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Round 1 Groundwater Monitoring Report for Area A Landfill

Naval Submarine Base New London

Groton, Connecticut

Northern Division Naval Facilities Engineering Command

Contract Number N62472-90-D-1298

Contract Task Order 0203

February 2000

TETRA TECH NUS, INC.

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ROUND 1 GROUNDWATER MONITORING REPORT
FOR
AREA A LANDFILL

NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

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TABLE OF CONTENTS

SECTION		PAGE NO.
1.0	**INTRODUCTION**	**1-1**
1.1	SCOPE AND OBJECTIVE	1-1
1.2	BACKGROUND INFORMATION	1-1
1.2.1	Base Description	1-1
1.2.2	Site Description and History	1-2
1.2.3	Previous Site Investigations	1-4
1.3	REPORT ORGANIZATION	1-8
2.0	**FIELD INVESTIGATION ACTIVITIES**	**2-1**
2.1	MONITORING WELL INSTALLATION	2-1
2.3	SOIL SAMPLING	2-3
2.4	STAFF GAUGE INSTALLATION	2-3
2.5	WATER LEVEL MEASUREMENT	2-3
2.6	GROUNDWATER SAMPLING	2-3
2.7	SURFACE WATER SAMPLING	2-5
2.8	SURVEYING	2-5
2.9	DECONTAMINATION AND INVESTIGATION-DERIVED WASTE	2-5
3.0	**MONITORING RESULTS**	**3-1**
REFERENCES		**R-1**

APPENDICES

A	FIELD ACTIVITIES LOG BOOK
B	BORING LOGS
C-1	MONITORING WELL CONSTRUCTION SHEETS
C-2	MONITORING WELL DEVELOPMENT SHEETS
D	SOIL SAMPLE LOGSHEETS
E	GROUNDWATER LEVEL MEASUREMENT SHEET
F	MONITORING INSTRUMENT CALIBRATION LOGS
G	GROUNDWATER SAMPLE LOGHSEETS AND LOW-FLOW PURGE DATA SHEETS
H	SURFACE WATER SAMPLE LOGSHEETS
I	CHAIN OF CUSTODY RECORDS
J-1	DATA VALIDATON LETTERS AND LABORATORY DATA SHEETS
J-2	UNVALIDATED SOIL RESULTS

TABLES

NUMBER		PAGE NO.
2-1	Soil Sample Summary	2-7
2-2	Water Level Elevations (July 1999)	2-8
3-1	Round 1 Groundwater Monitoring	3-5
3-2	Round 1 Surface Water and Seep Results	3-7

FIGURES

NUMBER		PAGE NO.
1-1	Location Map NSB-NLON Groton, Connecticut	1-9
1-2	Site Map	1-10
2-1	Sample Locations	2-9
2-2	Potentiometric Surface Map	2-11
3-1	COC Exceedances of Monitoring Criteria	3-9

1.0 INTRODUCTION

This Round 1 Groundwater Monitoring Report for the Area A Landfill 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) 0203.

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 SCOPE AND OBJECTIVE

An Interim Remedial Action (IRA) was completed in 1997 at the Area A Landfill site to address the risk from direct exposure to landfill material and to minimize the risk of migration of chemicals of concern (COCs) from the landfill to the surrounding areas via groundwater. The IRA consisted of capping the site with a multi-layer low-permeability cover system and installing a surface water and shallow groundwater interception and diversion system upgradient from the cover system. The groundwater monitoring is being conducted to evaluate the effectiveness of the IRA.

The objective of this Round 1 Groundwater Monitoring Report is to present the results of the initial round of long-term groundwater monitoring at the Area A Landfill site. Five existing Phase I and Phase II Remedial Investigation (RI) monitoring wells and 11 monitoring wells, installed in May 1999, and 8 surface water locations 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 Area A Landfill (TtNUS, January 1999). Because this is an interim report for the initial round of groundwater monitoring, evaluation of monitoring results is limited to a comparison of these results to the criteria identified in the GMP for the Area A Landfill (TtNUS, January 1999).

1.2 BACKGROUND INFORMATION

1.2.1 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 (Figure 1-1). 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.

1.2.2 Site Description and History

The Area A Landfill is located in the northeastern and north-central part of NSB-NLON and encompasses approximately 13 acres (Figure 1-2). The Area A Landfill is relatively flat and is bordered by a steep, wooded hillside that rises to the south, a steep wooded ravine to the west, and the Area A Wetland to the north. Access to the west end of the landfill is via a gate off Wahoo Avenue and access to the east end of the landfill is via a paved road and gate adjacent to a parking lot and the Area A recreational facilities.

