED FROM MAPS LISTED BELOW:
 1. NAUTILUS PARK, GROTON, CONN. EXISTING UTILITIES MAPS PREPARED BY CULLINAN ENGINEERING CO., INC. SCALE 1"=40' DATE 3/25/83 NAVFAC DRAWING NOS. 2,064,332, 2,064,353 AND 2,064,374.
 2. MONITOR WELL LOCATION AND GROUND WATER CONTOUR MAP OF JANUARY 21, 1992 DOLPHIN MART SITE US SUBBASE, GROTON, CT. PREPARED BY ERM-NORTHEAST SCALE 1"=20' 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 HEREIN SHALL BE FIELD VERIFIED.

NOTES:
 1. SEE SHEET T2 FOR LEGEND, ABBREVIATIONS GENERAL CONSTRUCTION NOTES AND EXISTING MANHOLE AND CATCH BASIN INVERTS.



HRP ASSOCIATES, INC. 177 WEST MAIN AVE. HARTFORD, CT 06105 PREPARED BY: [] CHECKED BY: [] DATE: [] APPROVED BY: [] DATE: []	DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NORTHERN DIVISION NEW LONDON, CONNECTICUT
	REMEDIATION OF CONTAMINATED SOIL/GROUND WATER FIGURE 1 - SITE PLAN DOLPHIN MART
CONTRACT NO. 80091 SHEET NO. 04-83-0006 SHEET 8 OF 84	DRAWING NO. 2166440 C2-1



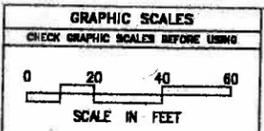
REVISIONS				
LTR	DESCRIPTION	PREP'D BY	DATE	APPROVED

HIGHEST RECORDED GROUND WATER ELEVATION			
WELL NO.	GROUND WATER EL.	WELL NO.	GROUND WATER EL.
DBG-1	16.73	ERN-18	16.97
DBG-2	17.09	ERN-19	16.06
DBG-4	16.63	ERN-1	17.09
DBG-5	16.85	ERN-2	16.31
DBG-6	16.76	ERN-3	14.76
DBG-7	18.40	ERN-4	16.86
DBG-8	17.96	ERN-5	17.78
DBG-9	17.63	ERN-6	16.79
ERN-10	18.68	ERN-7	15.81
ERN-11	17.84	ERN-8	17.14
ERN-12	16.69	ERN-9	17.00
ERN-13	17.58		
ERN-14	17.46		
ERN-15	17.59		
ERN-16	17.71		
ERN-17	16.91		

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

- THIS MAP WAS PREPARED FROM MAPS LISTED BELOW:
- EXISTING TOPOGRAPHY FROM MAP BY JAMES S. NINGES & ASSOCIATES, CARLSON & SWEATT FARMINGTON, CT & NEW YORK, N.Y. DATED 31 DEC. 1974.
 - EXISTING UTILITIES FROM 40 SCALE UTILITY MAPS SUPPLIED BY THE DEPARTMENT OF PUBLIC WORKS, NAVAL SUBMARINE BASE, NEW LONDON, GROTON, CT.
 - GROUND WATER ANALYTICAL RESULTS, JANUARY, 1992 NEX STATION SITE US SUBBASE, GROTON, CT PREPARED FOR ERN-PNC.
 - ALL TOPOGRAPHIC FEATURES AND INVERTS SHOWN HEREIN SHALL BE FIELD VERIFIED.

NOTES:
 1. SEE SHEET T2 FOR LEGEND, ABBREVIATIONS, GENERAL CONSTRUCTION NOTES AND EXISTING MANHOLE AND CATCH BASIN INVERTS.



HRP ASSOCIATES, INC. 11 NEW BRIDGE AVE. FARMINGTON, CT 06030		DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NORTHERN DIVISION PENNSYLVANIA	
PROJECT NO. 2166439 DRAWING NO. C1-1		NAVAL SUBMARINE BASE NEW LONDON, CONNECTICUT	
REMEDIATION OF CONTAMINATED SOIL/GROUND WATER			
FIGURE 2 - SITE PLAN NAVAL EXCHANGE (NEX)			
OFFICE IN CHARGE DATE	SCALE IDENT. NO. 80091	DRAWING NUMBER NO. 2166439	SHEET NO. C1-1
SATISFACTORY TO: _____ DATE: _____			
CONTROL CONTR. NO. NS472-83-C-0000 SPEC. NO. 04-83-0000 SHEET 4 OF 24			

