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Round 11 Groundwater Monitoring Report for Defense Reutilization and Marketing Office

Naval Submarine Base New London

Groton, Connecticut

Engineering Field Activity Northeast
Naval Facilities Engineering Command

Contract Number N62472-90-D-1298
Contract Task Order 0257

May 2001

TETRA TECH NUS, INC.

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ROUND 11 GROUNDWATER MONITORING REPORT
FOR
DEFENSE REUTILIZATION AND MARKETING OFFICE

NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

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Naval Facilities Engineering Command
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1.0 INTRODUCTION

This Round 11 Groundwater Monitoring Report for the Defense Reutilization and Marketing Office (DRMO) at the Naval Submarine Base New London (NSB-NLON) in Groton, Connecticut was prepared for the U.S. Department of the Navy (Navy) by Tetra Tech NUS, Inc. (TtNUS) under the Comprehensive Long-Term Environmental Action Navy (CLEAN), Contract Number N62472-90-D-1298, Contract Task Order (CTO) 0257.

This document has been prepared in accordance with the Navy Installation Restoration Laboratory Quality Assurance Guide (Interim Guidance) of the Naval Facilities Engineering Service Center, (NFESC, February 1996).

1.1 BACKGROUND INFORMATION

1.1.1 Base Description

NSB-NLON is located in southeastern Connecticut in the Towns of Ledyard and Groton. It encompasses approximately 576 acres and lies on the east bank of the Thames River, approximately 6 miles north of Long Island Sound. NSB-NLON is bounded to the east by Connecticut Route 12, to the south by Crystal Lake Road, and to the west by the Thames River. The northern border is a low, east-southeast trending ridge extending from the Thames River to Baldwin Hill.

NSB-NLON currently provides base command for naval submarine activities in the Atlantic Ocean. It also provides housing for Navy personnel and their families and supports submarine training facilities, military offices, medical facilities, and facilities for the submarine maintenance, repair, and overhaul.

1.1.2 Site Description and History

The DRMO is adjacent to the Thames River in the northwestern section of NSB-NLON. The DRMO is the storage and collection facility for items to be sold at auctions and sales held periodically throughout the year. Figure 1-1 shows the site location within NSB-NLON, and Figure 1-2 shows the general site plan.

The DRMO was used as a major base landfill and burning ground from 1950 to 1969. The materials burned and landfilled included construction materials, combustible scrap, and other non-salvageable waste items. These materials were burned on the Thames River shoreline adjacent to the current location of the DRMO. The residue was pushed to the shoreline and partially covered.

Atlantic Environmental Service, Inc. (Atlantic) personnel reviewed archived aerial photographs of the DRMO areas part of the Phase I Remedial Investigation (RI) (Atlantic, 1992). The 1934 photographs show fill in the southern portion of the site. Fill for bulkheads and docks south of the DRMO did not exist at that time. Aerial photographs from 1951 show the land in its present configuration, except for the northwest portion, which was not filled at that time.

Atlantic personnel inspected the site on September 30, 1988. Metal and wood products were stored throughout most of the site. Buildings 479 and 355 are located within the paved area to the south and are primarily used for storage. Building 491, located in the unpaved area to the north, is used for miscellaneous storage, including batteries. Metal baling operations were performed adjacent to Building 491 on a gravel surface. Based on an inspection of the building plans, Atlantic personnel identified the presence of a former battery acid handling facility at the north section of the site, within Building 491. A large scrap yard was located north of Building 479. Submarine batteries were stored in the southeast portion of the site adjacent to the railroad tracks; no leakage was observed.

Prior to 1995, the southern half of the DRMO was covered with asphalt, most of which had deteriorated, while the northern portion was unpaved and had a gravel surface. A Time-Critical Removal Action was performed at the DRMO by OHM Remediation Services Corporation. Construction aspects of the removal action were completed in January 1995. The removal action focused on the removal of soil contaminated with lead, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) from the northern half of the DRMO. The spent acid tank was also removed. The site was subsequently remediated and a composite cap was placed over a majority of the central and northern portions of the site (OHM, September 1995). The cap consisted of a woven geotextile liner, a geosynthetic clay liner (GCL), and a nonwoven geotextile liner. Bituminous concrete pavement was then placed over the entire area of the composite cap. The paved (southern) portion of the site was upgraded with an additional asphalt layer.

1.1.3 Previous Investigations

1.1.3.1 Phase I RI

The Phase I RI (Atlantic, 1992) at this site included test borings and monitoring well installation, as well as, soil, surface water, and groundwater sampling. Twelve shallow surface soil samples and 12 subsurface soil samples were collected from 7 test borings and 5 monitoring well borings. Four surface soil samples were collected and analyzed. Six groundwater samples were collected from five shallow wells and one deep well. Additionally, one surface water sample was collected from the Thames River at the northern end of this site (B&R Environmental, March 1997).

Concentrations of Volatile Organic Compounds (VOCs) in the soil were generally low. Semivolatile Organic Compounds (SVOCs) were present in most soil samples collected in the former landfill area. They were predominately comprised of PAHs, many of which were detected at elevated levels. A PCB, Aroclor 1260, was detected at almost all soil sample locations. Pesticides were detected in one soil sample at elevated concentrations.

Trichloroethene and 1,2-dichloroethene were detected in groundwater at three shallow downgradient wells. SVOCs (including PAHs), pesticides, petroleum hydrocarbons, or PCBs were not detected in any wells at the DRMO site. The inorganic groundwater analysis results indicated that selenium exceeded the primary drinking water standards for three wells. No VOCs, SVOCs, pesticides, or PCBs were detected in the upgradient surface water sample. Comparison of the inorganic results for this sample with the downgradient water sample (Goss Cove) did not suggest any detectable impact on the Thames River from the DRMO based on this limited data set.

1.1.3.2 Draft Focused Feasibility Study Field Investigation

A field investigation in support of the draft Focused Feasibility Study (FFS) was performed at the DRMO site in October 1993 to better define the extent of soil contamination. Twelve surface soil samples and twelve subsurface soil samples were collected. One surface and two subsurface field duplicates were also collected. One of the borings was completed as a monitoring well (6MW8S) (B&R Environmental, March 1997).

The highest concentrations of VOCs were present in soil samples west of Building 491. SVOCs, predominately PAHs, were detected in soil across the site. PCBs (Aroclor 1254, Aroclor 1260, and Aroclor 1242) were detected at nearly all boring locations at low to high concentrations. Pesticides (DDE, DDD, DDT) were detected at many locations across the site, primarily at low concentrations; however, several locations were found to have elevated levels. Concentrations of inorganic compounds were above background at all locations. Of primary concern at the site were the high levels of lead.

1.1.3.3 Phase II RI

Five new groundwater monitoring wells (two shallow and three deep) were installed and sampled during the Phase II RI. Additionally, 4 previously installed shallow wells were sampled. Two rounds of groundwater sampling were completed and ten samples were collected during each sampling round. Three subsurface soil samples were collected during the installation of three of the new wells (B&R Environmental, March 1997).

Relatively high concentrations of multiple organic and inorganic compounds were detected in the soil matrix at the DRMO. Organic chemicals detected at high concentrations include various halogenated aliphatic compounds, PAHs, phthalate esters, Aroclor-1254, and Aroclor-1260.

The results of the Phase II RI suggested that, in spite of the fact that relatively high concentrations of some VOCs were detected in the subsurface soil, it did not appear that substantial impact on the groundwater had occurred to date. In addition to the various organic chemicals detected in soil at the DRMO, relatively high concentrations of lead still remained in soil after the Time-Critical Removal Action was conducted during the course of the Phase II RI. Surface and subsurface soil concentrations of lead ranged as high as 4,980 mg/kg and 2,140 mg/kg, respectively. In spite of the high lead concentrations in soil, only limited evidence of lead migration to the water table is evidenced by the groundwater analytical results. Additionally, the results indicated that the cap effectively minimized precipitation infiltration to the groundwater (B&R Environmental, March 1997).

1.1.3.4 Time-Critical Removal Action

A Time-Critical Removal Action was performed at the DRMO by OHM Remediation Services Corporation during the course of the Phase II RI. Construction aspects of the removal action were completed in January 1995. The removal action focused on the removal of soil contaminated with lead, PAHs, and PCBs from the northern half of the DRMO.

First, a total of 73 soil samples and two pavement samples were collected from the scrap yard area north of Building 479. Then, soil was excavated to a depth of approximately 3 feet (or to the water table if the depth to water was less than 3 feet). Approximately 4,700 tons of soil was removed. Confirmation sampling was initiated when excavation operations were approximately 75% complete. Some further excavation was subsequently performed. Residual contamination above the PRGs remained in the soil after excavation was complete due to the excavation being limited to 3 feet by the shallow water table and exceedances of the allotted time for the project (B&R Environmental, March 1997).

After the completion of removal activities, the area was backfilled with clean borrow material. A cap consisting of a woven geotextile liner, a geosynthetic clay liner (GCL), and a nonwoven geotextile liner was installed. Approximately 12 inches of crushed stone and 3 inches of asphalt were placed over the clay/geotextile cover. The remaining (paved) portion of the DRMO was also upgraded via placement of an additional asphalt layer.

1.2 SCOPE AND OBJECTIVE

The objective of this Round 11 Groundwater Monitoring Report is to present and evaluate the results of the eleventh round of long-term groundwater monitoring at the DRMO site. This monitoring is being conducted to verify the effectiveness of the cap installed as part of the Time-Critical Removal Action to reduce precipitation infiltration and leaching of contaminants and to confirm that contamination is not migrating through the soil, into the groundwater, and ultimately discharging to the Thames River. This groundwater monitoring is part of the post-closure associated with the DRMO cap.

To meet this objective, five Phase I and Phase II RI monitoring wells and five monitoring wells installed during Rounds 1 and 2 of the DRMO Groundwater Monitoring Program were sampled and analyzed for a suite of analytes based on an evaluation of site history and previous analytical results. Sampling and analyses were performed in accordance to the Groundwater Monitoring Plan (GMP) prepared for the DRMO (B&R Environmental, February 1998).

Because this is an interim report for the eleventh round of groundwater monitoring, evaluation of monitoring results is limited to a comparison of these results to the criteria identified in the DRMO GMP (B&R Environmental, February 1998).

1.3 REPORT ORGANIZATION

This report has been prepared in the following format to address the requirements for long-term groundwater monitoring at the DRMO. Section 1.0 of the report is this brief introduction including the project scope and objective. Section 2.0 describes field sampling activities. Section 3.0 presents and evaluates the analytical results from the sampling effort.

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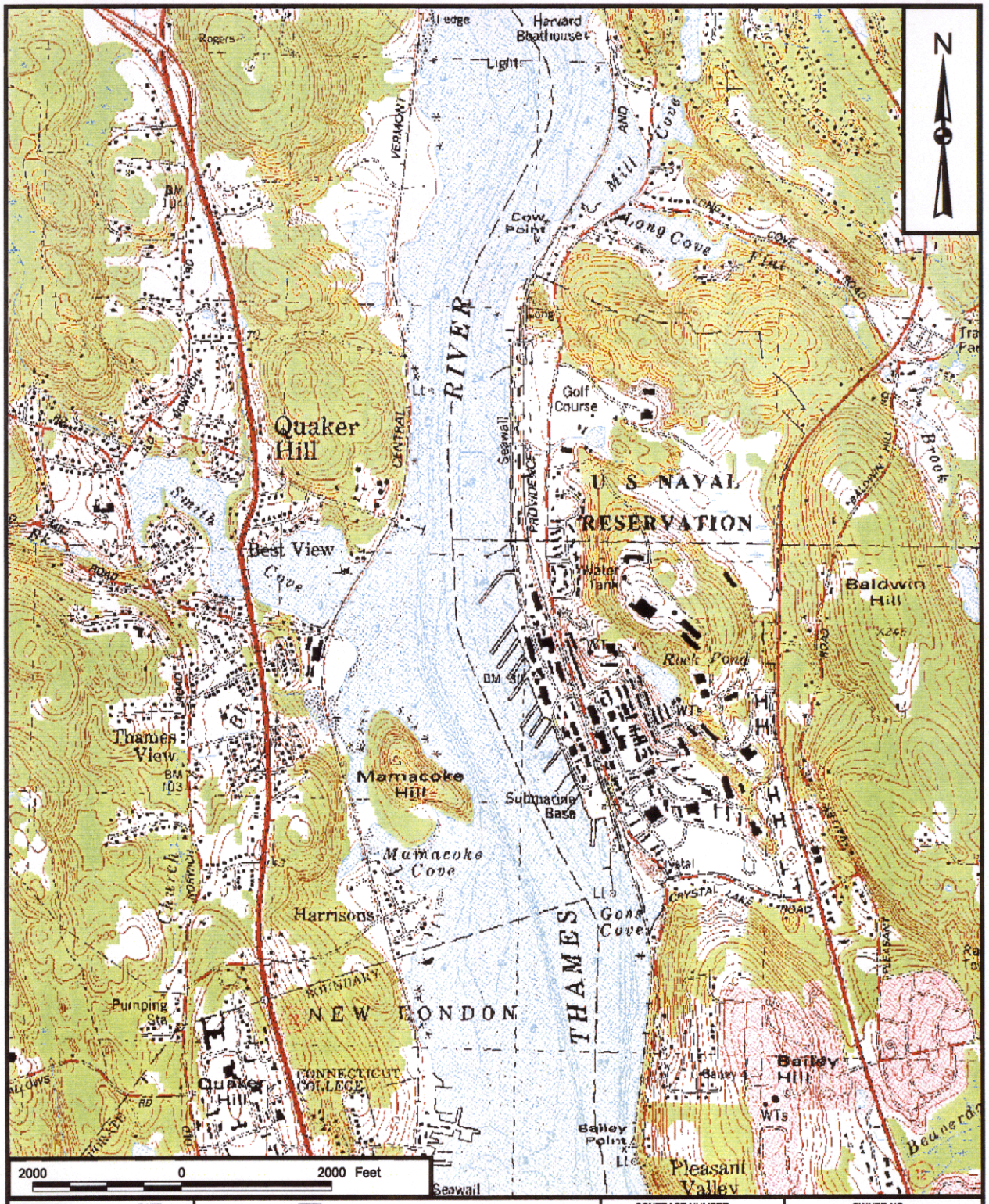

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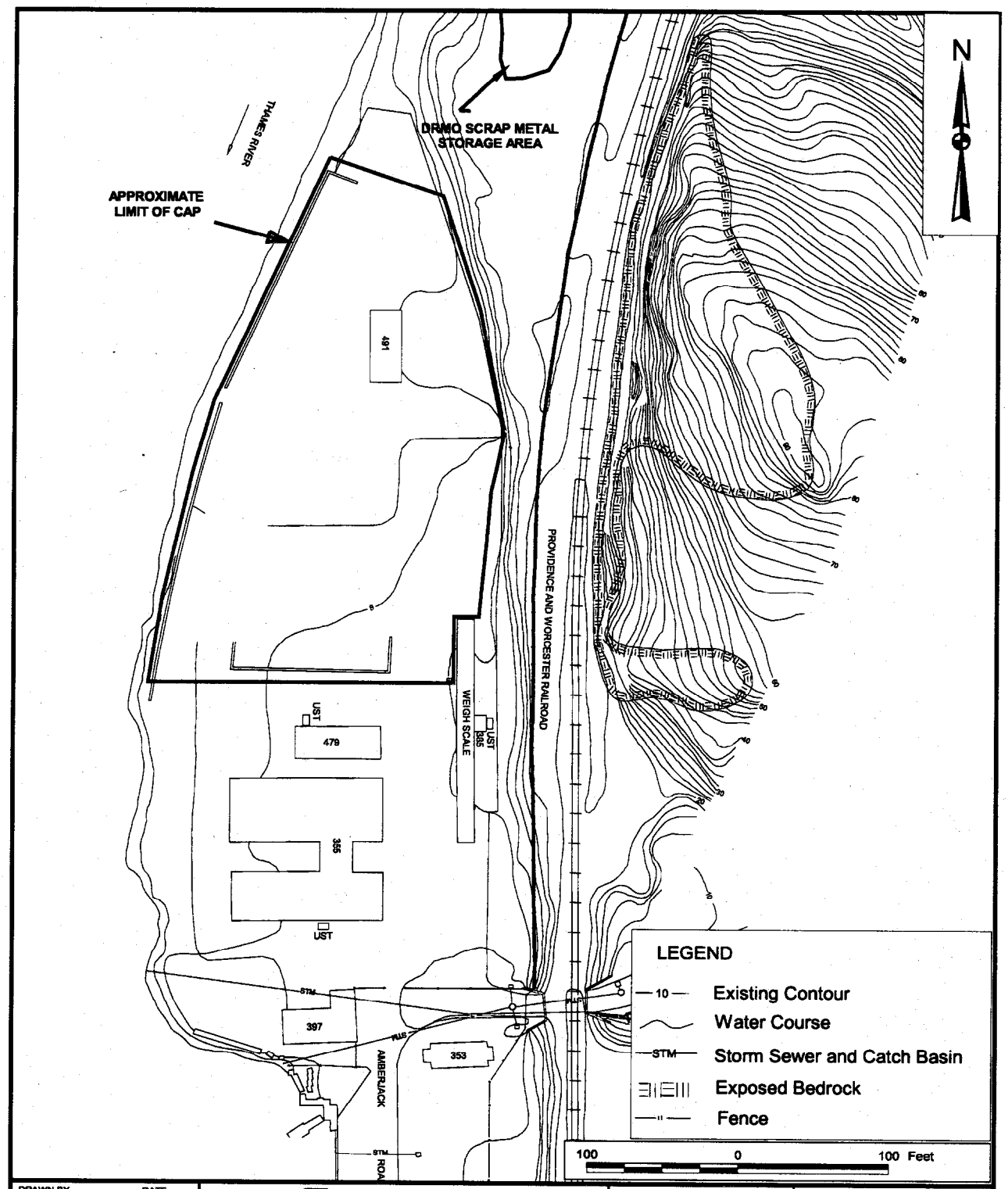
CHECKED BY CAR	DATE 10-MAR-99	SITE LOCATION MAP NSB - NLON GROTON, CONNECTICUT	APPROVED BY MDB / DATE 10-MAR-99
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 1-1 / REV 0

P:\GIS\NLON\7363_267.APR LOCATION MAP LAYOUT 2 MGS 5-8-01



DRAWN BY J. BELLONE	DATE 10/1/89	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7363 / OWNER NO.
CHECKED BY	DATE	DRMO SITE PLAN NSB - NLON GROTON, CONNECTICUT	APPROVED BY Mark L. Mengel DATE 5/8/01
COST/SCHEDULE-AREA			APPROVED BY — DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 1-2 / REV 0

P:\GIS\NLON\7363ANNUAL.APR DRMO SITE PLAN LAYOUT 3-5-01 MGS

2.0 FIELD INVESTIGATION ACTIVITIES

Field investigation activities as part of the eleventh round of groundwater monitoring included two rounds of groundwater level measurements and groundwater sampling of 10 monitoring wells. Monitoring well locations are shown on Figure 2-1. These activities were performed in accordance with the procedures and methodologies described in Section 3.0: Groundwater Monitoring System Installation and Section 4.0: Sampling and Analyses of the DRMO GMP (B&R Environmental, February 1998). A copy of the field activity log book is provided as Appendix A.

2.1 WATER LEVEL MEASUREMENTS

Water levels were measured in ten monitoring wells and one staff gage (in the Thames River). The staff gage was located at the outside edge of the storm sewer outfall leading to the Thames River, west of Building 397. The measurements were collected on March 10, 2001, within time periods of 34 to 2 minutes prior to the predicted high tide, and 109 minutes prior to and 17 minutes following the predicted low tide on March 10, 2001 for Smith Cove, opposite the DRMO on the Thames River. Tide tables are provided in Appendix B. Table 2-1 summarizes the groundwater measurements, and Figures 2-2 and 2-3 illustrate the potentiometric surface maps for the groundwater in the shallow aquifer during low tide and high tide, respectively. Groundwater level measurement sheets can be found in Appendix C.

2.2 GROUNDWATER SAMPLING

Ten monitoring wells were sampled during the eleventh round of groundwater monitoring using low-flow purging and sampling techniques, in accordance with USEPA Region I Low-Flow Purging and Sampling Procedure GW-001.

The wells were purged prior to sampling using the dedicated bladder pumps with bottled nitrogen gas as the power source. Groundwater quality parameters, including pH, specific conductivity, temperature, dissolved oxygen, salinity, and Eh were measured during purging at 5 to 10 minute intervals using a YSI 610 DM datalogger and 6820 multi-parameter water quality monitor equipped with a flow-through cell. Turbidity was also measured using a LaMotte 2020 Turbidimeter. Calibration log sheets are found in Appendix D. Water levels were also measured during purging at 5 to 10-minute intervals. Purging continued until the above parameters stabilized. Copies of the low-flow purge data sheets are provided in Appendix E.

Following purging, samples were collected directly from the discharge end of the Teflon®-lined pump tubing. The groundwater samples were collected and analyzed for VOCs, SVOCs, PAH, pesticides and

PCBs, and total metals. Analytical results of the samples are discussed in Section 3.0. Copies of the sample log sheets are provided in Appendix E, and chain of custody records are provided in Appendix F.

2.3 DECONTAMINATION AND INVESTIGATION-DERIVED WASTE

All water quality and water level meters were decontaminated by rinsing with de-ionized water prior to and after use.

IDW liquid wastewaters derived from the ongoing monitoring of existing groundwater wells at the DRMO have been extensively tested for COCs during the past two years of quarterly monitoring. The waste waters generated from the monitoring wells have been determined to be non-hazardous and were disposed directly to the OT-10 wastewater processing facility in compliance with the SUBASENLON Pre-Treatment Permit from the Connecticut Department of Environmental Protection.

TABLE 2-1

GROUNDWATER LEVEL MEASUREMENTS AND ELEVATIONS
GROUNDWATER MONITORING REPORT
DRMO, NSB-NLON, GROTON, CONNECTICUT

Well Number	Reference Elevation[1] (feet msl)	Depth to Water[2] (feet) LOW TIDE	Depth to Water[2] (feet) HIGH TIDE	Groundwater Elevation (feet msl) LOW TIDE	Groundwater Elevation (feet msl) HIGH TIDE	Well Screen Depth[3]
6MW1S	8.63	8.61	5.21	0.02	3.42	Shallow
6MW2S	7.30	7.00	3.85	0.30	3.45	Shallow
6MW2D	7.85	5.74	4.03	2.11	3.82	Deep
6MW6S	12.16	8.56	8.42	3.60	3.74	Shallow
6MW6D	12.50	8.88	8.73	3.62	3.77	Bedrock
6MW9S	7.52	3.92	3.26	3.60	4.26	Shallow
6MW10S	5.19	4.51	1.70	0.68	3.49	Shallow
6MW10D	5.01	2.49	0.50	2.52	4.51	Deep
6MW11S	4.92	4.39	1.34	0.53	3.58	Shallow
6MW11D	5.31	2.25	0.36	3.06	4.95	Deep
SG-01	5.67	5.08	2.17	0.59	3.50	NA

msl: mean sea level (1982 Base Traverse System)

NOTES:

1 Reference elevation is top of well casing (1982 Base Traverse System)
2 Depth to water is from top of well casing. Measured March 10, 2001.
3 Well screen depths designated as shallow unconfined, deep unconfined, and bedrock groundwater.

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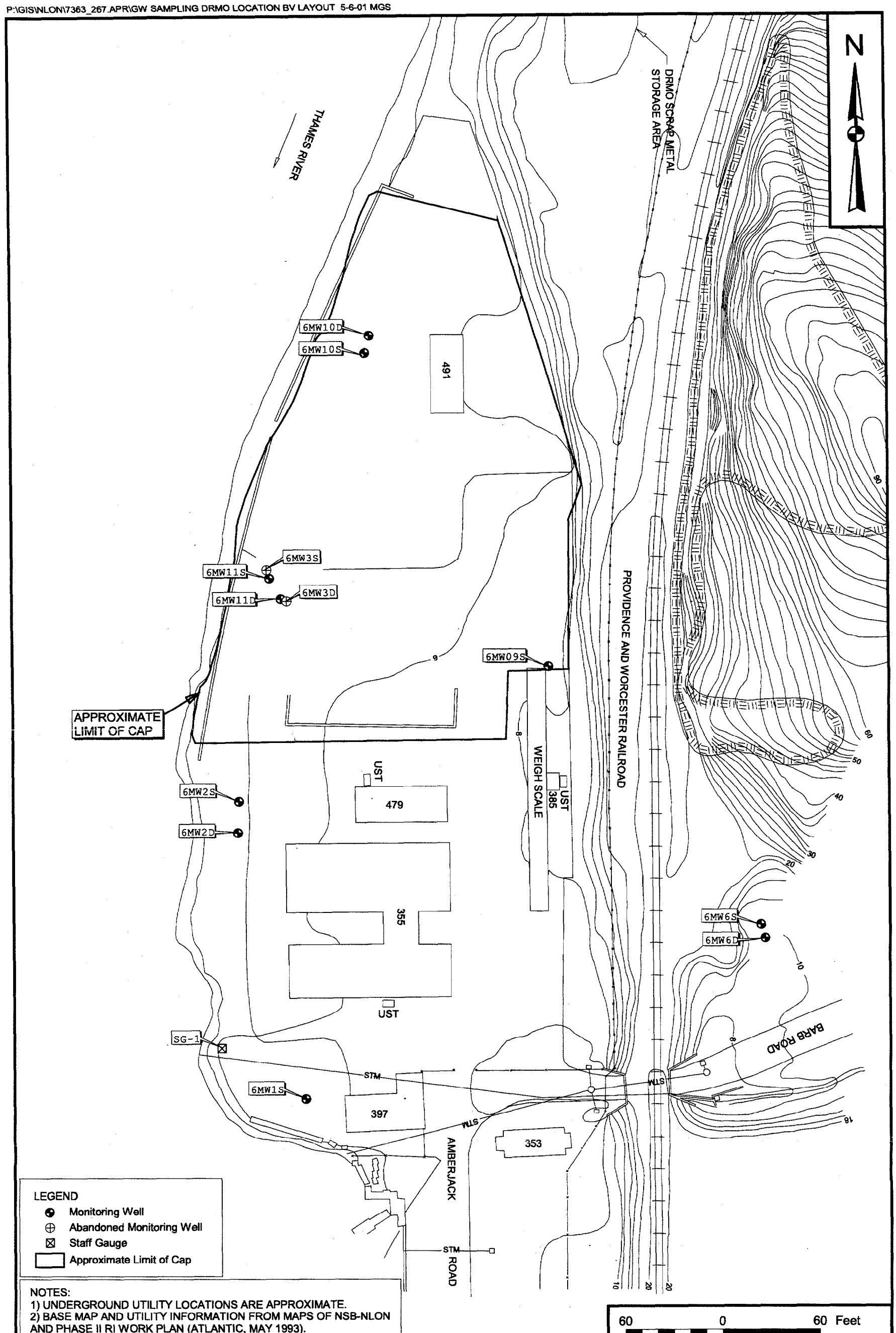
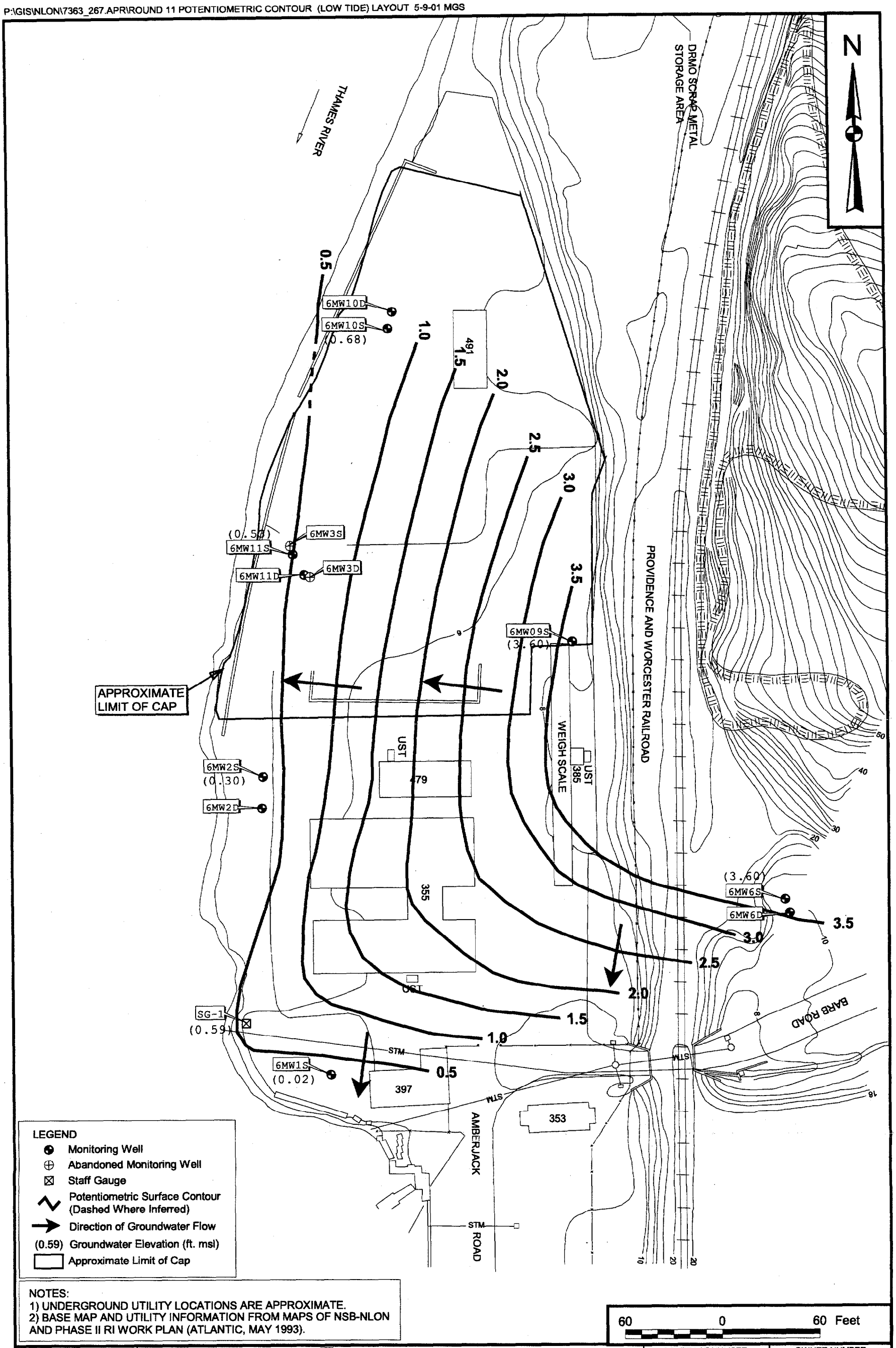
P:\GIS\NLON\7363_267.APR\GW SAMPLING DRMO LOCATION BV LAYOUT 5-6-01 MGS



DRAWN BY M. Spangenberg	DATE 2-28-01	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7091 / OWNER NUMBER —
CHECKED BY	DATE	MONITORING WELL LOCATIONS ROUND 11 GROUNDWATER SAMPLING FOR DRMO NSB-NLON, GROTON, CONNECTICUT	APPROVED BY CAR / DATE 5/10/01
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-1 / REV 0

1090CB22

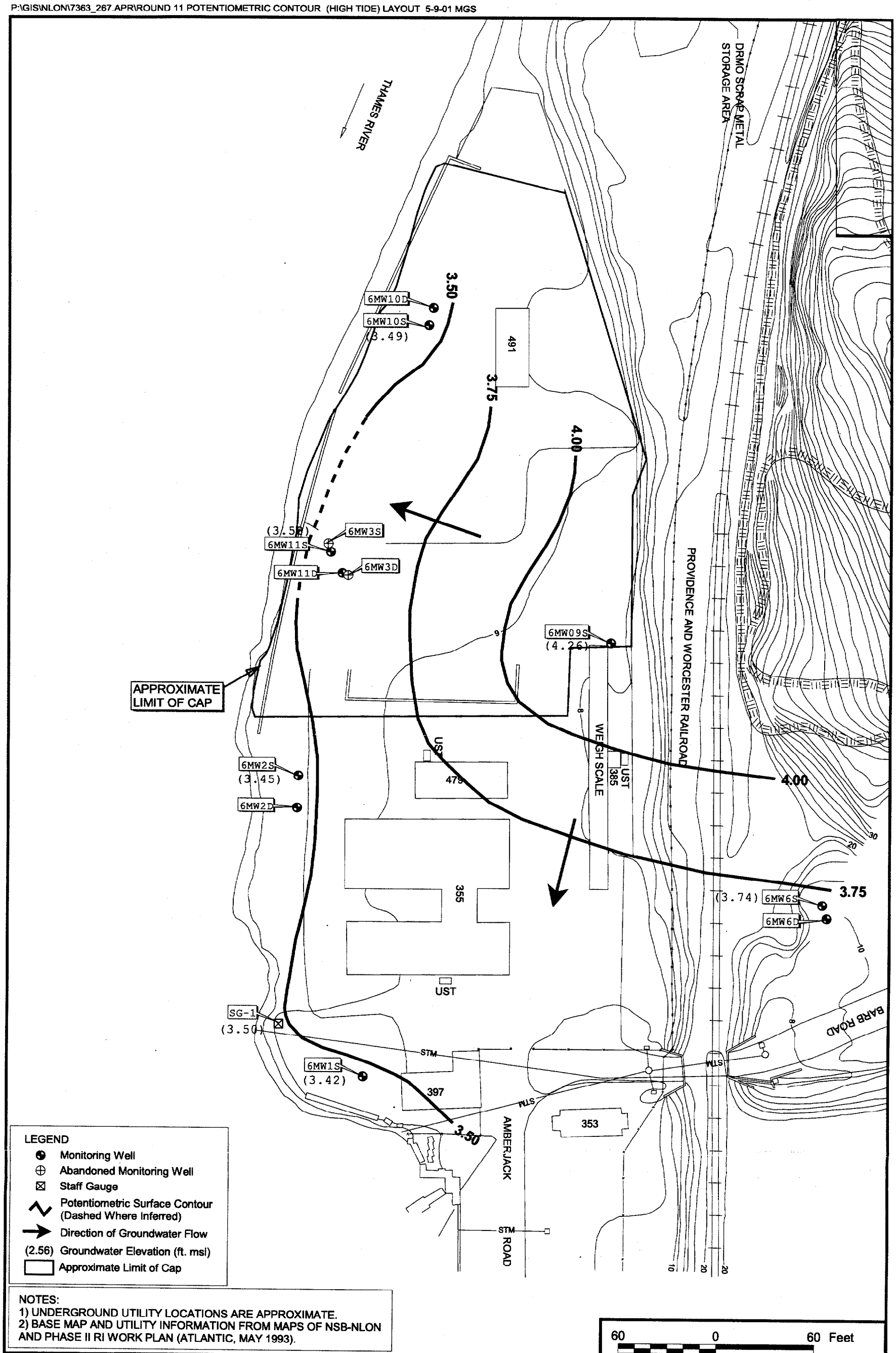
P:\GIS\NLON\7363_267.APR\ROUND 11 POTENTIOMETRIC CONTOUR (LOW TIDE) LAYOUT 5-9-01 MGS



NOTES:
1) UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE.
2) BASE MAP AND UTILITY INFORMATION FROM MAPS OF NSB-NLON AND PHASE II RI WORK PLAN (ATLANTIC, MAY 1993).

DRAWN BY M. Spangenberg DATE 5-6-01	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7091	OWNER NUMBER —
CHECKED BY — DATE —	LOW TIDE POTENTIOMETRIC SURFACE MAP ROUND 11 GROUNDWATER SAMPLING FOR DRMO NSB-NLON, GROTON, CONNECTICUT	APPROVED BY CAR	DATE 5/10/01
COST/SCHEDULE-AREA		APPROVED BY —	DATE —
SCALE AS NOTED		DRAWING NO. FIGURE 2-2	REV 0

P:\GIS\NLON\7363_267.APR\ROUND 11 POTENTIOMETRIC CONTOUR (HIGH TIDE) LAYOUT 5-9-01 MGS



NOTES:
1) UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE.
2) BASE MAP AND UTILITY INFORMATION FROM MAPS OF NSB-NLON AND PHASE II RI WORK PLAN (ATLANTIC, MAY 1993).

DRAWN BY M. Spangenberg	DATE 5-6-01	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7091 / OWNER NUMBER —
CHECKED BY —	DATE —	HIGH TIDE POTENTIOMETRIC SURFACE MAP ROUND 11 GROUNDWATER SAMPLING FOR DRMO NSB-NLON, GROTON, CONNECTICUT	APPROVED BY CAR / DATE 5/10/01
COST/SCHEDULE-AREA			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-3 / REV 0

3.0 MONITORING RESULTS

The groundwater samples collected from monitoring wells 6MW1S, 6MW2S, 6MW2D, 6MW6S, 6MW6D, 6MW9S, 6MW10S, 6MW10D, 6MW11S, and 6MW11D were analyzed for Target Compound List (TCL) organic chemicals and Target Analyte List (TAL) inorganic chemicals. Monitoring focused on the following organic and inorganic chemicals of potential concern, as identified in the GMP Monitoring Plan (B&R Environmental, February 1998):

- 1,1,2,2-Tetrachloroethane
- 1,2-Dichloroethane
- 1,2-Dichloroethene (total)
- Trichloroethene
- Vinyl Chloride
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzoic Acid
- Bis(2-ethylhexyl)phthalate
- Fluoranthene
- Fluorene
- Naphthalene
- Phenantrene
- Pyrene
- Heptachlor Epoxide
- Aroclors 1254 & 1260
- Hexachlorobiphenyl
- 4,4'-DDD
- Arsenic
- Barium
- Cadmium
- Chromium
- Copper
- Lead
- Silver
- Zinc

The contaminants listed were detected in soil either at concentrations that could result in exceedances of site specific Surface Water Protection Criteria (SWPCs) or at concentrations that exceed Connecticut's Pollutant Mobility Criteria for GB groundwater.