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

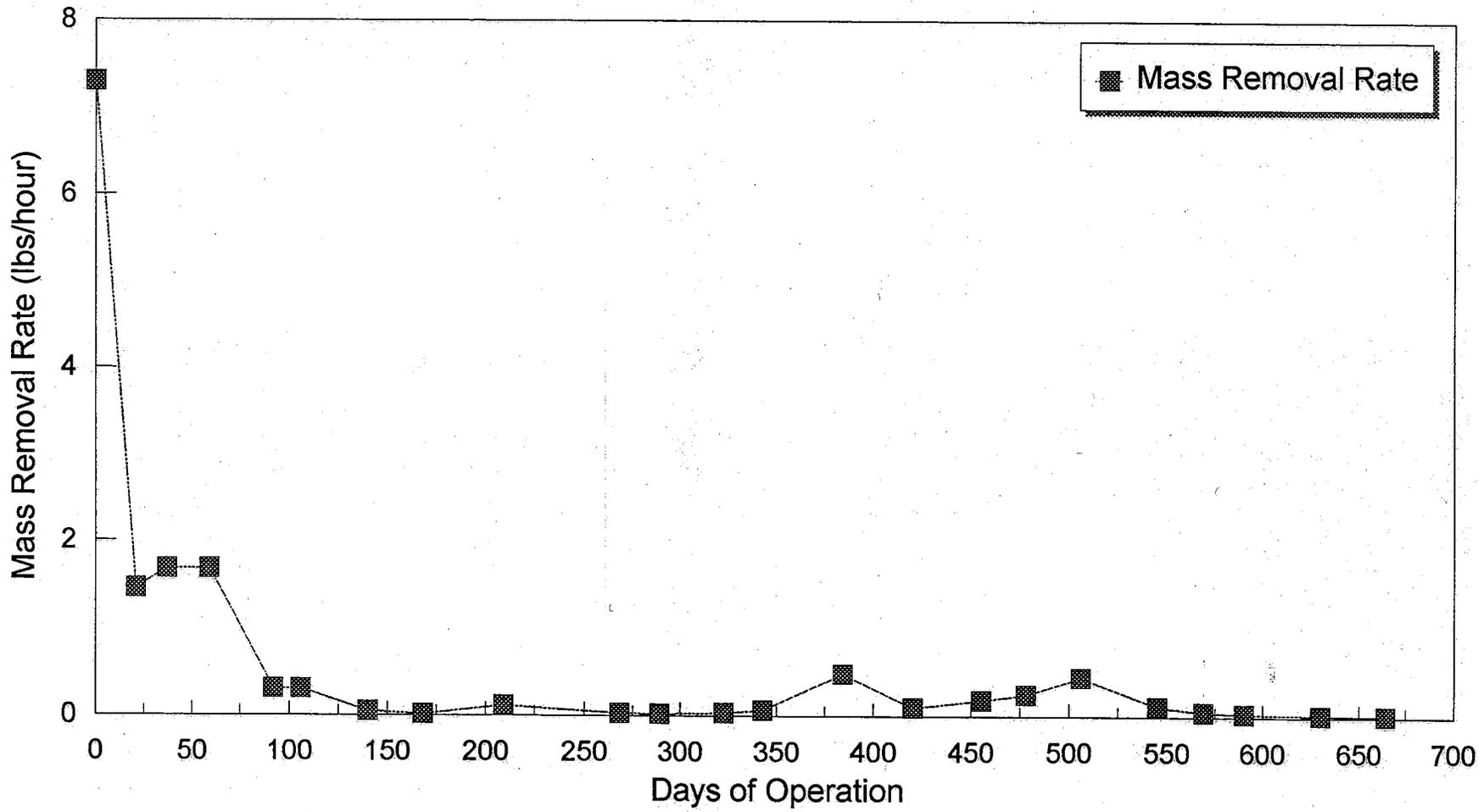


Figure 3B- Mass Removal Rate
Dolphin Mart Site, New London Naval Submarine Base, Groton, CT