Analytical results are summarized on Table 3-1 and the positive COC detections are shown on Figure 3-1. Table 3-1 also compares the analytical results with the primary and secondary monitoring criteria, as established in the GMP (B&R Environmental, February 1998). Chemicals exceeding either primary or secondary monitoring criteria are noted by shading. The results of this comparison may be summarized as follows:

- There were no exceedances of the primary monitoring criteria which were site-specific SWPCs using a dilution factor of 100, in any of the organic or inorganic sample results.

- The semivolatile organic; bis(2-ethylhexyl)phthalate was detected in three samples: 6MW1S at a concentration of 11 µg/L, the field duplicate for 6MW6D at a concentration of 6.9 µg/L, and 6MW10S at a concentration of 8 µg/L. The three concentrations exceeded the secondary monitoring criteria (AWQC and WQS for protection of human health from consumption of aquatic organisms) of 5.9 µg/L for bis(2-ethylhexyl)phthalate.

- Arsenic was detected in the samples from monitoring wells 6MW2D (2.6 µg/L), 6MW10D (3.2 µg/L), and 6MW11D (10.9 µg/L). These concentrations exceed the secondary monitoring criteria (AWQCs and WQSs for protection of human health from consumption of aquatic organisms) of 0.14 µg/L for arsenic.

- Zinc was detected in the samples from monitoring wells 6MW9S (91.7 µg/L), 6MW10D (756 µg/L), 6MW10S (261 µg/L), 6MW11D (277 µg/L), and 6MW11S (150 µg/L). These concentrations exceed the secondary monitoring criterion of 81 µg/L, which is the Federal AWQC for protection of aquatic life (chronic, saltwater).

- No other exceedances of secondary monitoring criteria were noted.

As discussed in Section 1.2, because this is only an interim report for the eleventh round of groundwater monitoring, the evaluation of the analytical results is limited to the above comparison. No conclusions or recommendations are drawn from this comparison. Conclusions and recommendations have been discussed in the Year 1 and Year 2 Summary Reports. Additional conclusions and recommendations will be noted upon the completion of the third year of sampling.

Data validation letters and laboratory data sheets are attached to this report as Appendix G.

TABLE 3-1

ROUND 11 ANALYTICAL RESULTS SUMMARY
INTERIM GROUNDWATER MONITORING REPORT
DRMO, NSB-NLON, GROTON, CONNECTICUT

Chemical	Primary Monitoring Criterion (1)	Secondary Monitoring Criterion (1)	6MW1S ROUND 11 3/10/01	6MW2D ROUND 11 3/7/01	6MW2S ROUND 11 3/7/01	6MW6D ROUND 11 3/6/01	6MW6D (DUP) ROUND 11 3/6/01	6MW6S ROUND 11 3/6/01
VOCs (ug/L)								
1,1,2,2-TETRACHLOROETHANE	1,100	11 (3)(4)	1 UJ	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	29,700	99 (3)(4)	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	NA	NA	1 U	1 U	1 U	3.5	3.2	1 U
TRANS-1,2-DICHLOROETHENE	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	23,400	81 (3)(4)	0.27 J	1 U	0.13 J	6.1	5.5	0.25 J
VINYL CHLORIDE	157,500	525 (3)(4)	1 U	0.17 J	1 U	1 U	1 U	1 U
SVOCs (ug/L)								
BENZO(A)ANTHRACENE	3.0	0.049 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
BENZO(A)PYRENE	3.0	0.049 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
BENZO(B)FLUORANTHENE	3.0	0.049 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
BENZO(K)FLUORANTHENE	3.0	0.049 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
BENZOIC ACID	NA	NA	50 U	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	590	5.9 (3)(4)	11	5.6 J	10 U	10 U	6.9 J	10 U
FLUORANTHENE	37,000	370 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
FLUORENE	1,400,000	14,000 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
NAPHTHALENE	NA	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U
PHENANTHRENE	0.77	NA	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
PYRENE	1,100,000	11,000 (3)(4)	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 U	0.2 U
Pesticides/PCBs (ug/L)								
4,4'-DDD	NA	0.00084 (3)(4)	0.02 U	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02 U
AROCLOR-1254	5.0	0.00017 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1260	5.0	0.00017 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
HEPTACHLOR EPOXIDE	0.5	0.00011 (3)(4)	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total) (ug/L)								
ARSENIC	40	0.14 (3)(4)	2.6 U	2.6 J	2.6 U	2.6 U	2.6 U	2.6 U
BARIUM	NA	NA	5.1 U	144	22.7 U	46.5	46.5	32.3 U
CADMIUM	60	NA	2.6 UJ	5.2 UJ	2.6 UJ	2.6 UJ	2.6 UJ	2.6 UJ
CHROMIUM	1,100	50 (2)	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
COPPER	480	2.4 (2)	2 U	2 U	8.6 U	2 U	2 U	2 U
LEAD	130	8.1 (2)	2 U	2 U	4.4	2 U	2 U	2 U
SILVER	120	1.9 (2)	2.1 U	2.1 UJ	2.1 UJ	2.1 U	2.1 U	2.1 U
ZINC	1,230	81 (2)	18.7 U	12.9 U	17.8 U	6.5 U	8.2 U	2 U

NOTES:
Bold numbers denote exceedance of secondary monitoring criterion. There are no exceedances of primary monitoring criteria.
(1) Surface Water Protection Criteria for substances in groundwater, using a site-specific dilution factor of 100.
(2) Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, saltwater).
(3) Federal Ambient Water Quality Criteria for protection of human health from consumption of organisms.
(4) Connecticut Water Quality Criteria for protection of human health from consumption of organisms.
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

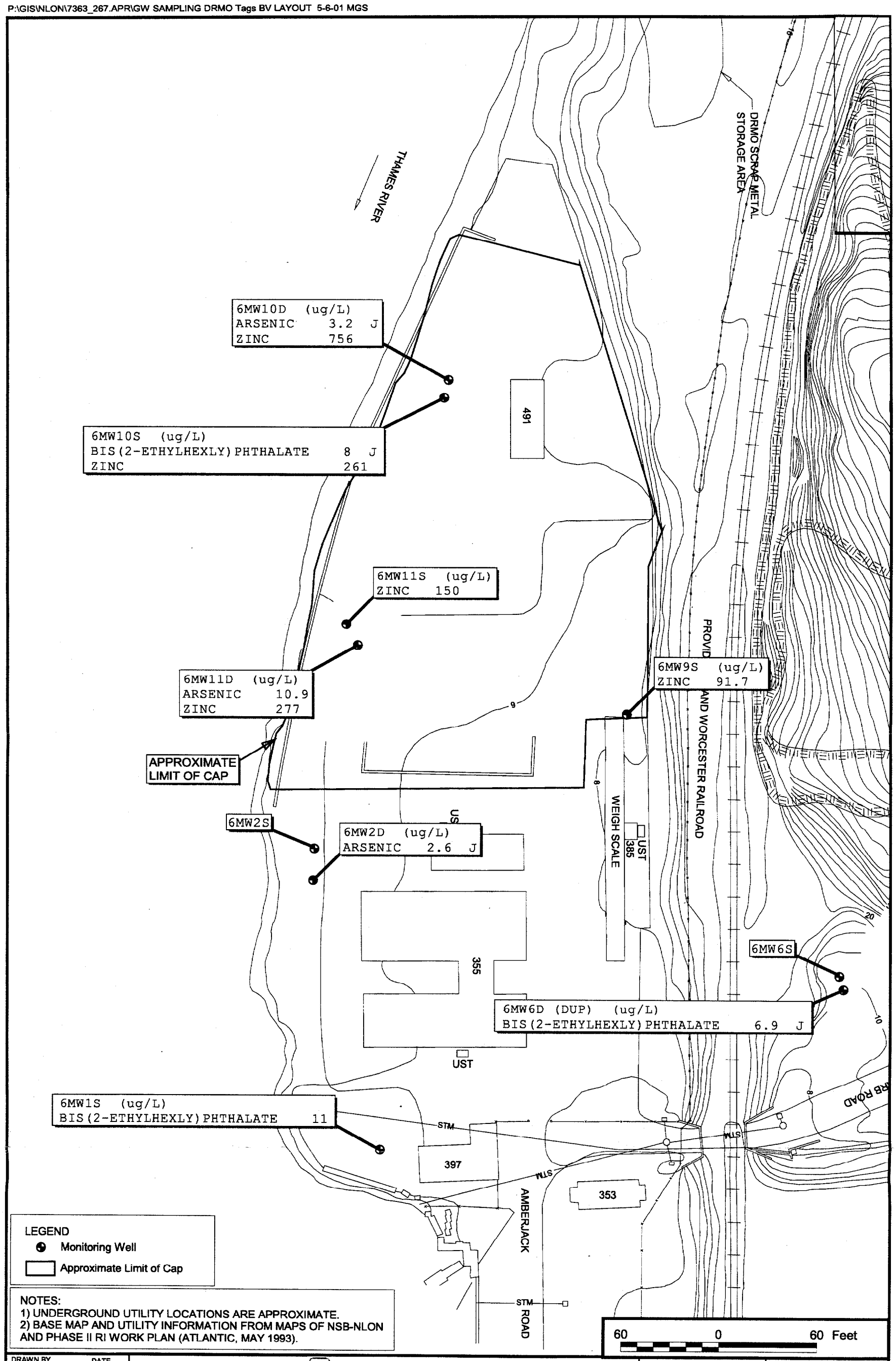
TABLE 3-1

ROUND 11 ANALYTICAL RESULTS SUMMARY
INTERIM GROUNDWATER MONITORING REPORT
DRMO, NSB-NLON, GROTON, CONNECTICUT

Chemical	Primary Monitoring Criterion (1)	Secondary Monitoring Criterion (1)	6MW9S ROUND 11 3/10/01	6MW10D ROUND 11 3/9/01	6MW10S ROUND 11 3/9/01	6MW11D ROUND 11 3/8/01	6MW11S ROUND 11 3/8/01
VOCs (ug/L)							
1,1,2,2-TETRACHLOROETHANE	1,100	11 (3)(4)	1 UJ	1 U	1 U	1 U	1 U
1,2-DICHLOROETHANE	29,700	99 (3)(4)	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	NA	NA	1 U	3.3	0.3 J	1.2	0.5 J
TRANS-1,2-DICHLOROETHENE	NA	NA	1 U	1 U	1 U	1 U	1 U
TRICHLOROETHENE	23,400	81 (3)(4)	0.26 J	1	1 U	1 U	1 U
VINYL CHLORIDE	157,500	525 (3)(4)	1 U	1 U	1 U	1 U	1 U
SVOCs (ug/L)							
BENZO(A)ANTHRACENE	3.0	0.049 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
BENZO(A)PYRENE	3.0	0.049 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
BENZO(B)FLUORANTHENE	3.0	0.049 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
BENZO(K)FLUORANTHENE	3.0	0.049 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
BENZOIC ACID	NA	NA	50 U	50 UJ	50 UJ	50 UJ	50 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	590	5.9 (3)(4)	10 U	10 U	8 J	10 U	10 U
FLUORANTHENE	37,000	370 (3)(4)	0.2 U	0.02 J	0.12 J	0.014 J	0.1 J
FLUORENE	1,400,000	14,000 (3)(4)	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
NAPHTHALENE	NA	NA	1 U	1 UJ	1 U	1 UJ	1 U
PHENANTHRENE	0.77	NA	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U
PYRENE	1,100,000	11,000 (3)(4)	0.2 U	0.2 UJ	0.16 J	0.2 UJ	0.11 J
Pesticides/PCBs (ug/L)							
4,4'-DDD	NA	0.00084 (3)(4)	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
AROCLOR-1254	5.0	0.00017 (3)(4)	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1260	5.0	0.00017 (3)(4)	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
HEPTACHLOR EPOXIDE	0.5	0.00011 (3)(4)	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total) (ug/L)							
ARSENIC	40	0.14 (3)(4)	2.6 U	3.2 J	2.6 U	10.9	2.6 U
BARIUM	NA	NA	19 U	97.3	66.4	152	60.3
CADMIUM	60	NA	2.6 UJ	9.3 J	2.6 UJ	2.6 UJ	2.6 UJ
CHROMIUM	1,100	50 (2)	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
COPPER	480	2.4 (2)	2 U	2 U	8.8 U	5.5 U	10.3 U
LEAD	130	8.1 (2)	2 U	2 U	2 U	4.4	2 U
SILVER	120	1.9 (2)	2.1 U	2.1 UJ	2.1 U	2.1 UJ	2.1 U
ZINC	1,230	81 (2)	91.7	756	261	277	150

NOTES:
Bold numbers denote exceedance of secondary monitoring criterion. There are no exceedances of primary monitoring criteria.
(1) Surface Water Protection Criteria for substances in groundwater, using a site-specific dilution factor of 100.
(2) Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, saltwater).
(3) Federal Ambient Water Quality Criteria for protection of human health from consumption of organisms.
(4) Connecticut Water Quality Criteria for protection of human health from consumption of organisms.
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

P:\GIS\NLON\7363_267.APR\GW SAMPLING DRMO Tags BV LAYOUT 5-6-01 MGS



DRAWN BY M. Spangenberg DATE 5-5-01	Tetra Tech NUS, Inc.	CONTRACT NUMBER 7091	OWNER NUMBER —
CHECKED BY — DATE —	ROUND 11 GROUNDWATER SAMPLING FOR DRMO NSB-NLON, GROTON, CONNECTICUT	APPROVED BY CAR DATE 5/10/01	
COST/SCHEDULE-AREA		APPROVED BY — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 3-1	REV 0

10900032

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(SCS, 1983): Soil Survey of New London County Connecticut. Soil Conversation Service.

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APPENDIX A

FIELD ACTIVITIES LOGBOOK

TITLE NSB NLON

PROJECT NO. 7363

BOOK 2497

TUESDAY 3.6.01

Work continued from Page WEATHER: 6" SNOW OVER-
NITE 28-33°F
BASE CLOSED DUE TO SNOW
MONDAY & TUESDAY
0700 KEITH SIMPSON AND TERRY
ROJAHN AT BLD 166
CLEAR SNOW PREP FOR SAMPLING
AT DRMO 6S & 6D.
CALL LAB TO ORDER SUPPLIES
20 COOLERS
3 SETS TRIP BLANKS
24 VOC + 36 L METALS
30 AMBER QTS
8 500 ML PE UNPRES.
CALLED TOM PATTON TO
CHECK ON PUMP & PID
0910 TO DRMO SET-UP @ 6S & D
SAMPLED + DUP @ 6D
SAMPLE + MS/MSD @ 6S
1240 COMPLETE SAMPLING TO
LUNCH, GAS + ICE
1335 TO BLD 166 TRACK FED
PACKS PUMP/PID PAPERWORK
PICK-UP PASS'S @ GATE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 3.6.01

DATE

TITLE NSB NLON

PROJECT NO. 7363

BOOK 2497

WED 3-07-01

Work continued from Page

1145 Hrs - PREP to SAMPLE GROUNDWATER @ DRMO

1200 Hrs - ARRIVE @ DRMO

WELL ID	GMW25	GMW2D
Start Purge	1226 Hrs	1235 Hrs
END PURGE	1330 Hrs	1335 Hrs
Start Sampling	1335 Hrs	1340 Hrs
Vol PURGED	4.2 gal	21.5 L
SAMPLER	K.S.	T.R

1410 Hrs - LEFT DRMO

1420 Hrs - ARRIVE @ BLDG 166
PAPERWORK & PREP. SAMPLES FOR
SHIPPING; SAMPLES ON C.O.C # 030601-01

1530 Hrs - FINISH PACKAging SAMPLES for
Pick up by Fed. Ex. / AB # 8169343343 20

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 3-07-01

DATE

TITLE NSB NLON

PROJECT NO. 7363

BOOK 2497

THURS. 03-08-01

Work continued from Page

Weather Overcast & 35°F

1200 Hrs - Prep. to Sample Groundwater @ DRMO

1215 Hrs - Arrive @ DRMO
Locate Wells via snow shovels

1300 Hrs - Start set up for Pumping Wells

WELL ID :	GMW11S	GMW11D
Start Purge :	1336 Hrs	1325 Hrs
End Purge :	1440 Hrs	1445 Hrs
Vol. Purged :	5.1 gal	24 L
Start Sampling :	1445 Hrs	1450 Hrs
Sampler	K.S.	T.R

1540 Hrs - Left DRMO

1550 Hrs - Begin Work @ Area A @ Bldg #166

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Terry Rogal

DATE 3/08/01

WITNESS

DATE

TITLE NSB NLON

PROJECT NO. 7363

BOOK 2497

FRI. 03-09-01

Work continued from Page

Weather Snow & 33°F

1400 Hrs - Prep. to sample Groundwater
Left Bldg 166 for DRMO

1415 Hrs - Prep. to set up @ Wells

WELL ID :	GMW10S	GMW10D
Start Purge :	1440 Hrs	1445 Hrs
End Purge :	1530 Hrs	1525 Hrs
Vol. Purged :	4.5 gal	14L
Start Sample :	1535 Hrs	1530 Hrs
Sampler :	K.S.	T.R

1620 Hrs - Left DRMO Return to Bld 166
Paperwork & Packaging for
Shipment via Fed. Ex
AB # 8169 3433 4353
on CoC # 030901-02

NOTE: Fed. Ex Picked up samples taken 3/08
on CoC 030801-02 via
AB # 8169 3433 4331 @ Bldg #166

1750 Hrs - Left for Fed. Ex. Drop of this date's samples

1850 Hrs - Return to Base

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE Terry Rogal

DATE 3/9/01

WITNESS

DATE

TITLE NSB - NLON PROJECT NO. 7363

SAT 03-10-01 BOOK 2497

Work continued from Page

Weather: Sunny & 35°F

0900 Hrs - Prep. to take water levels @ DRMO

High Tide Water Levels:

TIME	WELL ID	W.L.
6MW1S	0920 Hrs	5.21
6MW2S	0922	3.85
6MW2D	0924	4.03
6MW6S	0916	8.42
6MW6D	0914	8.73
6MW9S	0946	3.26
6MW10S	0940	1.70
6MW10D	0943	0.50
6MW11S	0930	1.34
6MW11D	0932	0.36
SG-1	0922	2.17

0955 Hrs - Return to BLDG #166

1010 Hrs - Start work on AREA-A

1450 Hrs - Left BLDG 166 for DRMO

1500 Hrs - Arrive @ DRMO

WELL ID	6MW1S	6MW9S
START PURGE:	1515 Hrs	1524 Hrs
END PURGE:	1605 Hrs	1615 Hrs
VOL. PURGED:	13.5L	4.2 gal
SAMPLE TIME:	1615 Hrs	1620 Hrs

SAMPLER: T.R.

TITLE NSB - NLON PROJECT NO. 7363

SAT 03-10-01 (Con't) BOOK 2497

Work continued from Page

Low Tide Water Levels:

DRMO

TIME	WELL ID	W.L.	Taken by
1650	6MW1S	8.61	TR
1630	6MW2S	7.00	TR
1629	6MW2D	5.74	TR
1642	6MW6S	8.56	KS
1640	6MW6D	8.88	KS
1524	6MW9S	3.92	KS
1635	6MW10S	4.51	KS
1638	6MW10D	2.49	KS
1637	6MW11S	4.39	KS
1636	6MW11D	2.25	KS
1626	SG-1	5.08	TR

1710 Hrs - Left DRMO

1720 Hrs - Arrive @ BLDG #166

- Unload EQ.
- Secure samples
- Paperwork

1800 Hrs - Left BLDG #166 for store. to pick up supplies.

END

TITLE NSB NLON

PROJECT NO. 7363

BOOK 2498

MON 3/12/01

Work continued from Page

NOTE: PACKAGED & PREPARED FOR
SHIPMENT (FED. EX. Pick up)
Samples collected 3/10/01
on COFC # 031001-02.
SHIPPED VIA FED EX.
AB # 8169 3433 4364

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

PROJECT NO.

BOOK

430
Stick ups
& Staffsause

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

APPENDIX B

TIDE TABLES

Day	Time	Ht.	Time	Ht.	Time	Ht.	Time	Ht.
1 Th	101am H	2.6	804am L	0.1	128pm H	2.1	759pm L	0.3
2 F	151am H	2.7	902am L	0.1	226pm H	2.0	856pm L	0.4
3 Sa	255am H	2.7	1002am L	0.1	334pm H	2.0	957pm L	0.3
4 Su	407am H	2.8	1101am L	0.0	441pm H	2.1	1100pm L	0.2
5 M	513am H	2.9	1159am L	-0.1	541pm H	2.3		
6 Tu	1202am L	0.0	612am H	3.1	1254pm L	-0.3	635pm H	2.5
7 W	101am L	-0.2	705am H	3.2	146pm L	-0.4	726pm H	2.7
8 Th	158am L	-0.4	756am H	3.3	235pm L	-0.5	816pm H	3.0
9 F	251am L	-0.5	845am H	3.2	322pm L	-0.6	906pm H	3.1
10 Sa	343am L	-0.6	935am H	3.1	408pm L	-0.6	957pm H	3.2
11 Su	434am L	-0.6	1024am H	3.0	455pm L	-0.4	1047pm H	3.2
12 M	527am L	-0.5	1114am H	2.8	543pm L	-0.2	1137pm H	3.2
13 Tu	621am L	-0.3	1204pm H	2.6	633pm L	0.0		
14 W	1228am H	3.0	718am L	-0.1	1257pm H	2.3	728pm L	0.2
15 Th	122am H	2.9	817am L	0.1	154pm H	2.2	826pm L	0.4
16 F	221am H	2.7	916am L	0.2	257pm H	2.0	927pm L	0.6
17 Sa	326am H	2.5	1015am L	0.3	405pm H	2.0	1028pm L	0.6
18 Su	433am H	2.5	1111am L	0.4	507pm H	2.1	1126pm L	0.6
19 M	532am H	2.5	1204pm L	0.4	600pm H	2.2		
20 Tu	1220am L	0.5	623am H	2.5	1250pm L	0.3	645pm H	2.3
21 W	108am L	0.4	707am H	2.6	131pm L	0.3	726pm H	2.5
22 Th	150am L	0.3	747am H	2.6	208pm L	0.2	806pm H	2.6
23 F	229am L	0.2	825am H	2.7	244pm L	0.1	844pm H	2.7
24 Sa	306am L	0.1	903am H	2.7	318pm L	0.1	921pm H	2.8
25 Su	345am L	0.0	941am H	2.7	353pm L	0.1	957pm H	2.9
26 M	424am L	-0.1	1018am H	2.6	429pm L	0.1	1032pm H	2.9
27 Tu	507am L	-0.1	1056am H	2.5	507pm L	0.2	1107pm H	3.0
28 W	553am L	0.0	1136am H	2.5	549pm L	0.3	1145pm H	3.0
29 Th	645am L	0.0	1219pm H	2.3	638pm L	0.4		
30 F	1230am H	2.9	741am L	0.1	108pm H	2.2	735pm L	0.5
31 Sa	124am H	2.9	840am L	0.1	207pm H	2.2	837pm L	0.5

New London, Connecticut
Tide Predictions (High and Low Waters) April, 2001
NOAA, National Ocean Service

Day	Time	Ht.	Time	Ht.	Time	Ht.	Time	Ht.
Daylight Saving Time begins at 0200								
1 Su	331am H	2.8	1040am L	0.1	415pm H	2.2	1042pm L	0.4
2 M	446am H	2.9	1139am L	0.0	524pm H	2.3	1147pm L	0.3
3 Tu	555am H	2.9	1236pm L	0.0	625pm H	2.5		
4 W	1250am L	0.1	655am H	3.0	131pm L	-0.1	719pm H	2.8
5 Th	150am L	-0.1	749am H	3.1	222pm L	-0.2	809pm H	3.0
6 F	246am L	-0.3	838am H	3.1	311pm L	-0.3	858pm H	3.3
7 Sa	338am L	-0.4	926am H	3.0	357pm L	-0.3	945pm H	3.4
8 Su	428am L	-0.5	1014am H	3.0	442pm L	-0.3	1033pm H	3.5
9 M	517am L	-0.4	1102am H	2.8	527pm L	-0.1	1120pm H	3.4
10 Tu	606am L	-0.3	1151am H	2.7	613pm L	0.1		
11 W	1208am H	3.3	657am L	-0.2	1240pm H	2.5	702pm L	0.3
12 Th	1258am H	3.1	749am L	0.0	131pm H	2.4	755pm L	0.5
13 F	149am H	2.9	844am L	0.2	225pm H	2.3	853pm L	0.7
14 Sa	246am H	2.7	940am L	0.4	324pm H	2.2	954pm L	0.8
15 Su	348am H	2.6	1035am L	0.5	428pm H	2.2	1054pm L	0.8
16 M	453am H	2.5	1128am L	0.5	531pm H	2.3	1152pm L	0.8
17 Tu	555am H	2.4	1218pm L	0.5	626pm H	2.4		
18 W	1246am L	0.7	647am H	2.5	104pm L	0.5	713pm H	2.6
19 Th	134am L	0.6	733am H	2.5	147pm L	0.4	755pm H	2.7
20 F	218am L	0.4	814am H	2.6	227pm L	0.3	833pm H	2.9
21 Sa	300am L	0.3	853am H	2.6	305pm L	0.3	910pm H	3.0
22 Su	340am L	0.1	931am H	2.6	342pm L	0.2	946pm H	3.1
23 M	420am L	0.0	1010am H	2.6	419pm L	0.2	1021pm H	3.2
24 Tu	501am L	-0.1	1049am H	2.6	458pm L	0.2	1058pm H	3.2
25 W	545am L	-0.2	1131am H	2.6	539pm L	0.3	1137pm H	3.3
26 Th	633am L	-0.1	1215pm H	2.5	625pm L	0.4		
27 F	1222am H	3.3	725am L	-0.1	103pm H	2.5	718pm L	0.4
28 Sa	112am H	3.2	821am L	0.0	156pm H	2.4	820pm L	0.5
29 Su	210am H	3.1	920am L	0.0	255pm H	2.4	925pm L	0.5
30 M	317am H	3.0	1018am L	0.1	402pm H	2.5	1031pm L	0.4

New London, Connecticut
Tide Predictions (High and Low Waters) May, 2001
NOAA, National Ocean Service

Daylight Saving Time

Day	Time	Ht.	Time	Ht.	Time	Ht.	Time	Ht.
1 Tu	429am H	2.9	1116am L	0.1	509pm H	2.6	1135pm L	0.3
2 W	537am H	2.9	1211pm L	0.0	610pm H	2.8		
3 Th	1238am L	0.2	637am H	2.9	105pm L	0.0	703pm H	3.1
4 F	138am L	0.0	730am H	2.9	157pm L	0.0	752pm H	3.3
5 Sa	233am L	-0.1	819am H	2.8	246pm L	0.0	838pm H	3.5

APPENDIX C

GROUNDWATER LEVEL MEASUREMENT SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project: NSB-NLON
Site: DRMO ROUND 11
Project No.: 7363
Personnel: SIMPSON / ROJAHN
Temperature: 38°F
Date: 3.10.01
Precipitation: NONE - SOME SNOW MELT 3.9.01
Level Indicator Type: M-SCOPE
Tide: LOW @ 1633
Serial Number: 26614

Well/Piezometer Number	Time	(A) Elevation of Reference Point (feet)*	(B) Water Level Indicator Reading (feet)*	=(A)-(B) Groundwater Elevation (feet)*	Total Well Depth (feet)*	Tidally Influenced	Comments
6MW1S	1650	8.63	8.61	0.02	15.68	Y	PUMP OFF @ 1640
6MW2S	1630	7.30	7.00	0.3	13.63	Y	
6MW2D	1629	7.85	5.74	2.11	88.84	Y	
6MW6S	1642	12.16	8.56	3.60	18.58	N	
6MW6D	1640	12.50	8.88	3.62	46.00	N	6" OPEN BOREHOLE *
6MW9S	1524	7.52	3.92	3.60	11.75	N	
6MW10S	1635	5.19	4.51	0.68	13.31	Y	
6MW10D	1633	5.01	2.49	2.52	54.06	Y	
6MW11S	1637	4.92	4.39	0.53	13.50	Y	
6MW11D	1636	5.31	2.25	3.06	85.00	Y	
SG-1	1626	5.67	5.08	0.59	--	Y	River Gauge

* Measurements to the nearest 0.01 foot.

* MEASURED AT TOP OF STEEL RISER

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project: NSB-NLON

Site: DRMO ROUND 11

Project No.: 7363

Personnel: SIMPSON / ROJAHN

Temperature: 35°F

Date: 3.10.01

Precipitation: NONE - SOME SNOW MELT 3.9.01

Level Indicator Type: M-SCOPE

Tide: HIGH @ 0948

Serial Number: 26614

Well/Piezometer Number	Time	(A) Elevation of Reference Point (feet)*	(B) Water Level Indicator Reading (feet)*	=(A)-(B) Groundwater Elevation (feet)*	Total Well Depth (feet)*	Tidally Influenced	Comments
6MW1S	0920	8.63	5.21	3.42	15.68	Y	
6MW2S	0922	7.30	3.85	3.45	13.63	Y	
6MW2D	0924	7.85	4.03 ~~0.05~~	3.82	88.84	Y	
6MW6S	0916	12.16	8.42	3.74	18.58	N	
6MW6D	0914	12.50	8.73	3.77	46.00	N	6" OPEN BOREHOLE *
6MW9S	0946	7.52	3.26	4.26	11.75	N	
6MW10S	0940	5.19	1.70	3.49	13.31	Y	
6MW10D	0943	5.01	0.50	4.51	54.06	Y	
6MW11S	0930	4.92	1.34	3.58	13.50	Y	
6MW11D	0932	5.31	0.36	4.95	85.00	Y	
SG-1	0922	5.67	2.17	3.50	--	Y	River Gauge

* Measurements to the nearest 0.01 foot.

APPENDIX D

MONITORING INSTRUMENT CALIBRATION LOG

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NSB NLON

INSTRUMENT NAME/MODEL: LA MOTTE 2020

SITE NAME: DRMO & AREA-A

MANUFACTURER: SAME

PROJECT No.: 7363 & 5082

SERIAL NUMBER: 1755-1600

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
3/6/01	SAME	T. ROJAHN	NA	NA	0.0 & 11	0.0 & 10	0.0 & 10	OK
3/7/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
3/8/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
3/9/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
3.10.01	"	RS	"	"	0 & 10	0 & 10	"	OK
3-11-01	"	TR	"	"	0 & 10	0 & 10	"	OK
3-12-01	"	RS	"	"	0 & 10	0 & 10	"	OK

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME: NSB NLON

INSTRUMENT NAME/MODEL: La MOTTE 2020

SITE NAME: DRMO & AREA-A

MANUFACTURER: SAME

PROJECT No.: 7363 & 5082

SERIAL NUMBER: 1737-1600

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
3/6/01	SAME	T. ROJAHN	NA	NA	0.0 & 9.6	0.0 & 10	0.0 & 10	OK
3/7/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
3/8/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
3/9/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
03/10/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
03/11/01	"	TR	"	"	0.0 & 10	0.0 & 10	"	OK
3/12/01	"	KS	"	"	0 & 10	0 & 10	"	OK
3/13/01	"	TR	"	"	0.0 & 9.9	0 & 10	"	OK

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : NSB-NION

INSTRUMENT NAME/MODEL: YSI 610 DM, SONDE 6820

SITE NAME: DRMO & AREA A

MANUFACTURER: YSI

PROJECT No.: 7363 & 5082

SERIAL NUMBER: SONDE SN 97K1095 AD
610-DM SN 318311R

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
3.6.01		KES						FULL CAL, AS PER MANUF.
3.7.01		KES						CHECK

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME: NSB NLON

INSTRUMENT NAME/MODEL: YSI 610-DM, SONDE 6820

SITE NAME: DRMO & AREA A

MANUFACTURER: YSI

PROJECT No.: 7363 & 5092

SERIAL NUMBER: SONDE SN 97G0401 AB
610-DM SN 222144 R

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
3.6.01		KES						FULL CAL., AS PER MANUF.
3.7.01		KES						CHECK

APPENDIX E

GROUNDWATER SAMPLE LOGSHEET AND LOW-FLOW PURGE DATA SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- GMW01S GW-11
Sample Location: GMW1S
Sampled By: T. ROJAHN
C.O.C. No.: 031001-02
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3/10/01 Time: 1615 Method: Low Flow/Bladder Pump	CLEAR	6.45	6.020	6.89	0.70	8.83	-3.4	3.27

PURGE DATA:

Date: 3/10/01	See Attached Low Flow Purge Data Sheet for Purge Data
Method: Low Flow/Bladder Pump	
Monitor Reading (ppm): —	
Well Casing Diameter & Material Type: 2" PVC	
Total Well Depth (TD): 15.7	
Static Water Level (WL): 8.20	
One Casing Volume(~~gal~~): 4.6L	
Start Purge (hrs): 1515	
End Purge (hrs): 1605	
Total Purge Time (min): 50	
Total Vol. Purged (~~gal~~): 13.5L	

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(1) Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc. **LOW FLOW PURGE DATA SHEET** **Well No.:** 6MW15

PROJECT:	NSB-NLON	**DATE:**	3-10-01
PROJECT NUMBER:	7363	**WEATHER:**	SUNNY & 35°F
SITE:	DRMO	**PERSONNEL:**	T. ROJAHN

Well Screen Depth: ~~8.20~~ (TOC) / _____ ft. **Pump Type/Material:** Bladder / Teflon & PVC **Tide Cycle:** ☐ High @ _____ ☒ Low @ 1633 ☐ Not Affected

Initial Water Level: 8.20 @ 1515 hrs. **Pump Intake Depth:**

Total Purge Volume= 13.5 (gal / L) **Total Purge Time=** 50 (min)

Time	Water Level feet below TOC	Volume mL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1515	8.20	~~300~~	300	30 & 300 15 PSI							→	Start Purge
1525	8.38	3000	300	"	6.90	7.26	7.001	4.90	9.5	3.94	-121	CLEAR
1535	8.45	6000	300	"	6.81	7.01	6.743	7.68	1.6	3.69	-98	"
1545	8.51	8500	250	45 & 300 15 PSI	6.81	6.71	6.424	8.48	1.3	3.50	-61	"
1555	8.55	11000	250	"	6.84	6.56	6.234	9.22	0.81	3.38	-29	"
1605	8.60	13500	250	"	6.89	6.45	6.020	8.83	0.70	3.27	-3.4	"
1615											→	Start Sampling
	Stop pump	@ 1605										
		TIME	W.L									
	NOTES	1610	8.63									
		1615	8.64	→ then	start	sampling / Restart Pump						
		1640	--	END	SAMPLING							
		~~1645~~	~~8.33~~	(TY)								
		1650	8.61									
		1655	8.71		1700	= 8.75		1705 =	8.73			

Water Quality Meter (S/N): YSI

Control Box Type (S/N): QED

Turbidimeter (S/N): LaMotte

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- GMW25 GW-11
Sample Location: GMW25
Sampled By: K. SIMPSON
C.O.C. No.: 030601-01
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3.7.01								
Time: 1335								
Method: Low Flow/Bladder Pump	CLEAR	6.98	17.34	5.2	2.2	3.19	40.0	10.12

PURGE DATA:

Date: 3.7.01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm):
Well Casing Diameter & Material Type: 2" PVC
Total Well Depth (TD): 13.6
Static Water Level (WL): 4.45
One Casing Volume(gal): 1.5
Start Purge (hrs): 1226
End Purge (hrs): 1330
Total Purge Time (min): 64
Total Vol. Purged (gal): 4.2

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	3	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	2	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	2	Qt. Amber Glass	✓
TCL PAH	4° C	1	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	1	L PE	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Tetra Tech NUS, Inc. **LOW FLOW PURGE DATA SHEET** **Well No.:** GMW2S

PROJECT: NSB NLON
PROJECT NUMBER: DRMO 7363
SITE: DRMO

DATE: 3.7.01
WEATHER: OVER CAST 35°F
PERSONNEL: K. SIMPSON

Well Screen Depth: 3.6 / 13.6 ft.
Initial Water Level: 4.45 @ 1226 hrs.

Pump Type/Material: Bladder / PVC TEFLON
Pump Intake Depth:

Tide Cycle: ☐ High @ ☒ Low @ 1346 ☐ Not Affected

Total Purge Volume= 4.2 (gal / L) **Total Purge Time=** 64 (min)

Time	Water Level (feet below TOC)	Volume ~~mL~~ GAL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1226	4.45	—	—	—	—	—	—	—	—	—	—	START PURGE
1232	4.45	0	250	30P/30D	4.8	7.22	14.78	5.64	5.7	8.51	-49.2	
1242	4.56	↓	↓	13 PSI	5.1	6.92	16.98	3.34	4.5	9.89	-22.5	
1252	4.46	↓	↓	↓	4.9	6.91	16.73	3.31	2.9	9.72	-0.6	
1302	4.51	↓	↓	↓	5.1	6.90	17.16	3.82	2.5	10.00	12.5	
1312	4.57	↓	↓	↓	5.1	6.93	17.28	3.34	2.2	10.07	24.6	
1320	4.63	↓	↓	↓	5.2	6.90	17.31	3.40	2.2	10.09	32.7	
1325	4.74	↓	↓	↓	5.2	6.86	17.33	3.08	2.2	10.12	38.5	
1330	4.78	4.2	↓	↓	5.2	6.88	17.34	3.19	2.2	10.12	40.0	END PURGE

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LAMOTTE

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- GMW2D - GW-11
Sample Location: GMW2D
Sampled By: T. ROJAHN
C.O.C. No.: 030601-01
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Date: 3/07/01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	ppt
Time: 1340								
Method: Low Flow/Bladder Pump	CLEAR	6.68	33.50	9.81	8.9	0.36	-267	20.88

PURGE DATA:

Date: 3/07/01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm): —
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 79.80
Static Water Level (WL): 4.71
One Casing Volume(~~gal~~): 46L
Start Purge (hrs): 1235
End Purge (hrs): 1335
Total Purge Time (min): 60
Total Vol. Purged (~~gal~~): 21.5L

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(1) Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

Sulfur ODOR

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): Terry Nagel

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

Well No.: 6MW2D

PROJECT: NSB NLON
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 3-07-01
WEATHER: OVERCAST 35°F
PERSONNEL: T. ROJAHN

Well Screen Depth: 68.8 / 78.8 ft.
Initial Water Level: 4.71 @ 1235 hrs.