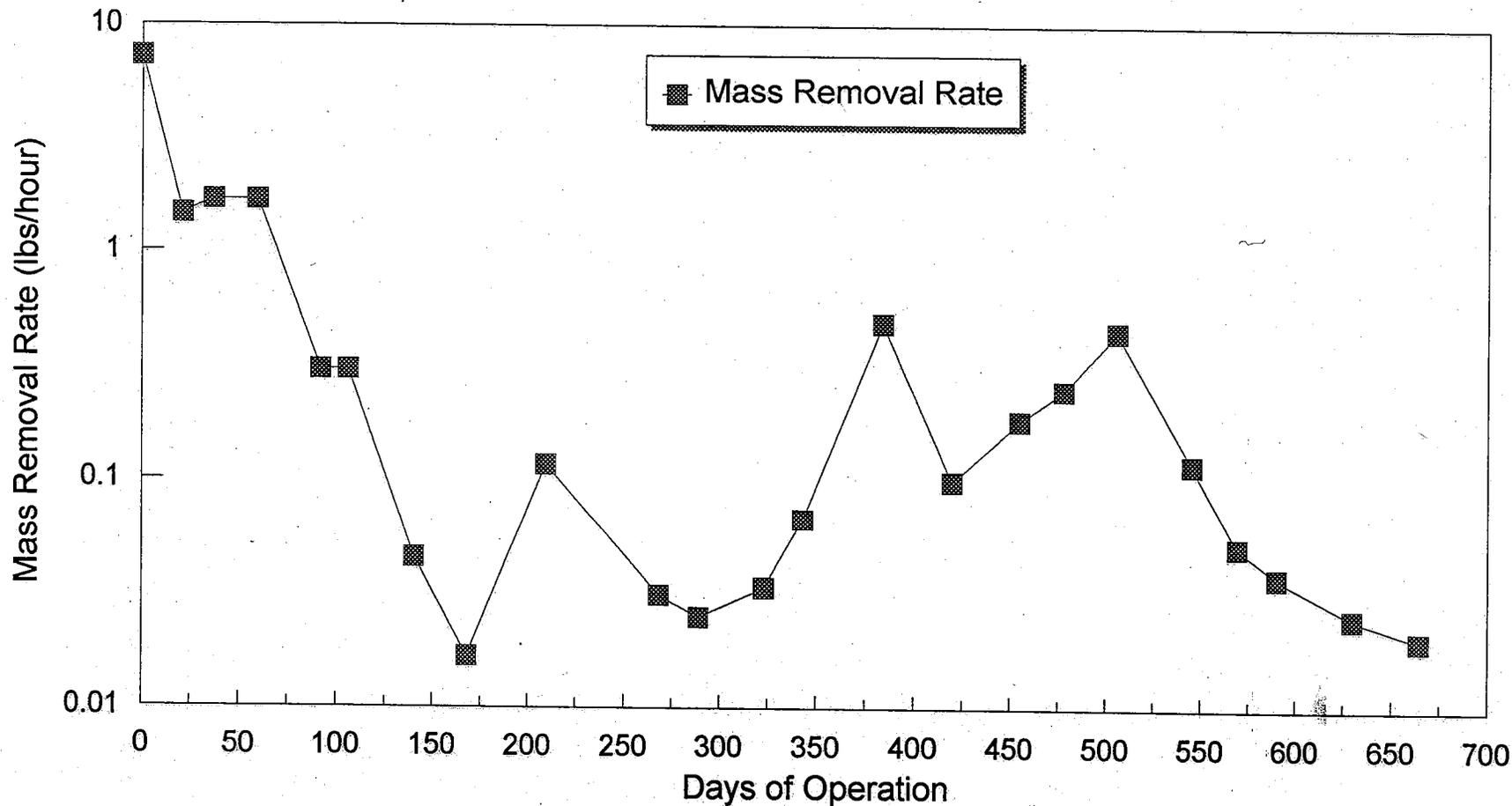


Figure 4 - Cumulative Mass Removed versus Time

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

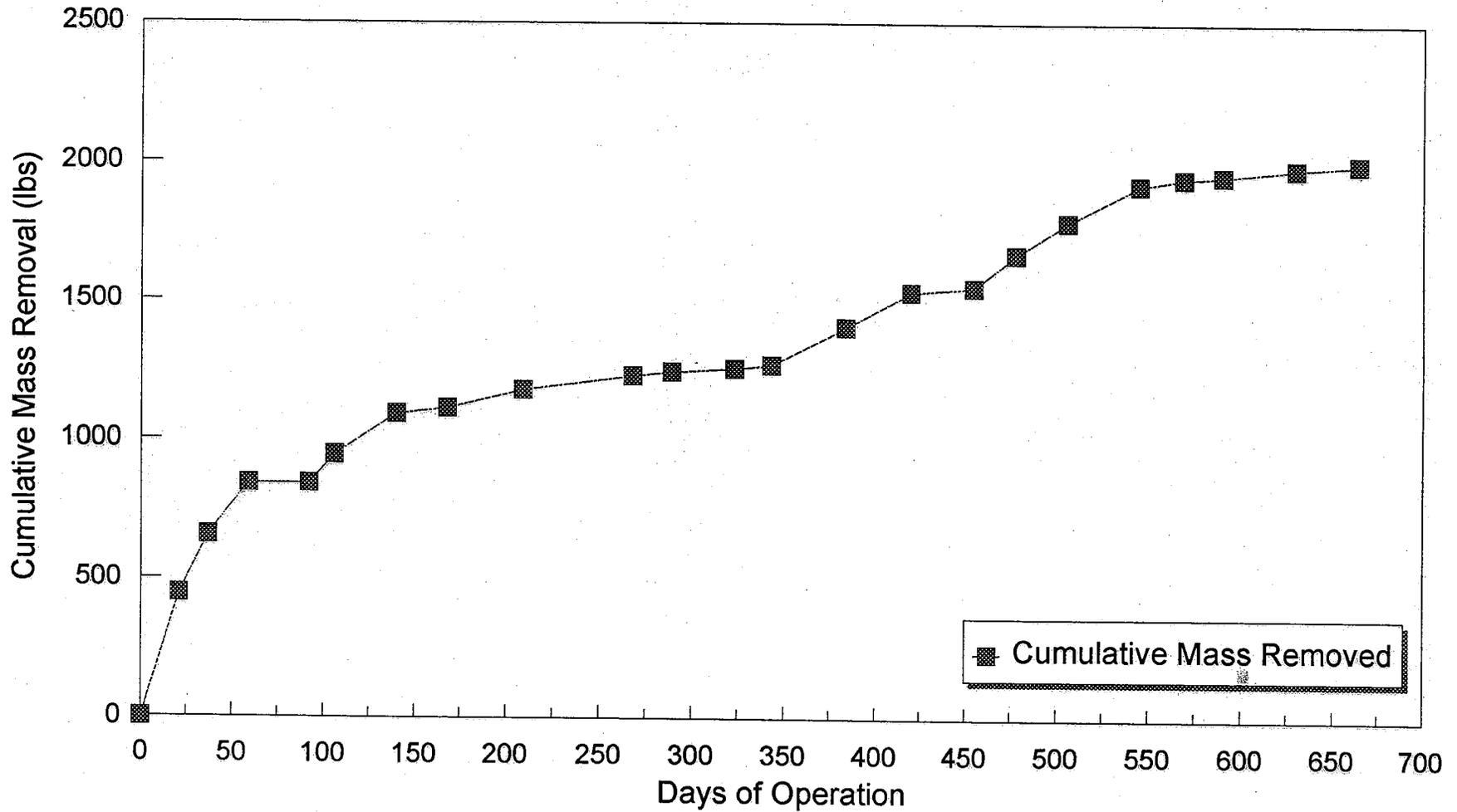


Figure 5A - Mass Removal Rate

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

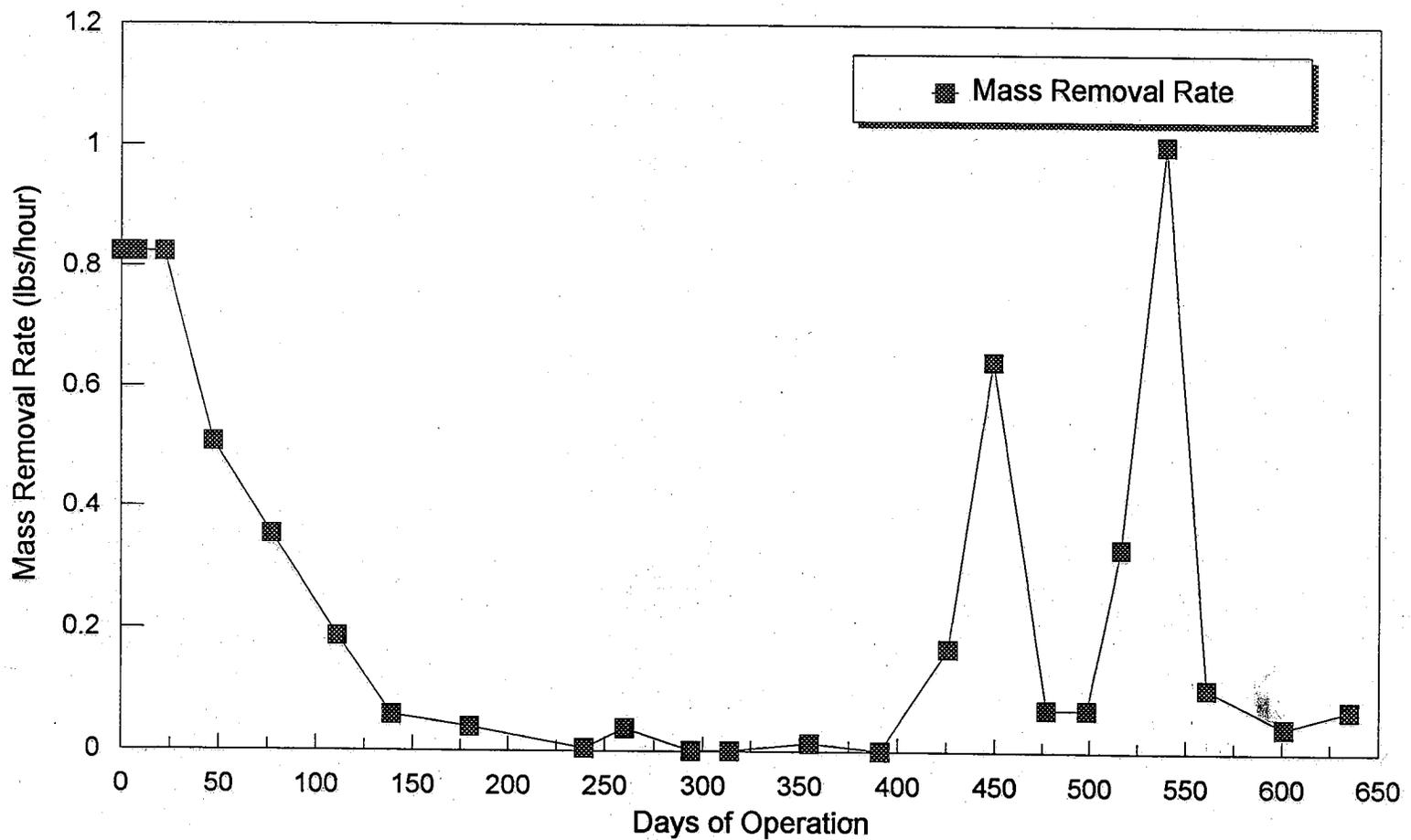


Figure 5B - Mass Removal Rate

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

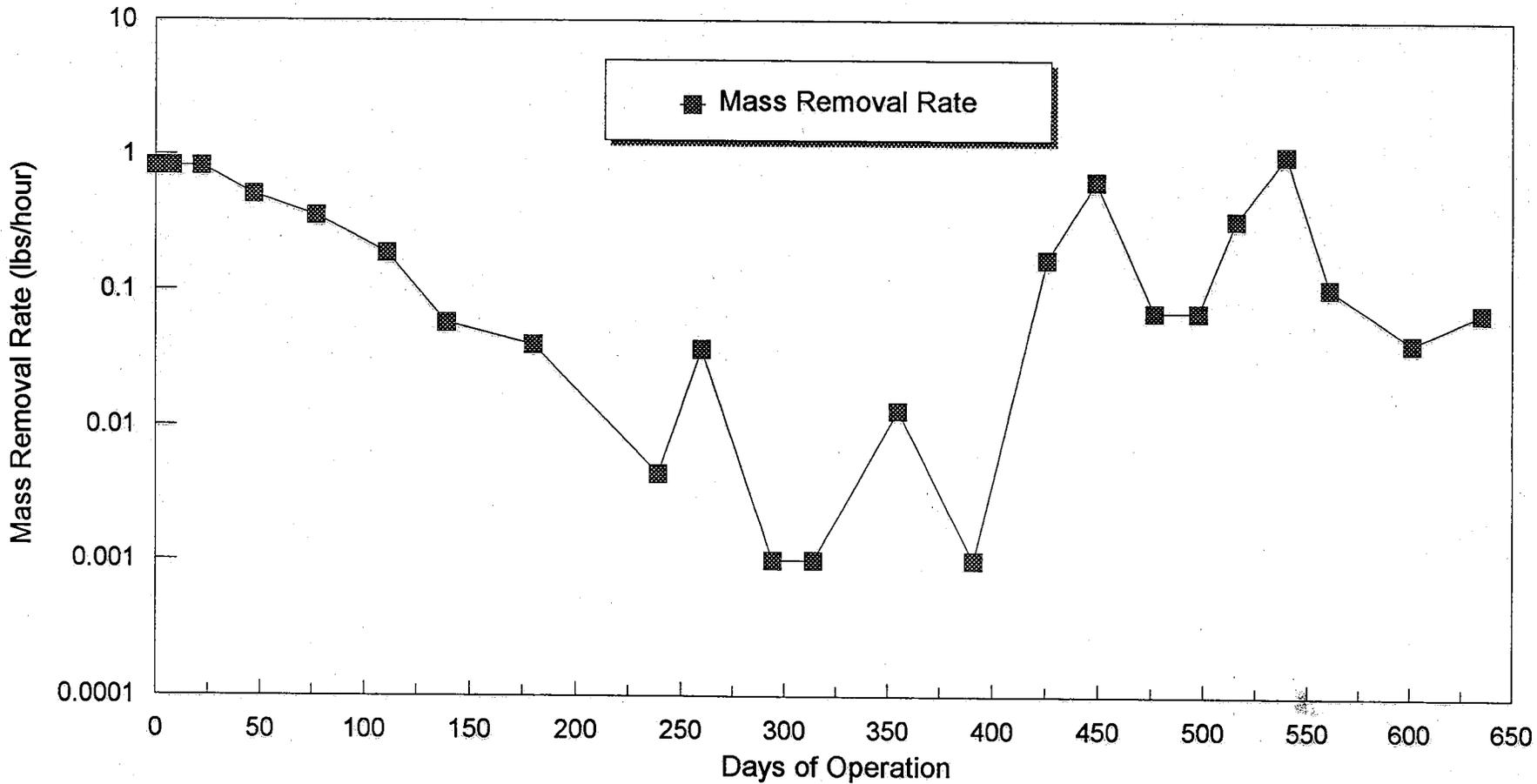
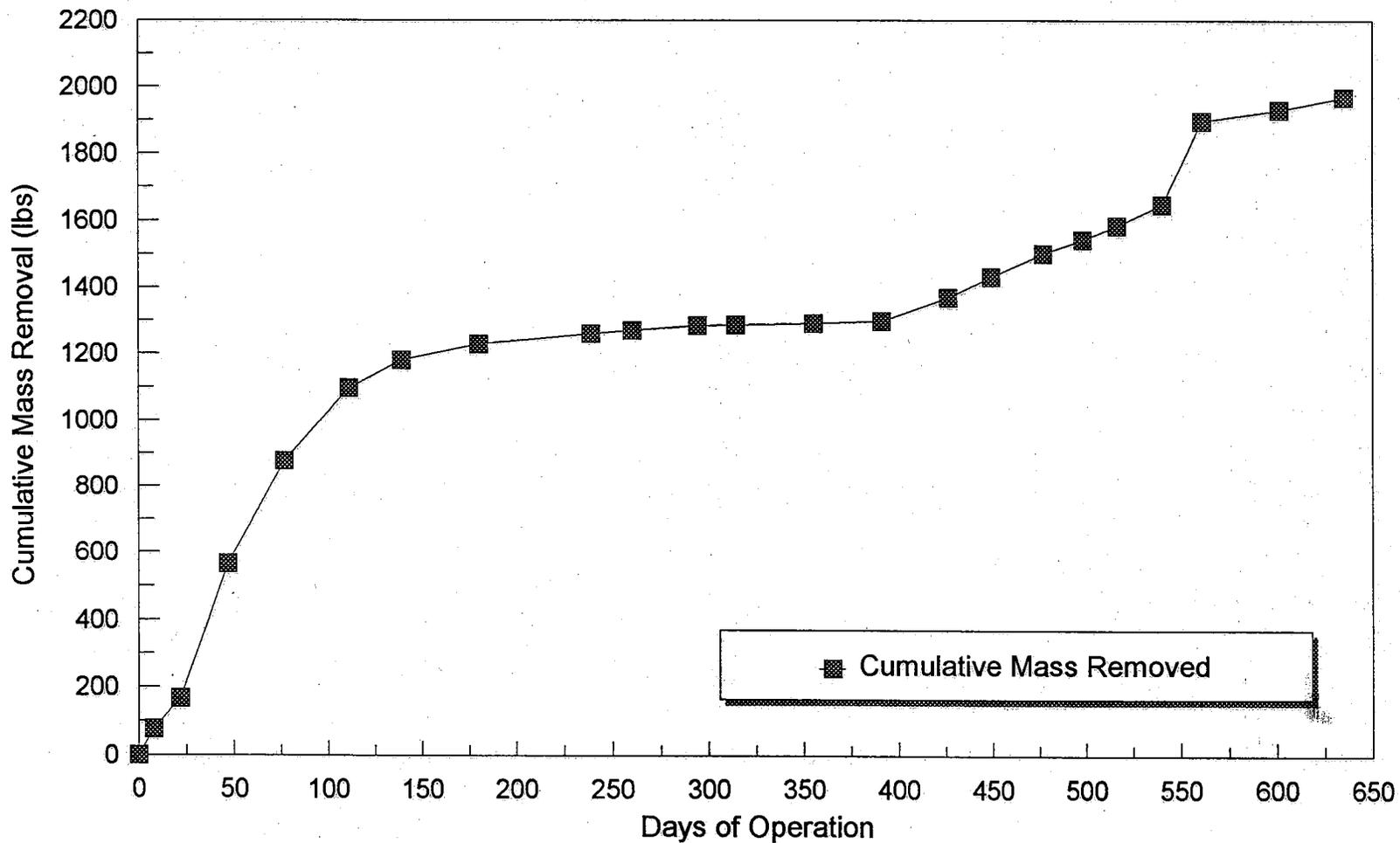