Pump Type/Material: Bladder/PVC
Pump Intake Depth: 73.0' + PVC

Tide Cycle: ☐ High @ ☒ Low @ 1346 ☐ Not Affected

Total Purge Volume= 21.5 (gal/L)
Total Purge Time= 60 (min)

Time	Water Level feet below TOC	Volume mL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1235	4.71	–	400	ESD 35% 35PSI								Start Purge
1245	5.23	4000	350	35PSI	9.40	6.69	34.63	2.14	4.7	21.66	-113	CLEAR - SLIGHT ODOR
1255	5.36	7500	350	35PSI	9.45	6.71	34.61	0.74	4.1	21.63	-146	CLEAR ODOR
1305	5.30	11000	350	"	9.48	6.72	34.68	0.29	4.2	21.70	-184	CLEAR
1315	5.33	14500	350	"	9.57	6.70	34.17	0.52	6.3	21.32	-238	CLEAR
1325	5.30	18000	350	"	9.74	6.69	33.66	0.43	8.4	20.97	-254	CLEAR
1335	5.30	21500	350	"	9.81	6.68	33.50	0.36	8.9	20.88	-267	CLEAR
1340											→	Start Sampling

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LaMotte

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- 6MW65 - GW-11
Sample Location: DRMO - 6MW65
Sampled By: T. ROJAHN
C.O.C. No.: 030601-01
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3/6/01 Time: 1130 Method: Low Flow/Bladder Pump	CLEAR	5.93	0.336	9.98	0.2	8.38	217	0.16

PURGE DATA:

Date: 3/6/01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm): —
Well Casing Diameter & Material Type: 2" PVC
Total Well Depth (TD): 19.56
Static Water Level (WL): 8.22
One Casing Volume(gal): 6.4 L
Start Purge (hrs): 1015
End Purge (hrs): 1125
Total Purge Time (min): 70
Total Vol. Purged (gal): 14 L

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	(7) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(8) Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	(2) L PE	✓

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: —

Signature(s): Tony Rojahn

Tetra Tech NUS, Inc. **LOW FLOW PURGE DATA SHEET** **Well No.:** 6MW65

PROJECT: NSB NLON
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 03-06-01
WEATHER: SNOW 33°F
PERSONNEL: T. ROJAHN

Well Screen Depth: 8.6 / 18.6 ft.
Initial Water Level: 8.22 @ 1015 hrs.
Total Purge Volume= 14 (gal (L))

Pump Type/Material: BLADDER/PVC
Pump Intake Depth: 14
Total Purge Time= 70 (min)

Tide Cycle: ☐ High @ ☐ Low @ ☒ Not Affected

Time	Water Level feet below TOC	Volume mL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1015	8.22	–	200	20 PSI 45 PSI	~~9.5~~ (TX)	–	–	–	–	–	–	Start PURGE
1025	8.26	2000	200	"	9.88	6.11	0.336	7.70	3.0	0.16	192	CLEAR
1035	8.26	4000	200	"	9.80	5.97	0.336	8.18	2.7	0.16	205	"
1045	8.26	6000	200	"	9.97	5.95	0.335	7.72	2.0	0.16	208	"
1055	8.30	8000	200	"	9.94	5.94	0.335	8.39	1.1	0.16	211	"
1105	8.31	10,000	200	"	10.05	5.94	0.335	8.35	0.6	0.16	214	"
1115	8.32	12,000	200	"	9.95	5.93	0.336	8.30	0.3	0.16	216	"
1125	8.33	14,000	200	"	9.98	5.93	0.336	8.38	0.2	0.16	217	END PURGE
1130												Start Sampling

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LaMotte

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- 6MW6D GW-11
Sample Location: 6MW6D
Sampled By: K. SIMPSON
C.O.C. No.: 030601-01
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3·6·01								
Time: 1130								
Method: Low Flow/Bladder Pump	CLEAR	5.62	3.110	9.6	32	0.28	197.2	1.63

PURGE DATA:

Date: 3·6·01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm): NA
Well Casing Diameter & Material Type: 6" OPEN BORE HOLE
Total Well Depth (TD): 46.0
Static Water Level (WL): 8.51
One Casing Volume(gal): 55
Start Purge (hrs): 1010
End Purge (hrs): 1125
Total Purge Time (min): 75
Total Vol. Purged (gal): 5.2

See Attached Low Flow Purge Data Sheet for Purge Data

1.47 GAL/FT

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	6	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	4	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	4	Qt. Amber Glass	✓
TCL PAH	4° C	4	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	2	L PE	✓
	X2 VOL	FOR	DUP	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: GWFD- 030601-01 (YES)

Signature(s): [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

Well No.: GMW6D

PROJECT: NSB NION DRMO
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 3.6.01
WEATHER: SNOW 33°F
PERSONNEL: R SIMPSON

Well Screen Depth: 30.5 / 46.0 ft.
Initial Water Level: 8.52 @ 1018 hrs.

Pump Type/Material: BLADER
Pump Intake Depth: 76

Tide Cycle: ☐ High @ ☐ Low @ ☒ Not Affected

Total Purge Volume= 5.2 (gal / L)
Total Purge Time= 75 (min)

Time	Water Level feet below TOC	Volume ~~mL~~ GAL	Flow Rate mL/min	Pump Settings	Temp ºC	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1018	8.52	0	275	37D 37R	9.6	5.65	3.122	0.30	40	1.63	209.8	
1028	8.53	↓	↓	25PSI	9.5	5.61	3.117	0.26	39	3.123	204.4	
1038	8.53	↓	250	↓	9.4	5.60	3.125	0.23	33	1.64	203.5	
1048	8.54	↓	↓	↓	9.5	5.59	3.118	0.21	31	1.64	204.8	
1058	8.54	↓	↓	↓	9.6	5.62	3.113	0.24	37	1.63	202.2	
1108	8.54	↓	↓	↓	9.6	5.66	3.116	0.32	34	1.63	197.2	
1115	↓	↓	↓	↓	9.6	5.62	3.110	0.28	33	1.63	198.4	
1120	↓	↓	↓	↓	9.6	5.61	3.111	0.29	33	1.63	197.8	
1125	↓	5.2	↓	↓	9.6	5.62	3.110	0.28	32	1.63	197.2	END PURGE

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LAMOTTE

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO-6MW095 GW-11
Sample Location: 6MW95
Sampled By: R. SIMPSON
C.O.C. No.: 03001-02
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3·10·01								
Time: 1620								
Method: Low Flow/Bladder Pump	CLEAR	5.21	0.068	4.2	1.0	10.98	166	0.03

PURGE DATA:

Date: 3·10·01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm):
Well Casing Diameter & Material
Type: 2" PVC FLUSH MT
Total Well Depth (TD): 11.80
Static Water Level (WL): 3.92
One Casing Volume(gal): 1.3
Start Purge (hrs): 1524
End Purge (hrs): 1615
Total Purge Time (min): 51
Total Vol. Purged (gal): 4.2

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	Qt. Amber Glass	✓
TCL PAH	4° C	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	L PE	✓

OBSERVATIONS / NOTES:

RUN OFF GETTING INTO VAULT & SOME INTO RISER (SNOW MELT)

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

Well No.: GMW09S

PROJECT: NSB-NION
PROJECT NUMBER: 7363
SITE: DRMO RD 11

DATE: 3-10-01
WEATHER: SUNNY 35°F
PERSONNEL: K. SIMPSON

Well Screen Depth: ____ / ____ ft.
Initial Water Level: 3.92 @ 1524 hrs.

Pump Type/Material:
Pump Intake Depth:

Tide Cycle: ☐ High @ ____ ☒ Low @ 1433 ☒ Not Affected
9S NOT AFFECTED

Total Purge Volume= 4.2 (gal/~~L~~)
Total Purge Time= 51 (min)

Time	Water Level feet below TOC	Volume mL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
		—	—	—	—	—	—	—	—	—	—	START PURGE
1524	3.92											
1530	4.04	0	310	30R/30D 10 PSI	4.4	7.54	0.069	9.39	25	0.06	-29	
1540	4.00	↓	↓	↓	4.2	6.00	0.070	11.30	19	0.06	112	
1550	↓				4.2	5.71	0.069	12.32	15	0.03	129	
1600					4.3	5.43	0.067	11.92	8.1	0.03	150	
1605					4.2	5.23	0.067	11.00	1.2	0.03	160	
1610					4.3	5.22	0.067	10.95	1.2	0.03	164	
1615					4.2	5.21	0.068	10.98	1.0	0.03	166	END PURGE

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LA MOTTE

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- GMW/10S GW-11
Sample Location: GMW/10S
Sampled By: R. SIMPSON
C.O.C. No.: 030901-02
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3.9.01								
Time: 1535								
Method: Low Flow/Bladder Pump	CLEAR	7.20	6.592	6.2	5.7	4.93	-180	3.60

PURGE DATA:

Date: 3.9.01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm):
Well Casing Diameter & Material Type: 2" PVC
Total Well Depth (TD): 13.50
Static Water Level (WL): 3.33
One Casing Volume(gal): 1.7
Start Purge (hrs): 1440
End Purge (hrs): 1530
Total Purge Time (min): 50
Total Vol. Purged (gal): 4.5

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	3	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	2	Qt. Amber Glass	—
TCL PEST/PCBs	4° C	2	Qt. Amber Glass	✓
TCL PAH	4° C	1	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	1	L PE	✓

OBSERVATIONS / NOTES:

ALL 4 FLUSH MT. WELLS CLOSE TO THE RIVER, HAVE ~~LOT~~ LOT RUN-OFF IN THE VAULT AND MAY BE GETTING INTO THE RISER.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Tetra Tech NUS, Inc. **LOW FLOW PURGE DATA SHEET** **Well No.:** GMW 10S

PROJECT: NSB-NLON
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 3.9.01
WEATHER: SNOW 33°F
PERSONNEL: R. SIMPSON

Well Screen Depth: / ft.
Initial Water Level: 3.33 @ 1440 hrs.
Pump Type/Material: Bladder / TEFLON/PVC
Pump Intake Depth:
Tide Cycle: ☐ High @ ☒ Low @ 3:47PM ☐ Not Affected 1547
Total Purge Volume= 4.5 (gal)
Total Purge Time= 50 (min)

Time	Water Level feet below TOC	Volume GAL ~~mL~~	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1440	3.33	—	—	—	—	—	—	—	—	—	—	START PURGE
1450	3.43	~~3400~~ 4.5	340	30 R/30D	7.1	7.39	7.937	3.54	10	4.39	-143	NO ODOR
1500	3.52			25 PSI	6.4	7.24	5.907	5.20	14	3.20	-159	TR. BLACK FINES
1510	3.55				6.3	7.25	6.163	5.55	9.1	3.36	-172	
1520	3.56				6.4	7.22	6.643	5.39	7.0	3.64	-180	
1525	3.56				6.2	7.18	6.693	4.71	6.3	3.66	-181	
1530	3.57	4.5			6.2	7.20	6.542	4.93	5.7	3.60	-180	

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LA MOTTE

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- 6MW10D GW-11
Sample Location: 6MW10D
Sampled By: T ROJAHN
C.O.C. No.: 030901-02
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Date: 3-09-01	Visual	Standard	mS/cm	Degrees C	NTU	mg/l	mV	ppt
Time: 1530								
Method:Low Flow/Bladder Pump	CLEAR	7.13	20.99	9.38	2.5	3.48	+ 13	12.15

PURGE DATA:

Date: 3-09-01
Method:Low Flow/Bladder Pump
Monitor Reading (ppm): —
Well Casing Diameter & Material
Type: 2" Ø PVC
Total Well Depth (TD): 54.10
Static Water Level (WL): 1.94
One Casing Volume(gal): NA
Start Purge (hrs): 1445
End Purge (hrs): 1525
Total Purge Time (min): 40
Total Vol. Purged (~~gal~~): 14L

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	(3) 40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2) Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2) Qt. Amber Glass	✓
TCL PAH	4° C	(1) Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	(1) L PE	✓

OBSERVATIONS / NOTES:

NOTE - SEE OBSERVATION FOR 6MW10S

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

Well No.: 6MW10D

PROJECT: NSB NLON
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 03-09-01
WEATHER: SNOW 33°F
PERSONNEL: T. ROJAHN

Well Screen Depth: 44.10 / 54.10 ft.
Initial Water Level: 1.94 @ 1445 hrs.

Pump Type/Material: Bladder/Teflon
Pump Intake Depth: 49'

Tide Cycle: ☐ High @ ☒ Low @ 1547 ☐ Not Affected

Total Purge Volume= 14 (gal/(L))

Total Purge Time= 40 (min)

Time	Water Level feet below TOC	Volume mL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1445	1.94	—	—	—	—	—	—	—	—	—	—	Start Purge
1455	2.07	3500	350	30D30R 20 PSI	8.02	7.18	13.38	3.22	12	7.77	22	CLEAR
1505	2.11	7000	350	"	8.76	7.14	18.16	4.90	4.9	10.81	21	CLEAR
1515	2.11	10500	350	"	9.42	7.14	19.94	4.97	2.3	11.88	16	CLEAR
1525	2.11	14000	350	"	9.38	7.13	20.99	3.48	2.5	12.15	13	CLEAR
1530												Start Sampling

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LaMotte

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- GMW11S GW-11
Sample Location: GMW11S
Sampled By: R. SIMPSON
C.O.C. No.: 030801-02
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3-8-01								
Time: 1445								
Method: Low Flow/Bladder Pump	CLEAR	7.16	7.735	6.0	1.8	3.94	-162	4.27

PURGE DATA:

Date: 3-8-01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm):
Well Casing Diameter & Material Type: 2" PVC
Total Well Depth (TD):
Static Water Level (WL): 3.04 T: PVC
One Casing Volume(gal):
Start Purge (hrs): 1336
End Purge (hrs): 1440
Total Purge Time (min): 64
Total Vol. Purged (gal): 5.1

See Attached Low Flow Purge Data Sheet for Purge Data

WL @ END OF SAMPLING (1504) = 3.45'

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	3	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	2	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	2	Qt. Amber Glass	✓
TCL PAH	4° C	1	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	1	L PE	✓

OBSERVATIONS / NOTES:

SOME RUN OFF MAY BE GETTING INTO WELL

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc. **LOW FLOW PURGE DATA SHEET** **Well No.:** GMW11S

PROJECT: NSB-NLON
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 3-9-01
WEATHER: OVERCAST 35°F
PERSONNEL: K. SIMPSON

Well Screen Depth: 3.50 / 13.50 ft.
Initial Water Level: 3.04 @ 1336 hrs.

Pump Type/Material: Bladder / Teflon
Pump Intake Depth: 11'

Tide Cycle: ☐ High @ ☒ Low @ 1500 ☐ Not Affected

Total Purge Volume= 5.1 (gal / L) **Total Purge Time=** 64 (min)

Time	Water Level feet below TOC	Volume ~~mL~~	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1336	3.04	GAL	—	—	—	—	—	—	—	—	—	START PURGE
1340	3.10	0	300	~~350~~/350	5.4	7.15	7.220	5.31	35	3.96	-149	NO ODOR
1350	3.10	↓	↓	12PSI	5.6	7.11	7.535	4.98	10	4.15	-155	TR FINES
1400	3.23	↓	↓	↓	5.7	7.24	7.646	5.29	4.2	4.20	-162	CLEAR
1410	3.21	↓	↓	↓	5.9	7.16	7.590	4.83	3.6	4.18	-160	
1420	3.25	↓	↓	↓	5.9	7.13	7.592	4.43	3.3	4.19	-160	
1430	3.31	↓	↓	↓	6.0	7.10	7.699	3.87	2.8	4.24	-160	
1435	3.35	↓	↓	↓	6.0	7.11	7.717	3.65	2.2	4.25	-161	
1440	3.36	5.1	↓	↓	6.0	7.16	7.735	3.94	1.8	4.27	-162	END PURGE

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LAMOTTE

Notes:

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-NLON / DRMO
Project No.: 7363

[ ] Domestic Well Data
[x] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: DRMO- 6MW11D GW-11
Sample Location: 6MW11D
Sampled By: T. ROJAHN
C.O.C. No.: 030801-02
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 3/08/01								
Time: 1450								
Method: Low Flow/Bladder Pump	CLEAR	6.76	23.99	10.87	3.8	0.80	-60	14.56

PURGE DATA:

Date: 3/08/01
Method: Low Flow/Bladder Pump
Monitor Reading (ppm): —
Well Casing Diameter & Material
Type: 2" PVC
Total Well Depth (TD): 85'
Static Water Level (WL): 1.94
One Casing Volume(gal): NA
Start Purge (hrs): 1325
End Purge (hrs): 1445
Total Purge Time (min): 80
Total Vol. Purged (gal): 24 L

See Attached Low Flow Purge Data Sheet for Purge Data

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL VOLATILES (LOW-LEVEL)	HCL / 4° C	(3)	40 ml Vial	✓
TCL SEMIVOLATILES	4° C	(2)	Qt. Amber Glass	✓
TCL PEST/PCBs	4° C	(2)	Qt. Amber Glass	✓
TCL PAH	4° C	(1)	Qt. Amber Glass	✓
TAL METALS (TOTAL)	HNO_3 / 4° C	(1)	L PE	✓

OBSERVATIONS / NOTES:

Well Cap Damaged - SURFACE RUN OFF COULD GET INTO WELL.
Concrete W/ Cracks

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Terry Rojahn

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

Well No.: 6MW11D

PROJECT: NSB NLON
PROJECT NUMBER: 7363
SITE: DRMO

DATE: 03-08-01
WEATHER: OVERCAST & 35°F
PERSONNEL: T. ROJAHN

Well Screen Depth: 75 / 85 ft.
Initial Water Level: 1.94 @ 1325 hrs.