Figure 6 - Cumulative Mass Removed versus Time

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: 4-13-98
 Time: 10:15
 Technician: John Kowzun, JR.

AIR COMPRESSOR SYSTEM

Flow Rate <u>28</u> SCFM	Total Flow <u>4238432</u> SCFM
Air Compressor C-1 Pressure <u>7.25</u> psi Temperature <u>198</u> °F Flow Control Valve Setting <u>100%</u> Bleed Valve <u>25%</u> Radiator <input checked="" type="checkbox"/> ON / OFF	Air Compressor C-2 Pressure <u>NA</u> psi Temperature _____ °F Flow Control Valve Setting _____ Bleed Valve _____ Radiator <input checked="" type="checkbox"/> ON / OFF

SOIL VAPOR EXTRACTION SYSTEM

Flow Rate <u>1,000</u> SCFM	(use anemometer in hole in pipe near Hersey flowmeter)
Vacuum Pump V-1 Vacuum <u>NA</u> °Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____	Vacuum Pump V-2 Vacuum <u>6.75</u> °Hg Temperature <u>125</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>0</u>
Vacuum Pump V-3 Vacuum <u>NA</u> °Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____	Vacuum Pump V-4 Vacuum <u>NA</u> °Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____

ACTIVATED CARBON ADSORPTION SYSTEM

Carbon Adsorber A/B Pressure <u>NA</u> psi Inf. VOC Level _____ ppm Mid. VOC Level _____ ppm Eff. VOC Level _____ ppm Change out Date <u>NA</u>	Carbon Adsorber C/D Pressure <u>29</u> psi Inf. VOC Level <u>5.6</u> ppm Mid. VOC Level <u>4.4</u> ppm Eff. VOC Level <u>5.2</u> ppm Change out Date <u>8-22-96</u>
---	---

WATER TREATMENT

Flowmeter Reading 4003.6 Gallons

COMMENTS

used OVA #3

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

Date: 4/13/98
 Time: 11:55
 Technician: John Kourzin, Jr.

AIR COMPRESSOR SYSTEM

Flow Rate <u>38-45</u> SCFM	Total Flow <u>2799572</u> SCFM
Air Compressor C-1 Pressure <u>9</u> psi Temperature <u>134</u> °F Flow Control Valve Setting <u>100%</u> Bleed Valve <u>25%</u> Radiator <input checked="" type="checkbox"/> ON / OFF	Air Compressor C-2 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="checkbox"/> ON / OFF

SOIL VAPOR EXTRACTION SYSTEM

Eastern Flow Rate <u>345-408</u> SCFM	Total Flow <u>87851725</u> SCFM
Western Flow Rate _____ SCFM	Total Flow <u>23238387</u> SCFM
Vacuum Pump V-1 Vacuum <u>11.5</u> "Hg Temperature <u>170</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>0</u>	Vacuum Pump V-2 Vacuum <u>3.5</u> "Hg Temperature <u>138</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>0</u>
Vacuum Pump V-3 Vacuum <u>7.5</u> "Hg Temperature <u>173</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100%</u> Bleed Air Valve Setting <u>25%</u> Liquid Level <u>0</u>	Vacuum Pump V-4 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

Carbon Adsorber A/B Pressure <u>NA</u> psi Inf. VOC Level <u>NA</u> ppm Mid. VOC Level <u>NA</u> ppm Eff. VOC Level <u>NA</u> ppm Change out Date <u>NA</u>	Carbon Adsorber C/D Pressure <u>38</u> psi Inf. VOC Level <u>6.5</u> ppm Mid. VOC Level <u>6.5</u> ppm Eff. VOC Level <u>6.5</u> ppm Change out Date <u>8/22-96</u>
---	---

WATER TREATMENT

Flowmeter Reading 76423.7 Gallons (prior to discharge) Flowmeter Reading 76514.9 Gallons (after discharge)

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: 4-27-98
 Time: 9:30
 Technician: John Kowzun, Jr

AIR COMPRESSOR SYSTEM

Flow Rate	<u>27</u>	SCFM	Total Flow	<u>4769812</u>	SCFM
Air Compressor C-1	<u>7.5</u>	psi	Air Compressor C-2	<u>NA</u>	psi
Pressure	<u>260</u>	°F	Pressure		°F
Temperature			Temperature		
Flow Control Valve Setting	<u>100</u>	%	Flow Control Valve Setting		
Bleed Valve	<u>25</u>	%	Bleed Valve		
Radiator	<input checked="" type="checkbox"/> ON / <input type="checkbox"/> OFF		Radiator	<input checked="" type="checkbox"/> ON / <input type="checkbox"/> OFF	

SOIL VAPOR EXTRACTION SYSTEM

Flow Rate	<u>0</u>	SCFM	<u>1,100</u>	(use anemometer in hole in pipe near Hersey flowmeter)	
Vacuum Pump V-1	<u>N/A</u>	°Hg	Vacuum Pump V-2	<u>7.0</u>	°Hg
Vacuum			Vacuum		
Temperature		°F	Temperature	<u>126</u>	°F
Particulate Filter			Particulate Filter	<u>ok</u>	
Flow Control Valve Setting			Flow Control Valve Setting	<u>100</u>	%
Bleed Air Valve Setting			Bleed Air Valve Setting	<u>25</u>	%
Liquid Level			Liquid Level	<u>0</u>	
Vacuum Pump V-3	<u>N/A</u>	°Hg	Vacuum Pump V-4	<u>NA</u>	°Hg
Vacuum			Vacuum		
Temperature		°F	Temperature		°F
Particulate Filter			Particulate Filter		
Flow Control Valve Setting			Flow Control Valve Setting		
Bleed Air Valve Setting			Bleed Air Valve Setting		
Liquid Level			Liquid Level		

ACTIVATED CARBON ADSORPTION SYSTEM

Carbon Adsorber A/B	<u>N/A</u>	psi	Carbon Adsorber C/D	<u>29</u>	psi
Pressure			Pressure		
Inf. VOC Level		ppm	Inf. VOC Level	<u>7.1</u>	ppm
Mid. VOC Level		ppm	Mid. VOC Level	<u>5.4</u>	ppm
Eff. VOC Level		ppm	Eff. VOC Level	<u>4.0</u>	ppm
Change out Date	<u>N/A</u>		Change out Date	<u>8/22/96</u>	

WATER TREATMENT

Flowmeter Reading 700 Gallons 4003.6

COMMENTS

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

Date: 4-27-98
 Time: 14:00
 Technician: John Kowzun, Jr.

AIR COMPRESSOR SYSTEM

Flow Rate <u>0</u> SCFM	Total Flow <u>2799952</u> SCFM
Air Compressor C-1 Pressure <u>12.5</u> psi Temperature <u>168</u> °F Flow Control Valve Setting <u>100 %</u> Bleed Valve <u>25 %</u> Radiator <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF	Air Compressor C-2 Pressure <u>N/A</u> psi Temperature _____ °F Flow Control Valve Setting <input checked="" type="checkbox"/> _____ Bleed Valve <input checked="" type="checkbox"/> _____ Radiator <input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF

SOIL VAPOR EXTRACTION SYSTEM

Eastern Flow Rate <u>161-179</u> SCFM	Total Flow <u>87932853</u> SCFM
Western Flow Rate <u>0</u> SCFM	Total Flow <u>23245831</u> SCFM
Vacuum Pump V-1 Vacuum <u>3.5</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>0</u>	Vacuum Pump V-2 Vacuum <u>3.25</u> "Hg Temperature <u>190</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100 %</u> Bleed Air Valve Setting <u>25 %</u> Liquid Level <u>0</u>
Vacuum Pump V-3 Vacuum <u>7 to 10</u> "Hg Temperature <u>158</u> °F Particulate Filter <u>OK</u> Flow Control Valve Setting <u>100 %</u> Bleed Air Valve Setting <u>25 %</u> Liquid Level _____	Vacuum Pump V-4 Vacuum <u>N/A</u> "Hg Temperature _____ °F Particulate Filter _____ Flow Control Valve Setting _____ Bleed Air Valve Setting _____ Liquid Level _____

ACTIVATED CARBON ADSORPTION SYSTEM

Carbon Adsorber A/B Pressure _____ psi Inf. VOC Level <u>99.2</u> ppm Mid. VOC Level <u>39.2</u> ppm Eff. VOC Level <u>25.1</u> ppm Change out Date <u>N/A</u>	Carbon Adsorber C/D Pressure <u>40</u> psi Inf. VOC Level <u>71.4</u> ppm Mid. VOC Level <u>N/A</u> ppm Eff. VOC Level <u>71.4</u> ppm Change out Date <u>8/22/96</u>
--	---

WATER TREATMENT

Flowmeter Reading 76676.0 Gallons (prior to discharge) Flowmeter Reading 76853.5 Gallons (after discharge)

COMMENTS

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

ATTACHMENT 2
MONTHLY FIELD ACTIVITY SUMMARY

**Field Activity Summary
April 1998**

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

Week Ending	Site	Period	Field Activities	Comments
4/17/98	Dolphin Mart	Monthly Monitoring	Conducted system monitoring and maintenance.	System operating normally.
	NEX		Conducted system monitoring and maintenance.	SVE blower V-2 and air compressor C-1 down due to high liquid level in moisture separator.
5/01/98	Dolphin Mart	Monthly Monitoring	Conducted system monitoring, maintenance, air discharge sampling and water DMR sampling.	System operating normally.
	NEX		Conducted system monitoring, maintenance, air discharge sampling and water DMR sampling.	System down due to high liquid levels in moisture separators.