Pump Type/Material: BLADER / TEFLON
Pump Intake Depth: 82'

Tide Cycle: ☐ High @ ☒ Low @ 1500 ☐ Not Affected

Total Purge Volume= 24 (gal (L))
Total Purge Time= 80 (min)

Time	Water Level feet below TOC	Volume mL	Flow Rate mL/min	Pump Settings	Temp °C	pH	Sp Cond mS/cm	DO mg/L	Turbidity NTU	Salinity ppt	Eh mV	Comments
1325	1.94	—	300	15R 15D 35 PSI								Start PURGE
1335	1.95	3000	300	"	10.69	6.71	24.97	0.93	44	15.21	-15	Clear w/ Partic
1345	1.98	6000	300	"	10.81	6.70	25.11	0.43	21	15.29	-35	" w/ "
1355	2.00	9000	300	"	10.84	6.71	24.58	1.40	12	14.92	-40	" w/ Sl. Partic
1405	2.00	12000	300	"	10.84	6.73	24.02	2.05	7.6	14.57	-46	" " "
1415	2.02	15000	300	"	10.83	6.74	23.89	1.35	5.9	14.48	-50	" " "
1425	2.02	18000	300	"	10.83	6.74	23.83	1.11	4.3	14.44	-54	Clear w/ Trace Partic
1435	2.02	21000	300	"	10.87	6.75	23.86	1.58	5.1	14.47	-58	" "
1445	2.02	24000	300	"	10.97	6.76	23.99	0.80	3.8	14.56	-60	" "
1450												Start Sampling

24
16
40

Water Quality Meter (S/N): YSI
Control Box Type (S/N): QED
Turbidimeter (S/N): LaMotte

Notes:

APPENDIX F

CHAIN OF CUSTODY RECORDS

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 031001-02 | PAGE ___ OF ___

PROJECT NO: CTO-267	SITE NAME: NSB NLON
PROJECT MANAGER AND PHONE NUMBER	MARK MENGEL (412) 921-8723
FIELD OPERATIONS LEADER AND PHONE NUMBER	KEITH SIMPSON (412) 921-8131
CARRIER/WAYBILL NUMBER	FED. EX. / AB# 8169 3433 4364
LABORATORY NAME AND CONTACT:	STL / VERONICA BORTOT
ADDRESS	450 WILLIAM PITT WAY
CITY, STATE	PITTSBURGH, PA 15238
SAMPLERS (SIGNATURE)	Terry Hoppe / [signature]

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40ml VIALS	TCL SVOC 1L GLASS AMBER	TCL PEST/PCB 1L GLASS AMBER	TCL PAH 1L GLASS AMBER	TAL METALS (total) 1L HDPE				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	G	P	
PRESERVATIVE USED						HCl			/	/	/		HNO3	
3/10	1615	DRMO-GMW01S-GW-11	GW	G	9	3	2	2	(TR) 1	1				
3/10	1620	DRMO-GMW09S-GW-11	GW	G	9	3	2	2	1	1				

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	3.12.01	1635	1. RECEIVED BY FEDEX	3.12.01	1635
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: VOCS SUBMITTED W/ AREA A'S TRIP BLANK

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC. / DRMO

CHAIN OF CUSTODY | NUMBER 030601-01 | PAGE 1 OF 1

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO-267	NSB NLON	MARK MENGEL (412) 921-8723	STL / VERONICA BORTOT
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
Terry Rojahn		KEITH SIMPSON (412) 921-8131	450 WILLIAM PITT WAY
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FED. EX. / AB# 8169 3433 4320	PITTSBURGH, PA 15238

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40ml Vials	TCL SVOC 1L Glass Amber	TCL PEST / PCBS 1L Glass Amber	TCL PAH 1L Glass Amber	TAL METALS (total) 1L HDPE				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P				
PRESERVATIVE USED						HCl				HNO3				
3/06	0745	TB-030601-01	AQ	G	2	2								TRIP BLANK
3/06	1130	DRMO-6MW6S-GW-11	GW	G	17	*7	*4	2	2	*2				DO MS/MSD
3/06	1130	DRMO-6MW6D-GW-11	GW	G	10	3	2	2	2	1				
3/06	1130	GWFD-030601-01	GW	G	10	3	2	2	2	1				DUP OF 6MW6D
3/07	1335	DRMO-6MW2S-GW-11	GW	G	9	3	2	2	1	1				
3/07	1340	DRMO-6MW2D-GW-11	GW	G	9	3	2	2	1	1				

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rojahn	3/07/01	1630	1. RECEIVED BY FEDERAL EXPRESS	3/07/01	1630
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS * ADDITIONAL VOL COLLECTED FOR MS/MSD

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TINUS-001 3/99

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER 0 8 0 3 0 2 1 PAGE 1 OF 1

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
CTO-267	NSB NLON	MARK MENGEL (412) 921-8723	STL / VERONICA BORTOT
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON (412) 921-8131	ADDRESS: 450 WILLIAM PITT WAY
Terry Rogalski		CARRIER/WAYBILL NUMBER: FED. EX. / AB# 8169 3433 4331	CITY, STATE: PITTSBURGH, PA 15238

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40ml VIALS	TCL SVOC 1L Glass Amber	TCL PEST/PCBS 1L Glass Amber	TCL PAH 1L Glass Amber	TAL METALS (TOTAL) 1L HDPE				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P				
PRESERVATIVE USED						HCl	-	-	-	HNO3				
03/08	1445	DRMO-GMW11S-GW-11	GW	G	9	3	2	2	1	1				
03/08	1450	DRMO-GMW11D-GW-11	GW	G	9	3	2	2	1	1				

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Terry Rogalski	03-09-01	1630	1. RECEIVED BY FEDERAL EXPRESS	03-09-01	1630
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS VOCs SUBMITTED W/ AREA A's TRIP BLANK

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 030901-02

PROJECT NO: CTO-267

SITE NAME: NSB NLON

SAMPLERS (SIGNATURE): [signature]

PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL (412) 921-8723

FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON (412) 921-8131

CARRIER/WAYBILL NUMBER: FED. EX. /AB# 8169 3433 4353

LABORATORY NAME AND CONTACT: STL / VERONICA BORTOT

ADDRESS: 450 WILLIAM PITT WAY

CITY, STATE: PITTSBURGH, PA 15238

STANDARD TAT ☒

RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40ml VIALS	TCL SVOC 1L GLASS AMBER	TCL PEST/PCBS 1L GLASS AMBER	TCL PAH 1L GLASS AMBER	TAL METALS (total) 1L HDPE				COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P				
PRESERVATIVE USED						HCl	1	1	1	HNO3				
03/09	1500	TB-030901-01	AQ	G	2	2								
03/09	1530	DRMO-6MW10D-GW-11	GW	G	9	3	2	2	1	1				
03/09	1535	DRMO-6MW10S-GW-11	GW	G	9	3	2	2	1	1				

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	3-9-01	1815	1. RECEIVED BY FEDERAL EXPRESS	3-9-01	1815
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TINUS-001 3/99

APPENDIX G

DATA VALIDATION LETTERS AND LABORATORY DATA SHEETS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **M. MENGEL** **DATE: APRIL 26, 2001**

FROM: **ANGELA SCHEETZ** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION: VOA / SVOA / PEST / PCB / PAH**
CTO 267, NSB NEW LONDON
SDG NL005

SAMPLES: 11 / Aqueous / VOA / SVOA / PEST / PCB / PAH

DRMO-6MW01S-GW-11	DRMO-6MW09S-GW-11
DRMO-6MW10D-GW-11	DRMO-6MW10S-GW-11
DRMO-6MW11D-GW-11	DRMO-6MW11S-GW-11
DRMO-6MW2D-GW-11	DRMO-6MW2S-GW-11
DRMO-6MW6D-GW-11	DRMO-6MW6S-GW-11
GWFD-030601-01	

2 / Aqueous / VOA

TB-030601-01	TB-030901-01

Overview

The sample set for CTO 267, NSB New London; SDG NL005 consists of eleven (11) aqueous environmental samples and two (2) aqueous trip blanks. The 11 aqueous environmental samples were analyzed for TCL volatile organics, TCL semivolatile organics, organochlorine pesticide, polychlorinated biphenyl organic compounds, and polynuclear aromatic hydrocarbons. The 2 trip blanks were analyzed for TCL volatile organic compounds only. One field duplicate pair was included in this SDG, GWFD-030601-01/DRMO-6MW6D-GW-11.

The samples were collected by TetraTech NUS on March 6-10, 2001 and were analyzed by Severn Trent Laboratories. Analyses were conducted using the Contract Laboratory Program (CLP) Statement of Work (SOW) OLC02.1 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning
- Initial and Continuing Calibration
- Laboratory Method and/or Field Quality Control Blanks
- Surrogate Spike Recoveries
- Blank Spike / Blank Spike Duplicate Recoveries
- * Internal Standards Performance
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation

* • Tentatively Identified Compounds (TICs)

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report. The attached Table summarizes the validation qualifications which are based on the following information:

CALIBRATIONS

The following tables summarize calibration noncompliance and corresponding actions for:

Compound	ICV 03/06/01	CCV 03/08/01	CCV 03/13/01
Acetone	D	RX	RX
1,2-dibromo-3-chloropropane		RX	RX
2-hexanone		X	X
2-butanone			RX
4-methyl-2-pentanone			X
Bromomethane			
1,1,2,2-tetrachloroethane			
Associated Samples:	All	DRMO-6MW6S-GW-11 DRMO-6MW6D-GW-11 DRMO-6MW2S-GW-11 DRMO-6MW2D-GW-11 GWFD-030601-01 TB-030601-01	DRMO-6MW11S-GW-11 DRMO-6MW11D-GW-11 DRMO-6MW10S-GW-11 DRMO-6MW10D-GW-11

Compound	CCV 03/14/01
Acetone	RX
1,2-dibromo-3-chloropropane	RX
2-hexanone	X
2-butanone	RX
4-methyl-2-pentanone	X
Bromomethane	X
1,1,2,2-tetrachloroethane	X
Associated Samples:	DRMO-6MW01S-GW-11 DRMO-6MW09S-GW-11

Compound	ICV 02/26/01	CCV 03/14/01	CCV 03/19/01
2,4-Dinitrophenol	D	X	X

Benzoic Acid	D	X	
4-Nitrophenol			X
4-Nitroaniline			X

Associated Samples:	DRMO-6MW6S-GW-11	DRMO-6MW6S-GW-11	DRMO-6MW01S-GW-11
	DRMO-6MW6D-GW-11	DRMO-6MW6D-GW-11	DRMO-6MW09S-GW-11
	DRMO-6MW2S-GW-11	DRMO-6MW2S-GW-11	
	DRMO-6MW2D-GW-11	DRMO-6MW2D-GW-11	
	DRMO-6MW10S-GW-11	DRMO-6MW10S-GW-11	
	DRMO-6MW10D-GW-11	DRMO-6MW10D-GW-11	
	DRMO-6MW11S-GW-11	DRMO-6MW11S-GW-11	
	DRMO-6MW11D-GW-11	DRMO-6MW11D-GW-11	
	GWFD-030601-01	GWFD-030601-01	

Calibration Actions:

D - Percent Relative Standard Deviation > 30%; estimate positive (J) and nondetected (UJ) results.
X - Percent Difference > 25%; estimate (J) positive and (UJ) nondetected results.
R - Relative Response Factors < 0.05; estimate positive (J) and reject nondetected (UR) results.

Compound	ICV 03/19/01
Alpha-BHC	D
Delta-BHC	D
Associated Samples:	All

Calibration Actions for pesticide/PCBs:

D – Percent Relative Standard Deviation > 20% on one analytical column; estimate positive (J) and no action required for nondetected results; on both analytical columns; estimate positive (J) and nondetected (UJ) results.
X - Percent Difference > 25% on both analytical columns; estimate (J) positive and (UJ) nondetected results.
* - Percent Difference > 25% on one analytical column; estimate positive (J) and no action required for nondetected results.

BLANKS

The following contaminants were detected in laboratory method blanks:

Compound	Maximum Concentration	Action Level
Methylene chloride	0.76 µg/L	7.6 µg/L
Acetone	3.1 µg/L	31 µg/L

Samples Affected: All

Blank Actions:

- Value < Contract Required Quantitation Limit (CRQL); report CRQL followed by a U.
- Value > CRQL and < action level; report value followed by a U.
- Value > CRQL and > action level; report value unqualified.

Dilution factors and sample aliquots were taken into consideration when applying blank action levels. Positive results for methylene chloride and acetone were qualified in the manner indicated by the blank action table. Field quality control blanks were not qualified due to method blank contamination.

SURROGATE RECOVERY

% Recovery of the PAH surrogate p-terphenyl fell below the quality control limits on both detectors in the following samples:

DRMO-6MW01S-GW-11	DRMO-6MW10D-GW-11
DRMO-6MW11D-GW-11	DRMO-6MW2S-GW-11
DRMO-6MW2D-GW-11	DRMO-6MW6D-GW-11

Positive and nondetected results were qualified as estimated, J and UJ, respectively in the aforementioned samples.

% Recovery of the PAH surrogate Benzo(E)pyrene fell below the quality control limits on the UV detector in sample DRMO-6MW11D-GW-11. No qualifications were made on this basis as the recovery was compliant on the other detector.

% Recovery of the pesticide surrogate tetrachloro-m-xylene fell below the lower quality control limits on both analytical columns in sample DRMO-6MW2D-GW-11. Nondetected results in this sample were qualified as estimated, UJ.

% Recovery of the PCB surrogate tetrachloro-m-xylene fell below the lower quality control limits in sample DRMO-6MW2D-GW-11. Nondetected results in this sample were qualified as estimated, UJ.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate % recovery in the semivolatile fraction of 3,3'-dichlorobenzidine fell below the 10% quality control limits in the lab sample. No qualifications were made on this basis since the MS/MSD associated with sample DRMO-6MW6S-GW-11 was compliant.

Matrix spike/matrix spike duplicate relative percent differences in the PAH fraction for Naphthalene and Acenaphthylene were outside the quality control limits for sample DRMO-6MW6S-GW-11. No qualifications were made on this basis as the percent recoveries were compliant.

BLANK SPIKE RESULTS

Blank spike % recoveries for 4-chloroaniline, 3-nitroaniline, and 3,3'-dichlorobenzidine fell below the 10% quality control limits. Nondetected results reported, for samples associated with batch number 1071355 were qualified as rejected, UR.

Blank spike % recoveries for diethyl phthalate and 4-nitroaniline fell below the quality control limits.

Nondetected results reported, for samples associated with batch number 1071355 were qualified as estimated, UJ.

TENTATIVELY INDENTIFIED COMPOUNDS

Several tentatively identified compounds were detected for the volatile analysis in the samples that follow. These are summarized in Table 1 of this report.

DRMO-6MW01S-GW-11	DRMO-6MW09S-GW-11
DRMO-6MW10D-GW-11	DRMO-6MW10S-GW-11
DRMO-6MW11D-GW-11	DRMO-6MW11S-GW-11
DRMO-6MW2D-GW-11	DRMO-6MW2S-GW-11
DRMO-6MW6D-GW-11	DRMO-6MW6S-GW-11
GWFD-030601-01	

ADDITIONAL COMMENTS

Positive results reported at concentrations below the CRQL were qualified as estimated (J).

1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene were reported in both the volatile and semivolatile fractions. Since the reporting limits for the referenced compounds is lower in the volatile fraction (1 ppb), the compounds were removed from the semivolatile fraction.

OVERALL ASSESSMENT

Laboratory Performance: Several compounds were detected in the laboratory blank and/or field quality control blank analyses. The laboratory was unable to obtain acceptable percent differences between initial and continuing calibration response factors for several volatile compounds. Several semivolatile compounds had blank spike recoveries that were noncompliant. Several surrogate recoveries were below the quality control limits in the PAH fraction.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96).

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Angela Scheetz
TetraTech NUS

Angela Scheetz
Chemist/Data Validator

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Regional Worksheets
4. Appendix D - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11			DRMO-6MW09S-GW-11			DRMO-6MW10D-GW-11			DRMO-6MW10S-GW-11		
SAMPLE DATE:	03/10/01			03/10/01			03/09/01			03/09/01		
LABORATORY ID:	C1C130222001			C1C130222002			C1C100179003			C1C100179004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	UJ	C	1	UJ	C	1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		0.29	J	P
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	UR	C	1	UR	C	1	UR	C	1	UR	C
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	UR	C	5	UR	C	5	UR	C	5	UR	C
2-HEXANONE	5	UJ	C	5	UJ	C	5	UJ	C	5	UJ	C
4-METHYL-2-PENTANONE	5	UJ	C	5	UJ	C	5	UJ	C	5	UJ	C
ACETONE	5	U	A	5	U	A	5	U	A	5	U	A
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	UJ	C	1	UJ	C	1	U		1	U	
CARBON DISULFIDE	1	U		1	U		0.2	J	P	1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	0.26	J	P	1	U		1	U		1	U	
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		1	U		3.3			0.3	J	P
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		2	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11			DRMO-6MW09S-GW-11			DRMO-6MW10D-GW-11			DRMO-6MW10S-GW-11		
SAMPLE DATE:	03/10/01			03/10/01			03/09/01			03/09/01		
LABORATORY ID:	C1C130222001			C1C130222002			C1C100179003			C1C100179004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	
TOLUENE	1	U		1	U		1	U		0.13	J	P
TOTAL XYLENES	1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	0.27	J	P	0.26	J	P	1			1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11			DRMO-6MW11S-GW-11			DRMO-6MW2D-GW-11			DRMO-6MW2S-GW-11		
SAMPLE DATE:	03/08/01			03/08/01			03/07/01			03/07/01		
LABORATORY ID:	C1C100179002			C1C100179001			C1C080161005			C1C080161004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		0.31	J	P	1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	UR	C	1	UR	C	1	UR	C	1	UR	C
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	UR	C	5	UR	C	5	U		5	U	
2-HEXANONE	5	UJ	C	5	UJ	C	5	UJ	C	5	UJ	C
4-METHYL-2-PENTANONE	5	UJ	C	5	UJ	C	5	U		5	U	
ACETONE	5	U	A	5	U	A	5	U	A	5	U	A
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	0.41	J	P	1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U		1	U		1	U		1	U	
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1.2			0.5	J	P	1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		2	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11			DRMO-6MW11S-GW-11			DRMO-6MW2D-GW-11			DRMO-6MW2S-GW-11		
SAMPLE DATE:	03/08/01			03/08/01			03/07/01			03/07/01		
LABORATORY ID:	C1C100179002			C1C100179001			C1C080161005			C1C080161004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	
TOLUENE	1	U		1	U		1	U		1	U	
TOTAL XYLENES	1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	1	U		1	U		1	U		0.13	J	P
VINYL CHLORIDE	1	U		1	U		0.17	J	P	1	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11			DRMO-6MW6S-GW-11			GWFD-030601-01			TB-030601-01		
SAMPLE DATE:	03/06/01			03/06/01			03/06/01			03/06/01		
LABORATORY ID:	C1C080161002			C1C080161001			C1C080161003			C1C080161006		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:							DRMO-6MW6D-GW-11					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	UR	C	1	UR	C	1	UR	C	1	UR	C
1,2-DIBROMOETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		1	U		1	U		1	U	
2-BUTANONE	5	U		5	U		5	U		5	U	
2-HEXANONE	5	UJ	C	5	UJ	C	5	UJ	C	5	UJ	C
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U	A	5	U	A	5	U	A	1.9	J	CP
BENZENE	1	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		1	U		1	U		1	U	
BROMOFORM	1	U		1	U		1	U		1	U	
BROMOMETHANE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	1	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		1	U		1	U		1	U	
CHLOROBENZENE	1	U		1	U		1	U		1	U	
CHLORODIBROMOMETHANE	1	U		1	U		1	U		1	U	
CHLOROETHANE	1	U		1	U		1	U		1	U	
CHLOROFORM	1	U		1	U		1	U		1	U	
CHLOROMETHANE	1	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	3.5			1	U		3.2			1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	2	U		2	U		2	U		2	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11	DRMO-6MW6S-GW-11	GWFD-030601-01	TB-030601-01
SAMPLE DATE:	03/06/01	03/06/01	03/06/01	03/06/01
LABORATORY ID:	C1C080161002	C1C080161001	C1C080161003	C1C080161006
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
UNITS:	UG/L	UG/L	UG/L	UG/L
FIELD DUPLICATE OF:			DRMO-6MW6D-GW-11	