ATTACHMENT 3

AIR SPARGE/SVE SYSTEM DATABASES

**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 (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 (ppmv)	Removal Rate TVPH (lb/hr)	Total Mass Removal Rate (lbs/hr)	Period Mass Removed (lbs)	Cumulative Mass Removed (lbs)	Comments
07/31/96	NA*	253	1.80	0.013	---	0.000	130.00	0.810	0.00	0.000	---	0.000	0.823	0.00	0.00	
08/08/96	NA*	270	1.80	0.013	---	0.000	130.00	0.810	0.00	0.000	---	0.000	0.823	78.21	78.21	system operated approx. 92 hrs between 7/31 and 8/8
08/22/96	NA*	270	1.80	0.013	---	0.000	130.00	0.810	0.00	0.000	---	0.000	0.823	88.09	166.30	24-hour per day system operation began 8/8
09/16/96	NA*	320	2.70	0.021	0.00	0.000	---	0.000	---	0.000	61.00	0.487	0.508	399.38	565.68	
10/16/96	NA*	320	2.50	0.020	0.00	0.000	---	0.000	---	0.000	42.00	0.335	0.355	310.76	876.44	
11/19/96	NA*	324	0.95	0.008	0.00	0.000	---	0.000	---	0.000	22.61	0.180	0.188	221.67	1098.10	
12/17/96	NA*	310	0.18	0.001	0.07	0.000	---	0.000	---	0.000	6.98	0.056	0.058	82.54	1180.65	
01/27/97	NA*	321	0.14	0.001	0.00	0.000	---	0.000	---	0.000	4.81	0.038	0.040	47.78	1228.42	
03/27/97	NA**	384	0.00	0.000	0.00	0.000	---	0.000	---	0.000	0.55	0.004	0.004	31.10	1259.52	
04/17/97	NA***	721	0.00	0.000	0.00	0.000	---	0.000	---	0.000	2.89	0.037	0.037	10.40	1269.92	
05/21/97	6****	360	0.00	0.000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.00	15.48	1285.39	
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	1285.87	
07/21/97	36****	358	0.00	0.000	0.00	0.000	---	0.000	---	0.000	2.04	0.013	0.013	6.88	1292.74	
08/28/97	28****	223	0.00	0.000	0.00	0.000	---	0.000	---	0.000	0.00	0.000	0.00	6.04	1298.78	One blower down due to high water level in moisture trap.
09/30/97	27****	221	2.37	0.016	6.00	0.021	---	0.000	---	0.000	33.68	0.132	0.169	71.24	1370.01	One blower down due to high water level in moisture trap.
10/23/97	47****	322	2.47	0.016	17.05	0.086	---	0.000	---	0.000	95.02	0.542	0.644	60.92	1430.93	Two blowers down due to high water level in moisture trap.
11/20/97	47****	213	0.50	0.004	1.12	0.004	---	0.000	---	0.000	16.36	0.062	0.069	70.19	1501.12	One blower down due to high water level in moisture trap.
12/11/97	47	213	0.50	0.004	1.12	0.004	---	0.000	---	0.000	16.36	0.062	0.069	41.42	1542.54	
12/29/97	47	520	0.78	0.006	2.18	0.018	---	0.000	---	0.000	33.68	0.310	0.334	42.40	1584.93	
01/22/98	53	479	2.46	0.019	4.50	0.034	---	0.000	---	0.000	111.86	0.949	1.002	62.99	1647.92	
02/12/98	NA****	324	0.77	0.006	1.05	0.005	---	0.000	---	0.000	16.24	0.093	0.104	248.62	1896.55	
03/24/98	53	249	0.44	0.003	0.82	0.003	---	0.000	---	0.000	7.94	0.035	0.041	33.60	1930.15	
04/27/98	53	170	0.57	0.004	8.32	0.022	---	0.000	---	0.000	18.40	0.055	0.069	36.71	1966.86	

- 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 1/23/98 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.

**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 (ppmv)	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	1.375	0.00	0.000	—	0.000	1.467	446.86	446.86	system operated approx. 102 hrs between 7/2 and 7/23
08/08/96	32	454	18.00	0.142	—	0.000	210.00	1.444	12.00	0.102	—	0.000	1.687	209.75	656.61	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	187.31	843.92	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	36.00	0.287	0.306	0.00	843.92	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	36.00	0.287	0.306	102.81	946.74	system reactivated 10/2/98
11/19/96	30	450	0.38	0.003	0.00	0.000	—	0.000	—	0.000	5.29	0.042	0.045	143.33	1090.06	
12/17/96	30	450	0.12	0.001	0.00	0.000	—	0.000	—	0.000	1.97	0.016	0.017	20.84	1110.90	
01/27/97	30	450	1.35	0.011	0.00	0.000	—	0.000	—	0.000	13.23	0.106	0.117	65.56	1176.46	
03/27/97	30	450	0.00	0.000	0.00	0.000	—	0.000	—	0.000	3.90	0.031	0.031	104.53	1228.73	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	3.13	0.025	0.025	14.13	1242.86	
05/21/97	15	329	0.00	0.000	0.00	0.000	—	0.000	—	0.000	5.77	0.034	0.034	11.96	1254.82	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	11.31	0.066	0.067	12.14	1266.96	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	81.79	0.477	0.488	136.76	1403.71	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	10.82	0.092	0.099	126.91	1530.63	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	21.17	0.181	0.184	17.84	1548.46	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	24.06	0.251	0.251	120.10	1668.56	
11/20/97	32	590	0.00	0.000	5.45	0.050	—	0.000	—	0.000	38.49	0.403	0.453	118.28	1786.84	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	10.82	0.113	0.118	133.65	1920.49	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	5.77	0.048	0.051	24.38	1944.87	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	6.98	0.036	0.038	11.19	1956.06	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	5.29	0.023	0.025	24.89	1980.95	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	5.29	0.020	0.020	18.47	1999.41	

- 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.

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	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

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

Well Data
New London 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	OBC-1	OBC-2	OBC-4	OBC-6	OBC-7	OBC-8	OBC-9	MW-4	MW-6	
09/16/96	3.82	5.14	5.27	NG	NG	NG	NG	8.36	7.01	6.89	4.30	8.51	5.62	3.65	5.28	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							
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							
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							
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							
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	7.91	7.78	NG	NG	NG	5.58	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	NG	5.79	5.80	5.84/5.31	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	

Notes: NG = Not Gauged

ATTACHMENT 5

HISTORICAL GROUNDWATER SAMPLING RESULTS

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

(analytical results in µg/l)
page 1 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	780	630	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

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

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

(analytical results in µg/l)
page 2 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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

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.

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

(analytical results in µg/l)
page 3 of 14

Compound	BTEX				MTBE	TPH (By EPA Method 418.1)	Total Volatiles (by EPA Method 8010/8020)	DRO (by EPA Method 8160M)	GRO (by EPA Method 8015M)	
	Benzene	Toluene	Ethylbenzene	Xylenes						
Remediation Standard	1.0	1,000	700	630	100	600	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

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

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

(analytical results in µg/l)
page 4 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	2	<1.0	<1.0	<1.0	3	<500	5	NS	NS
	2/98	<1.0	<1.0	<1.0	<1.0	<1.0	800	<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

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

(analytical results in µg/l)
page 5 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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									
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

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

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

(analytical results in µg/l)
page 6 of 14

Compound	BTEX				MTBE	TPH (By EPA Method 418.1)	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									
HRP-10	3/95	304	35.2	257	1140	<50	6,080	NS	NS	NS
	5/96	125	21	54	329	<20	1,740	NS	NS	NS
	11/96	9	<1.0	65	<1.0	7	<1,000	81	600	<500
	2/97	<1.0	<1.0	<1.0	<1.0	3	<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	3.0	800	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	700	<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

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

(analytical results in µg/l)
page 7 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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
MW-1	11/96	3	<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

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

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

(analytical results in µg/l)
page 8 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	4	<1.0	14	<1.0	4	<1,000	28	1,200	<500
	2/97	<1.0	<1.0	<1.0	<1.0	<1.0	1,000	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	2	<1.0	3	1	3	<500	9	NS	NS
	2/98	2	1	6	<1.0	<1.0	700	9	NS	NS
MW-3	2/97	36	23	72	500	5	2,000	645 B	3,300	1,600
	5/97	60	38	69	730D	<1.0	5,000	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	21,000	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

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

(analytical results in µg/l)
page 9 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	72	24.6	25.9	62.4	9.29	<473	NS	NS	NS
	5/96	12.0	<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	3	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

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

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

(analytical results in µg/l)
page 10 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	3,000	<1.0	<500	<500
	8/97	<1.0	<1.0	<1.0	<1.0	3.0	11,000	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	3,100	<1.0	NS	NS
WE-2D(B)	11/96	1	<1.0	<1.0	<1.0	<1.0	<1,000	3	<500	<500
	2/97	2	<1.0	<1.0	<1.0	3	<500	5	<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	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

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

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

(analytical results in µg/l)
page 11 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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									
WE-2S	3/95	37.9	24.2	60.3	126.4	21.3	725	NS	NS	NS
	5/96	50	22	101	144	<10	1,570	NS	NS	NS
	11/96	7	<1.0	9	4	14	<1,000	34	<500	<500
	2/97	5	<1.0	14	3	10	<500	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	<500	<1.0	NS	NS
	2/98	4	<1.0	<1.0	15	7	<500	26	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

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

(analytical results in µg/l)
page 12 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	2.0	<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	2	<1.0	<1.0	<1.0	160D	<500	162	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

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

(analytical results in µg/l)
page 13 of 14

Compound	BTEX				MTBE	TPH (By EPA Method 418.1)	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
WE-5	11/96	240D	410D	720D	4,300E	27	9,000	5,697	12,000	8,900
	2/97	42D	10	89D	490D	6	2,000	637	2,000	1,200
	5/97	370	190	840	3,900D	<1.0	4,000	5,300	11,000	16,000
	8/97	210D	<1.0	210D	470DB	63D	5,000	953	3,900	2,500
	11/97	11	<1.0	2	6	27	1,100	46	NS	NS
	2/98	11	<1.0	10	14	3	1,800	38	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

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

(analytical results in µg/l)
page 14 of 14

Compound	BTEX				MTBE	TPH (By EPA Method 418.1)	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-6	11/96	5	210D	71D	630D	<1.0	<1,000	916	2,000	1,400
	2/97	3	4	8	12	2	<500	29	800	700
	5/97	3	1.0	12	<1.0	<1.0	<500	15	1,200	1,200
	8/97	<1.0	1.0	<1.0	28	<1.0	1,000	29	<500	<500
	11/97	2	<1.0	3	2	4	<500	11	NS	NS
	2/98	2	<1.0	5	3	4	500	14	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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 1 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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-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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 2 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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-6	5/96	15	<1.0	<1.0	<1.0	<2.0	NS	35	63	<473
	11/96	610	230	770	2,400E	<40	5,000	4,054	500	7,800
	2/97	430D	21	300	1,000D	<10	2,000	1,763 B	2,200	4,800
	5/97	430D	21	640D	2,300D	<1.0	1,000	3,391D	1,500	6,700
	8/97	470	90	650	2,000	<1.0	2,000	3,210	3,500	6,200
	11/97	250D	23	260D	530D	<1.0	<500	1,063	NS	NS
	2/98	97D	13	110D	240D	<1.0	<500	460	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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 3 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	Total Volatiles (by EPA Method 8010/6020)	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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 4 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	Total Volatiles (by EPA Method 8010/8020)	DRO	GRO
		Benzene	Toluene	Ethylbenzene	Xylenes					
Remediation Standard		216	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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 5 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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	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
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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 6 of 14

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-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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 7 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 8 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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

Notes: NS = Not sampled (NS results have been shaded)
B = Analyte detected in method blank, **E** = Analyte concentration exceeded the calibration range
D = Analyte concentration was obtained from a diluted analysis, **DRO**=Diesel Range Organics, **GRO**=Gasoline Range Organics
LP = Liquid-phase petroleum present; well could not be sampled

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 9 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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-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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 10 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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
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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 11 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 419.1)	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
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

Notes: NS = Not sampled (NS results have been shaded)
B = Analyte concentration exceeded the 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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 12 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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-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
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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 13 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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
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
OBG-4	2/97	<1.0	<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

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

Table 3
Historical Groundwater Sampling Results
NEX - March 1995 - February 1998
Naval Submarine Base, Groton, CT

(analytical results in µg/l)
page 14 of 14

Compound		BTEX				MTBE	TPH (By EPA Method 418.1)	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-7	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
OBG-8	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
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

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