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	
TOLUENE	1	U		1	U		1	U		1	U	
TOTAL XYLENES	1	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
TRICHLOROETHENE	6.1			0.25	J	P	5.5			1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	TB-030901-01											
SAMPLE DATE:	03/09/01			/ /			/ /			/ /		
LABORATORY ID:	C1C100179005											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	1	U										
1,1,2,2-TETRACHLOROETHANE	1	UJ	C									
1,1,2-TRICHLOROETHANE	1	U										
1,1-DICHLOROETHANE	1	U										
1,1-DICHLOROETHENE	1	U										
1,2-DIBROMO-3-CHLOROPROPANE	1	UR	C									
1,2-DIBROMOETHANE	1	U										
1,2-DICHLOROBENZENE	1	U										
1,2-DICHLOROETHANE	1	U										
1,2-DICHLOROPROPANE	1	U										
1,3-DICHLOROBENZENE	1	U										
1,4-DICHLOROBENZENE	1	U										
2-BUTANONE	5	UR	C									
2-HEXANONE	5	UJ	C									
4-METHYL-2-PENTANONE	5	UJ	C									
ACETONE	2.6	J	CP									
BENZENE	1	U										
BROMOCHLOROMETHANE	1	U										
BROMODICHLOROMETHANE	1	U										
BROMOFORM	1	U										
BROMOMETHANE	1	UJ	C									
CARBON DISULFIDE	1	U										
CARBON TETRACHLORIDE	1	U										
CHLOROBENZENE	1	U										
CHLORODIBROMOMETHANE	1	U										
CHLOROETHANE	1	U										
CHLOROFORM	1	U										
CHLOROMETHANE	1	U										
CIS-1,2-DICHLOROETHENE	1	U										
CIS-1,3-DICHLOROPROPENE	1	U										
ETHYLBENZENE	1	U										
METHYLENE CHLORIDE	2	U										

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	TB-030901-01			
SAMPLE DATE:	03/09/01	/ /	/ /	/ /
LABORATORY ID:	C1C100179005			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
STYRENE	1	U										
TETRACHLOROETHENE	1	U										
TOLUENE	1	U										
TOTAL XYLENES	1	U										
TRANS-1,2-DICHLOROETHENE	1	U										
TRANS-1,3-DICHLOROPROPENE	1	U										
TRICHLOROETHENE	1	U										
VINYL CHLORIDE	1	U										

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11			DRMO-6MW09S-GW-11			DRMO-6MW10D-GW-11			DRMO-6MW10S-GW-11		
SAMPLE DATE:	03/10/01			03/10/01			03/09/01			03/09/01		
LABORATORY ID:	C1C130222001			C1C130222002			C1C100179003			C1C100179004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
ACENAPHTHENE	1	UJ	R	1	U		1	UJ	R	1	U	
ACENAPHTHYLENE	1	UJ	R	1	U		1	UJ	R	1	U	
ANTHRACENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
BENZO(A)ANTHRACENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
BENZO(A)PYRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
BENZO(B)FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
BENZO(G,H,I)PERYLENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
BENZO(K)FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
CHRYSENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
FLUORANTHENE	0.2	UJ	R	0.2	U		0.02	J	RP	0.12	J	P
FLUORENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
NAPHTHALENE	1	UJ	R	1	U		1	UJ	R	1	U	
PHENANTHRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	U	
PYRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.16	J	P

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11			DRMO-6MW09S-GW-11			DRMO-6MW10D-GW-11			DRMO-6MW10S-GW-11		
SAMPLE DATE:	03/10/01			03/10/01			03/09/01			03/09/01		
LABORATORY ID:	C1C130222001			C1C130222002			C1C100179003			C1C100179004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	10	U		10	U		10	U		10	U	
2,2'-OXYBIS(1-CHLOROPROPANE)	10	U		10	U		10	U		10	U	
2,4,5-TRICHLOROPHENOL	10	U		10	U		10	U		10	U	
2,4,6-TRICHLOROPHENOL	10	U		10	U		10	U		10	U	
2,4-DICHLOROPHENOL	10	U		10	U		10	U		10	U	
2,4-DIMETHYLPHENOL	10	U		10	U		10	U		10	U	
2,4-DINITROPHENOL	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
2,4-DINITROTOLUENE	10	U		10	U		10	U		10	U	
2,6-DINITROTOLUENE	10	U		10	U		10	U		10	U	
2-CHLORONAPHTHALENE	10	U		10	U		10	U		10	U	
2-CHLOROPHENOL	10	U		10	U		10	U		10	U	
2-METHYLPHENOL	10	U		10	U		10	U		10	U	
2-NITROANILINE	50	U		50	U		50	U		50	U	
2-NITROPHENOL	10	U		10	U		10	U		10	U	
3,3'-DICHLOROBENZIDINE	50	U		50	U		50	UR	E	50	UR	E
3-NITROANILINE	50	U		50	U		50	UR	E	50	UR	E
4,6-DINITRO-2-METHYLPHENOL	50	U		50	U		50	U		50	U	
4-BROMOPHENYL PHENYL ETHER	10	U		10	U		10	U		10	U	
4-CHLORO-3-METHYLPHENOL	10	U		10	U		10	U		10	U	
4-CHLOROANILINE	10	U		10	U		10	UR	E	10	UR	E
4-CHLOROPHENYL PHENYL ETHER	10	U		10	U		10	U		10	U	
4-METHYLPHENOL	10	U		10	U		10	U		10	U	
4-NITROANILINE	50	UJ	C	50	UJ	C	50	UJ	E	50	UJ	E
4-NITROPHENOL	50	UJ	C	50	UJ	C	50	U		50	U	
BENZOIC ACID	50	U		50	U		50	UJ	C	50	UJ	C
BIS(2-CHLOROETHOXY)METHANE	10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER	10	U		10	U		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE	11			10	U		10	U		8	J	P
BUTYL BENZYL PHTHALATE	10	U		10	U		10	U		10	U	
CARBAZOLE	10	U		10	U		10	U		10	U	
DI-N-BUTYL PHTHALATE	10	U		10	U		10	U		10	U	
DI-N-OCTYL PHTHALATE	10	U		10	U		10	U		10	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11			DRMO-6MW09S-GW-11			DRMO-6MW10D-GW-11			DRMO-6MW10S-GW-11		
SAMPLE DATE:	03/10/01			03/10/01			03/09/01			03/09/01		
LABORATORY ID:	C1C130222001			C1C130222002			C1C100179003			C1C100179004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	10	U		10	U		10	U		10	U	
DIETHYL PHTHALATE	10	U		10	U		10	UJ	E	10	UJ	E
DIMETHYL PHTHALATE	10	U		10	U		10	U		10	U	
HEXACHLOROBENZENE	10	U		10	U		10	U		10	U	
HEXACHLOROBUTADIENE	10	U		10	U		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE	50	U		50	U		50	U		50	U	
HEXACHLOROETHANE	10	U		10	U		10	U		10	U	
ISOPHORONE	10	U		10	U		10	U		10	U	
N-NITROSO-DI-N-PROPYLAMINE	10	U		10	U		10	U		10	U	
N-NITROSODIPHENYLAMINE	10	U		10	U		10	U		10	U	
NITROBENZENE	10	U		10	U		10	U		10	U	
PENTACHLOROPHENOL	50	U		50	U		50	U		50	U	
PHENOL	10	U		10	U		10	U		10	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11	DRMO-6MW11S-GW-11	DRMO-6MW2D-GW-11	DRMO-6MW2S-GW-11
SAMPLE DATE:	03/08/01	03/08/01	03/07/01	03/07/01
LABORATORY ID:	C1C100179002	C1C100179001	C1C080161005	C1C080161004
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
UNITS:	UG/L	UG/L	UG/L	UG/L
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	10	U		10	U		10	U		10	U	
2,2'-OXYBIS(1-CHLOROPROPANE)	10	U		10	U		10	U		10	U	
2,4,5-TRICHLOROPHENOL	10	U		10	U		10	U		10	U	
2,4,6-TRICHLOROPHENOL	10	U		10	U		10	U		10	U	
2,4-DICHLOROPHENOL	10	U		10	U		10	U		10	U	
2,4-DIMETHYLPHENOL	10	U		10	U		10	U		10	U	
2,4-DINITROPHENOL	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
2,4-DINITROTOLUENE	10	U		10	U		10	U		10	U	
2,6-DINITROTOLUENE	10	U		10	U		10	U		10	U	
2-CHLORONAPHTHALENE	10	U		10	U		10	U		10	U	
2-CHLOROPHENOL	10	U		10	U		10	U		10	U	
2-METHYLPHENOL	10	U		10	U		10	U		10	U	
2-NITROANILINE	50	U		50	U		50	U		50	U	
2-NITROPHENOL	10	U		10	U		10	U		10	U	
3,3'-DICHLOROBENZIDINE	50	UR	E	50	UR	E	50	UR	E	50	UR	E
3-NITROANILINE	50	UR	E	50	UR	E	50	UR	E	50	UR	E
4,6-DINITRO-2-METHYLPHENOL	50	U		50	U		50	U		50	U	
4-BROMOPHENYL PHENYL ETHER	10	U		10	U		10	U		10	U	
4-CHLORO-3-METHYLPHENOL	10	U		10	U		10	U		10	U	
4-CHLOROANILINE	10	UR	E	10	UR	E	10	UR	E	10	UR	E
4-CHLOROPHENYL PHENYL ETHER	10	U		10	U		10	U		10	U	
4-METHYLPHENOL	10	U		10	U		10	U		10	U	
4-NITROANILINE	50	UJ	E	50	UJ	E	50	UJ	E	50	UJ	E
4-NITROPHENOL	50	U		50	U		50	U		50	U	
BENZOIC ACID	50	UJ	C	50	UJ	C	50	UJ	C	50	UJ	C
BIS(2-CHLOROETHOXY)METHANE	10	U		10	U		10	U		10	U	
BIS(2-CHLOROETHYL)ETHER	10	U		10	U		10	U		10	U	
BIS(2-ETHYLHEXYL)PHTHALATE	10	U		10	U		5.6	J	P	10	U	
BUTYL BENZYL PHTHALATE	10	U		10	U		10	U		10	U	
CARBAZOLE	10	U		10	U		10	U		10	U	
DI-N-BUTYL PHTHALATE	10	U		10	U		10	U		10	U	
DI-N-OCTYL PHTHALATE	10	U		10	U		10	U		10	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11			DRMO-6MW11S-GW-11			DRMO-6MW2D-GW-11			DRMO-6MW2S-GW-11		
SAMPLE DATE:	03/08/01			03/08/01			03/07/01			03/07/01		
LABORATORY ID:	C1C100179002			C1C100179001			C1C080161005			C1C080161004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	10	U		10	U		10	U		10	U	
DIETHYL PHTHALATE	10	UJ	E	10	UJ	E	10	UJ	E	10	UJ	E
DIMETHYL PHTHALATE	10	U		10	U		10	U		10	U	
HEXACHLOROBENZENE	10	U		10	U		10	U		10	U	
HEXACHLOROBUTADIENE	10	U		10	U		10	U		10	U	
HEXACHLOROCYCLOPENTADIENE	50	U		50	U		50	U		50	U	
HEXACHLOROETHANE	10	U		10	U		10	U		10	U	
ISOPHORONE	10	U		10	U		10	U		10	U	
N-NITROSO-DI-N-PROPYLAMINE	10	U		10	U		10	U		10	U	
N-NITROSODIPHENYLAMINE	10	U		10	U		10	U		10	U	
NITROBENZENE	10	U		10	U		10	U		10	U	
PENTACHLOROPHENOL	50	U		50	U		50	U		50	U	
PHENOL	10	U		10	U		10	U		10	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11			DRMO-6MW6S-GW-11			GWFD-030601-01					
SAMPLE DATE:	03/06/01			03/06/01			03/06/01			/ /		
LABORATORY ID:	C1C080161002			C1C080161001			C1C080161003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							DRMO-6MW6D-GW-11					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	10	U		10	U		10	U				
2,2'-OXYBIS(1-CHLOROPROPANE)	10	U		10	U		10	U				
2,4,5-TRICHLOROPHENOL	10	U		10	U		10	U				
2,4,6-TRICHLOROPHENOL	10	U		10	U		10	U				
2,4-DICHLOROPHENOL	10	U		10	U		10	U				
2,4-DIMETHYLPHENOL	10	U		10	U		10	U				
2,4-DINITROPHENOL	50	UJ	C	50	UJ	C	50	UJ	C			
2,4-DINITROTOLUENE	10	U		10	U		10	U				
2,6-DINITROTOLUENE	10	U		10	U		10	U				
2-CHLORONAPHTHALENE	10	U		10	U		10	U				
2-CHLOROPHENOL	10	U		10	U		10	U				
2-METHYLPHENOL	10	U		10	U		10	U				
2-NITROANILINE	50	U		50	U		50	U				
2-NITROPHENOL	10	U		10	U		10	U				
3,3'-DICHLOROBENZIDINE	50	UR	E	50	UR	E	50	UR	E			
3-NITROANILINE	50	UR	E	50	UR	E	50	UR	E			
4,6-DINITRO-2-METHYLPHENOL	50	U		50	U		50	U				
4-BROMOPHENYL PHENYL ETHER	10	U		10	U		10	U				
4-CHLORO-3-METHYLPHENOL	10	U		10	U		10	U				
4-CHLOROANILINE	10	UR	E	10	UR	E	10	UR	E			
4-CHLOROPHENYL PHENYL ETHER	10	U		10	U		10	U				
4-METHYLPHENOL	10	U		10	U		10	U				
4-NITROANILINE	50	UJ	E	50	UJ	E	50	UJ	E			
4-NITROPHENOL	50	U		50	U		50	U				
BENZOIC ACID	50	UJ	C	50	UJ	C	50	UJ	C			
BIS(2-CHLOROETHOXY)METHANE	10	U		10	U		10	U				
BIS(2-CHLOROETHYL)ETHER	10	U		10	U		10	U				
BIS(2-ETHYLHEXYL)PHTHALATE	10	U		10	U		6.9	J	P			
BUTYL BENZYL PHTHALATE	10	U		10	U		10	U				
CARBAZOLE	10	U		10	U		10	U				
DI-N-BUTYL PHTHALATE	10	U		10	U		10	U				
DI-N-OCTYL PHTHALATE	10	U		10	U		10	U				

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11			DRMO-6MW6S-GW-11			GWFD-030601-01					
SAMPLE DATE:	03/06/01			03/06/01			03/06/01			/ /		
LABORATORY ID:	C1C080161002			C1C080161001			C1C080161003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							DRMO-6MW6D-GW-11					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	10	U		10	U		10	U				
DIETHYL PHTHALATE	10	UJ	E	10	UJ	E	10	UJ	E			
DIMETHYL PHTHALATE	10	U		10	U		10	U				
HEXACHLOROBENZENE	10	U		10	U		10	U				
HEXACHLOROBUTADIENE	10	U		10	U		10	U				
HEXACHLOROCYCLOPENTADIENE	50	U		50	U		50	U				
HEXACHLOROETHANE	10	U		10	U		10	U				
ISOPHORONE	10	U		10	U		10	U				
N-NITROSO-DI-N-PROPYLAMINE	10	U		10	U		10	U				
N-NITROSODIPHENYLAMINE	10	U		10	U		10	U				
NITROBENZENE	10	U		10	U		10	U				
PENTACHLOROPHENOL	50	U		50	U		50	U				
PHENOL	10	U		10	U		10	U				

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11	DRMO-6MW09S-GW-11	DRMO-6MW10D-GW-11	DRMO-6MW10S-GW-11
SAMPLE DATE:	03/10/01	03/10/01	03/09/01	03/09/01
LABORATORY ID:	C1C130222001	C1C130222002	C1C100179003	C1C100179004
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
UNITS:	UG/L	UG/L	UG/L	UG/L
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.020	U		0.020	U		0.020	U		0.020	U	
4,4'-DDE	0.020	U		0.020	U		0.020	U		0.020	U	
4,4'-DDT	0.020	U		0.020	U		0.020	U		0.020	U	
ALDRIN	0.010	U		0.010	U		0.010	U		0.010	U	
ALPHA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
ALPHA-CHLORDANE	0.010	U		0.010	U		0.010	U		0.010	U	
AROCLOR-1016	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1221	0.40	U		0.40	U		0.40	U		0.40	U	
AROCLOR-1232	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1242	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1248	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1254	0.20	U		0.20	U		0.20	U		0.20	U	
AROCLOR-1260	0.20	U		0.20	U		0.20	U		0.20	U	
BETA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
DELTA-BHC	0.010	U		0.010	U		0.010	U		0.010	U	
DIELDRIN	0.020	U		0.020	U		0.020	U		0.020	U	
ENDOSULFAN I	0.010	U		0.010	U		0.010	U		0.010	U	
ENDOSULFAN II	0.020	U		0.020	U		0.020	U		0.020	U	
ENDOSULFAN SULFATE	0.020	U		0.020	U		0.020	U		0.020	U	
ENDRIN	0.020	U		0.020	U		0.020	U		0.020	U	
ENDRIN ALDEHYDE	0.020	U		0.020	U		0.020	U		0.020	U	
ENDRIN KETONE	0.020	U		0.020	U		0.020	U		0.020	U	
GAMMA-BHC (LINDANE)	0.010	U		0.010	U		0.010	U		0.010	U	
GAMMA-CHLORDANE	0.010	U		0.010	U		0.010	U		0.010	U	
HEPTACHLOR	0.010	U		0.010	U		0.010	U		0.010	U	
HEPTACHLOR EPOXIDE	0.010	U		0.010	U		0.010	U		0.010	U	
METHOXYCHLOR	0.10	U		0.10	U		0.10	U		0.10	U	
TOXAPHENE	1.0	U		1.0	U		1.0	U		1.0	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11			DRMO-6MW11S-GW-11			DRMO-6MW2D-GW-11			DRMO-6MW2S-GW-11		
SAMPLE DATE:	03/08/01			03/08/01			03/07/01			03/07/01		
LABORATORY ID:	C1C100179002			C1C100179001			C1C080161005			C1C080161004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
4,4'-DDE	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
4,4'-DDT	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
ALDRIN	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
ALPHA-BHC	0.010	U		0.010	U		0.010	U	R	0.010	U	
ALPHA-CHLORDANE	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
AROCLOR-1016	0.20	U		0.20	U		0.20	UJ	R	0.20	U	
AROCLOR-1221	0.40	U		0.40	U		0.40	UJ	R	0.40	U	
AROCLOR-1232	0.20	U		0.20	U		0.20	UJ	R	0.20	U	
AROCLOR-1242	0.20	U		0.20	U		0.20	UJ	R	0.20	U	
AROCLOR-1248	0.20	U		0.20	U		0.20	UJ	R	0.20	U	
AROCLOR-1254	0.20	U		0.20	U		0.20	UJ	R	0.20	U	
AROCLOR-1260	0.20	U		0.20	U		0.20	UJ	R	0.20	U	
BETA-BHC	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
DELTA-BHC	0.010	U		0.010	U		0.010	U	R	0.010	U	
DIELDRIN	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
ENDOSULFAN I	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
ENDOSULFAN II	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
ENDOSULFAN SULFATE	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
ENDRIN	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
ENDRIN ALDEHYDE	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
ENDRIN KETONE	0.020	U		0.020	U		0.020	UJ	R	0.020	U	
GAMMA-BHC (LINDANE)	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
GAMMA-CHLORDANE	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
HEPTACHLOR	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
HEPTACHLOR EPOXIDE	0.010	U		0.010	U		0.010	UJ	R	0.010	U	
METHOXYCHLOR	0.10	U		0.10	U		0.10	UJ	R	0.10	U	
TOXAPHENE	1.0	U		1.0	U		1.0	UJ	R	1.0	U	

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11	DRMO-6MW6S-GW-11	GWFD-030601-01	
SAMPLE DATE:	03/06/01	03/06/01	03/06/01	/ /
LABORATORY ID:	C1C080161002	C1C080161001	C1C080161003	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	UG/L	UG/L	UG/L	
FIELD DUPLICATE OF:			DRMO-6MW6D-GW-11	

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
PESTICIDES/PCBs												
4,4'-DDD	0.020	U		0.020	U		0.020	U				
4,4'-DDE	0.020	U		0.020	U		0.020	U				
4,4'-DDT	0.020	U		0.020	U		0.020	U				
ALDRIN	0.010	U		0.010	U		0.010	U				
ALPHA-BHC	0.010	U		0.010	U		0.010	U				
ALPHA-CHLORDANE	0.010	U		0.010	U		0.010	U				
AROCLOR-1016	0.20	U		0.20	U		0.20	U				
AROCLOR-1221	0.40	U		0.40	U		0.40	U				
AROCLOR-1232	0.20	U		0.20	U		0.20	U				
AROCLOR-1242	0.20	U		0.20	U		0.20	U				
AROCLOR-1248	0.20	U		0.20	U		0.20	U				
AROCLOR-1254	0.20	U		0.20	U		0.20	U				
AROCLOR-1260	0.20	U		0.20	U		0.20	U				
BETA-BHC	0.010	U		0.010	U		0.010	U				
DELTA-BHC	0.010	U		0.010	U		0.010	U				
DIELDRIN	0.020	U		0.020	U		0.020	U				
ENDOSULFAN I	0.010	U		0.010	U		0.010	U				
ENDOSULFAN II	0.020	U		0.020	U		0.020	U				
ENDOSULFAN SULFATE	0.020	U		0.020	U		0.020	U				
ENDRIN	0.020	U		0.020	U		0.020	U				
ENDRIN ALDEHYDE	0.020	U		0.020	U		0.020	U				
ENDRIN KETONE	0.020	U		0.020	U		0.020	U				
GAMMA-BHC (LINDANE)	0.010	U		0.010	U		0.010	U				
GAMMA-CHLORDANE	0.010	U		0.010	U		0.010	U				
HEPTACHLOR	0.010	U		0.010	U		0.010	U				
HEPTACHLOR EPOXIDE	0.010	U		0.010	U		0.010	U				
METHOXYCHLOR	0.10	U		0.10	U		0.10	U				
TOXAPHENE	1.0	U		1.0	U		1.0	U				

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11	DRMO-6MW11S-GW-11	DRMO-6MW2D-GW-11	DRMO-6MW2S-GW-11
SAMPLE DATE:	03/08/01	03/08/01	03/07/01	03/07/01
LABORATORY ID:	C1C100179002	C1C100179001	C1C080161005	C1C080161004
QC_TYPE:	NORMAL	NORMAL	NORMAL	NORMAL
% SOLIDS:	0.0 %	0.0 %	0.0 %	0.0 %
UNITS:	UG/L	UG/L	UG/L	UG/L
FIELD DUPLICATE OF:				

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
ACENAPHTHENE	1	UJ	R	1	U		1	UJ	R	1	UJ	R
ACENAPHTHYLENE	1	UJ	R	1	U		1	UJ	R	1	UJ	R
ANTHRACENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
BENZO(A)ANTHRACENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
BENZO(A)PYRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
BENZO(B)FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
BENZO(G,H,I)PERYLENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
BENZO(K)FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
CHRYSENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
DIBENZO(A,H)ANTHRACENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
FLUORANTHENE	0.014	J	RP	0.1	J	P	0.2	UJ	R	0.2	UJ	R
FLUORENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
INDENO(1,2,3-CD)PYRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
NAPHTHALENE	1	UJ	R	1	U		1	UJ	R	1	UJ	R
PHENANTHRENE	0.2	UJ	R	0.2	U		0.2	UJ	R	0.2	UJ	R
PYRENE	0.2	UJ	R	0.11	J	P	0.2	UJ	R	0.2	UJ	R

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11	DRMO-6MW6S-GW-11	GWFD-030601-01	
SAMPLE DATE:	03/06/01	03/06/01	03/06/01	/ /
LABORATORY ID:	C1C080161002	C1C080161001	C1C080161003	
QC_TYPE:	NORMAL	NORMAL	NORMAL	
% SOLIDS:	0.0 %	0.0 %	0.0 %	100.0 %
UNITS:	UG/L	UG/L	UG/L	
FIELD DUPLICATE OF:			DRMO-6MW6D-GW-11	

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
ACENAPHTHENE	1	UJ	R	1	U		1	U				
ACENAPHTHYLENE	1	UJ	R	1	U		1	U				
ANTHRACENE	0.2	UJ	R	0.2	U		0.2	U				
BENZO(A)ANTHRACENE	0.2	UJ	R	0.2	U		0.2	U				
BENZO(A)PYRENE	0.2	UJ	R	0.2	U		0.2	U				
BENZO(B)FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	U				
BENZO(G,H,I)PERYLENE	0.2	UJ	R	0.2	U		0.2	U				
BENZO(K)FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	U				
CHRYSENE	0.2	UJ	R	0.2	U		0.2	U				
DIBENZO(A,H)ANTHRACENE	0.2	UJ	R	0.2	U		0.2	U				
FLUORANTHENE	0.2	UJ	R	0.2	U		0.2	U				
FLUORENE	0.2	UJ	R	0.2	U		0.2	U				
INDENO(1,2,3-CD)PYRENE	0.2	UJ	R	0.2	U		0.2	U				
NAPHTHALENE	1	UJ	R	1	U		1	U				
PHENANTHRENE	0.2	UJ	R	0.2	U		0.2	U				
PYRENE	0.2	UJ	R	0.2	U		0.2	U				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MENGEL**	**DATE:**	**APRIL 13, 2001**
FROM:	**ERIN M. FAUST**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – TAL METALS**
CTO-267 NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) – NL005

SAMPLES: 11/Aqueous/

DRMO-6MW01S-GW-11	DRMO-6MW09S-GW-11
DRMO-6MW10D-GW-11	DRMO-6MW10S-GW-11
DRMO-6MW11D-GW-11	DRMO-6MW11S-GW-11
DRMO-6MW-2D-GW-11	DRMO-6MW2S-GW-11
DRMO-6MW6D-GW-11	DRMO-6MW6S-GW-11
GWFD-030601-01	

Overview

The sample set for CTO 267, NSB New London, SDG NL005, consists of eleven (11) aqueous environmental samples. One field duplicate pair (GWFD-030601-01 / DRMO-6MW6D-GW-11) is included in this SDG.

All samples were analyzed for target analyte list (TAL) metals The samples were collected by TetraTech NUS from March 6-10, 2001 and analyzed by Severn Trent Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Metals analyses, with the exception of mercury, were conducted using SW 846 method 6010B. Mercury analyses were conducted using SW 846 method 7470A.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
• Calibration Recoveries
• Laboratory Blank Analyses
* • Laboratory Control Sample Results
• ICP Interference Check Sample Results
* • Matrix Spike Results
* • Laboratory Duplicate Results
* • Field Duplicate Results
• ICP Serial Dilution Results
• Sample Quantitation
* • Detection Limits

* - All quality control criteria were met for this parameter.

Calibration Recoveries

The contract required detection limit (CRDL) percent recovery (%R) was < 80% quality control limit for cadmium. All nondetected results reported for cadmium were qualified as estimated, "UJ". All positive results less than three times the CRDL were qualified as estimated, "J".

The CRDL percent recoveries for selenium and sodium were >120% quality control limit. All nondetected results reported for selenium were qualified as estimated, "UJ". All positive results less than three times the CRDL reported for sodium were qualified as estimated, "J".

Laboratory Blank Analyses

The following contaminants were detected in the laboratory method / preparation blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Aluminum	164 µg/L	820 µg/L
Barium	6.5 µg/L	32.5 µg/L
Beryllium	1.1 µg/L	5.5 µg/L
Calcium	150 µg/L	750 µg/L
Chromium	7.8 µg/L	39.0 µg/L
Cobalt	6.5 µg/L	32.5 µg/L
Copper	2.2 µg/L	11.0 µg/L
Iron	35.3 µg/L	176.5 µg/L
Magnesium	171 µg/L	855 µg/L
Manganese	6.9 µg/L	34.5 µg/L
Nickel	10.5 µg/L	52.5 µg/L
Potassium	541 µg/L	2705 µg/L
Silver	2.3 µg/L	11.5 µg/L
Sodium[1]	361 µg/L	1805 µg/L
Vanadium	8.1 µg/L	40.5 µg/L
Zinc[1]	9.5 µg/L	47.5 µg/L

[1] Maximum concentration present in a laboratory preparation blank.

An action level of 5X the maximum concentration was used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when evaluating for blank contamination. Positive results less than the blank action levels for aluminum, barium, beryllium, cobalt, copper, iron, magnesium, manganese, nickel, potassium, vanadium and zinc were qualified, "U", as a result of blank contamination.

ICP Interference Check Sample Results

The interfering analyte magnesium was present in sample DRMO-6MW10D-GW-11 at a concentration, which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely barium, cadmium, cobalt, manganese, silver, sodium and thallium were present in the ICS solution at concentrations which exceeded 2X the absolute value of the Instrument Detection Limit (IDL). Interference effects exist for cadmium and silver in the effected sample. The positive result reported for cadmium was qualified as estimated, "J". The nondetected result reported for silver was qualified as estimated, "UJ".

The interfering analyte magnesium was present in samples DRMO-6MW11D-GW-11 and DRMO-6MW2S-GW-11 at concentrations, which were comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely barium, cadmium, cobalt, manganese, silver, sodium and thallium were present in the ICS solution at concentrations which exceeded 2X the absolute value of the Instrument Detection Limit (IDL). Interference effects exist for cadmium and silver in the effected samples. The nondetected results reported for cadmium and silver were qualified as estimated, "UJ".

The interfering analytes calcium and magnesium were present in sample DRMO-6MW2D-GW-11 at concentrations, which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely barium, cadmium, cobalt, manganese, silver, sodium and thallium were present in the ICS solution at concentrations which exceeded 2X the absolute value of the Instrument Detection Limit (IDL). Interference effects exist for cadmium and silver in the effected samples. The nondetected results reported for cadmium and silver were qualified as estimated, "UJ".

ICP Serial Dilution Results

The ICP serial dilution percent differences (%Ds) exceeded the 15% quality control limit for iron and sodium. Positive results reported for iron and sodium were qualified as estimated, "J".

Sample Quantitation

The positive result < 2X the IDL reported for arsenic was qualified as estimated, "J", per regional guidelines.

Notes

The CRDL percent recovery was >120% quality control limit for mercury. No qualification was necessary per regional guidance.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks. Cadmium, selenium and sodium were qualified due to calibration noncompliance.

Other Factors Effecting Data Quality: Iron and sodium were qualified due to ICP serial dilution noncompliance. The interfering analytes calcium and/or magnesium were present in several samples. Arsenic was qualified due to concentrations < 2X the IDL.

The data for these analyses were reviewed with reference to the EPA Region I "National Functional Guidelines for Inorganic Review", February 1989 and the NFESC document entitled "Navy IRCDQM" (September 1999).

The text of this report has been formulated to address only those problem areas effecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC Guidelines and the Quality Assurance Project Plan (QAPP)."

Erin M Faust

Tetra Tech NUS
Erin M. Faust
Environmental Scientist

TetraTech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration (i.e., % RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS - GFAA MSA's $r < 0.995$
K = ICP Interference - include ICSAB % R's
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCD% between columns for positive results
V = Non-linear calibrations, tuning $r < 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW01S-GW-11			DRMO-6MW09S-GW-11			DRMO-6MW10D-GW-11			DRMO-6MW10S-GW-11		
SAMPLE DATE:	03/10/01			03/10/01			03/09/01			03/09/01		
LABORATORY ID:	C1C130222001			C1C130222002			C1C100179003			C1C100179004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	14.7	U		289	U	A	87.9	U	A	54.0	U	A
ANTIMONY	3.2	U		3.2	U		3.2	U		3.2	U	
ARSENIC	2.6	U		2.6	U		3.2	J	P	2.6	U	
BARIUM	5.1	U	A	19.0	U	A	97.3			66.4		
BERYLLIUM	0.13	U		0.13	U		0.13	U		0.13	U	
CADMIUM	2.6	UJ	C	2.6	UJ	C	9.3	J	CK	2.6	UJ	C
CALCIUM	43500			4890			179000			93800		
CHROMIUM	2.6	U		2.6	U		2.6	U		2.6	U	
COBALT	4.1	U		4.1	U		4.1	U		4.1	U	
COPPER	2.0	U		2.0	U		2.0	U		8.8	U	A
IRON	19.2	U	A	43.8	U	A	181	J	I	737	J	I
LEAD	2.0	U		2.0	U		2.0	U		2.0	U	
MAGNESIUM	103000			707	U	A	444000			193000		
MANGANESE	0.82	U	A	55.0			302			325		
MERCURY	0.08	U		0.08	U		0.08	U		0.08	U	
NICKEL	9.8	U		9.8	U		9.8	U		11.9	U	A
POTASSIUM	38800			1300	U	A	158000			63300		
SELENIUM	3.8	UJ	C	3.8	UJ	C	3.8	UJ	C	3.8	UJ	C
SILVER	2.1	U		2.1	U		2.1	UJ	K	2.1	U	
SODIUM	934000	J	I	7050	J	CI	3800000	J	I	1710000	J	I
THALLIUM	6.0	U		6.0	U		6.0	U		6.0	U	
VANADIUM	2.6	U	A	2.6	U		12.4	U	A	147		
ZINC	18.7	U	A	91.7			756			261		

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW11D-GW-11			DRMO-6MW11S-GW-11			DRMO-6MW2D-GW-11			DRMO-6MW2S-GW-11		
SAMPLE DATE:	03/08/01			03/08/01			03/07/01			03/07/01		
LABORATORY ID:	C1C100179002			C1C100179001			C1C080161005			C1C080161004		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	261	U	A	27.3	U	A	617	U	A	302	U	A
ANTIMONY	3.2	U		3.2	U		3.2	U		3.2	U	
ARSENIC	10.9			2.6	U		2.6	J	P	2.6	U	
BARIUM	152			60.3			144			22.7	U	A
BERYLLIUM	0.13	U		0.13	U		0.13	U		0.13	U	
CADMIUM	2.6	UJ	CK	2.6	UJ	C	5.2	UJ	CK	2.6	UJ	CK
CALCIUM	221000			82300			288000			156000		
CHROMIUM	2.6	U		2.6	U		2.6	U		2.6	U	
COBALT	12.2	U	A	4.1	U		4.1	U		4.1	U	
COPPER	5.5	U	A	10.3	U	A	2.0	U		8.6	U	A
IRON	1410	J	I	197	J	I	3770	J	I	437	J	I
LEAD	4.4			2.0	U		2.0	U		4.4		
MAGNESIUM	505000			188000			750000			433000		
MANGANESE	988			199			650			29.7	U	A
MERCURY	0.08	U		0.08	U		0.08	U		0.08	U	
NICKEL	9.8	U		9.8	U		9.8	U		9.8	U	
POTASSIUM	155000			61400			270000			149000		
SELENIUM	3.8	UJ	C	3.8	UJ	C	3.8	UJ	C	3.8	UJ	C
SILVER	2.1	UJ	K	2.1	U		2.1	UJ	K	2.1	UJ	K
SODIUM	4310000	J	I	1280000	J	I	6900000	J	I	3900000	J	I
THALLIUM	6.0	U		6.0	U		6.0	U		6.0	U	
VANADIUM	6.4	U	A	20.2	U	A	11.1	U	A	9.2	U	A
ZINC	277			150			12.9	U	A	17.8	U	A

CTO267-NSB NEW LONDON
WATER DATA
QUANTERRA
SDG: NL005

SAMPLE NUMBER:	DRMO-6MW6D-GW-11			DRMO-6MW6S-GW-11			GWFD-030601-01					
SAMPLE DATE:	03/06/01			03/06/01			03/06/01			/ /		
LABORATORY ID:	C1C080161002			C1C080161001			C1C080161003					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:							DRMO-6MW6D-GW-11					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	16.0	U	A	17.7	U	A	21.8	U	A			
ANTIMONY	3.2	U		3.2	U		3.2	U				
ARSENIC	2.6	U		2.6	U		2.6	U				
BARIUM	46.5			32.3	U	A	46.5					
BERYLLIUM	0.13	U		0.22	U	A	0.13	U				
CADMIUM	2.6	UJ	C	2.6	UJ	C	2.6	UJ	C			
CALCIUM	71300			15900			73900					
CHROMIUM	2.6	U		2.6	U		2.6	U				
COBALT	4.1	U		4.1	U		4.1	U				
COPPER	2.0	U		2.0	U		2.0	U				
IRON	3860	J	I	22.2	U	A	3910	J	I			
LEAD	2.0	U		2.0	U		2.0	U				
MAGNESIUM	56600			3480			58300					
MANGANESE	2470			1.1	U	A	2540					
MERCURY	0.08	U		0.08	U		0.08	U				
NICKEL	9.8	U		9.8	U		9.8	U				
POTASSIUM	19800			2630	U	A	20600					
SELENIUM	3.8	UJ	C	3.8	UJ	C	3.8	UJ	C			
SILVER	2.1	U		2.1	U		2.1	U				
SODIUM	521000	J	I	38200	J	I	532000	J	I			
THALLIUM	6.0	U		6.0	U		6.0	U				
VANADIUM	2.6	U		2.6	U		2.6	U				
ZINC	6.5	U	A	2.0	U		8.2	U	A			