Before the Area A Landfill was opened, dredge spoil from the Thames River was deposited continuously along a major portion of the hillside and within the former valley, which is currently the Area A Wetland. The Area A Landfill reportedly opened sometime before 1957. However, a 1957 aerial photograph (USEPA, EPIC, 1957) shows no apparent landfilling activities, indicating a somewhat later start-up date. After the NSB-NLON incinerator closed in 1963, most of the waste generated by submarine and base operations were disposed of in the landfill, including all non-salvageable materials.

The area fill method was reportedly used in landfill operations at the Area A Landfill. The area fill method consists of filling an area in a sequence of cells and lifts. Each lift is a specified thickness and consists of several cells. Each cell can be viewed as a rectangular area which is filled from back to front. The front area is the "working face" and is the location were new refuse is placed and is the area that is covered on a daily basis. The cover material used on the landfill was gravel obtained from the Groton water supply reservoir. The Area A Landfill closed in 1973.

After closure, a bituminous concrete pad approximately 160 x 100 feet in size was constructed in the southwest portion of the landfill for above-ground storage of industrial wastes. Steel drums, transformers, and electrical switches were stored on this pad. All of these materials have been properly disposed of off-site. This pad was also used for crane testing and test weights were stored there. The remainder of the Area A Landfill was unpaved and included a gravel covered parking lot (Deployed Parking) that was located in the central part of the landfill.

Site investigations were conducted at the Area A Landfill as part of a base-wide Phase I Remedial Investigation (RI) (Atlantic, August 1992) and a base-wide Phase II RI (B&R Environmental, March 1997).

A site-specific Area A Landfill Focused Feasibility Study (FFS) (Atlantic, May 1995), and a Proposed Remedial Action Plan (PRAP), (Atlantic, June 1995) were also prepared. A Record Of Decision (ROD) was prepared and signed by the Navy and United States Environmental Protection Agency (USEPA) Region I on September 26, 1995. The major components of the selected alternative as described in the ROD were as follows:

- Restricting access to the contaminated areas of the site using perimeter fencing and institutional controls.
- Capping the site with a low-permeability multi-layer cover system to prevent water infiltration into the landfill.
- Constructing an interception system to collect shallow groundwater and storm water and re-route these around the landfill
- Establishing landfill gas controls to manage landfill gas migration.
- Developing a groundwater monitoring plan to monitor the quality of groundwater after the landfill closure is completed.

A remedial design for the proposed landfill cover system was first prepared by Atlantic Environmental Services, Inc. (Atlantic, July 1994) and subsequently amended and finalized by Brown & Root Environmental (B&R Environmental, December 1996b). As part of the re-design effort, a Geotechnical Field Investigation (HNUS, May 1995), an Area A East End Investigation (B&R Environmental, December 1996a), and a Groundwater/Leachate Modeling Study (B&R Environmental, October 1996) were also conducted.

Construction of the landfill cover system (including gas control and storm water and shallow groundwater interception systems) was completed as part of an Interim Remedial Action (IRA) in September 1997 by Foster Wheeler Environmental Corporation. Prior to commencement of construction, a large quantity of metal, concrete and wood debris, several thousand sandbags, the Deployed Parking lot, the electrical storage building (Building 496), the Master at Arms Building (Building 373), salt storage shed, and various other items that had been located on the surface of the landfill were removed or relocated. The majority of the surficial debris was disposed of off-site as scrap metal or at an off-site landfill. The debris that was salvageable by NSB-NLON was removed and relocated to other areas of NSB-NLON.

The preparation of the subgrade to the cover required excavation from the northern slope of the landfill and placement of the excavated material on the southern slope. Also, approximately 4,000 cubic yards of soil from the Rubble Fill Area at Bunker A 86 (Site 4) and 1,000 cubic yards of common fill were placed over the eastern portion of the landfill, beneath the area of the relocated Deployed Parking. The soils were then compacted. During the subgrade preparation activities, two storm water drainage structures located within the limits of the site were decommissioned. These structures consisted of open catch basins on the southern edge of the landfill that discharged into a reinforced concrete culvert running through the landfill and ultimately into the Area A Wetland. Both culverts were entirely filled with flowable concrete to eliminate potential voids in the subgrade due to pipe collapse. The catch basins were filled with materials unsuitable for placement in the landfill subgrade (e.g., tires, large metal and wood debris, large concrete debris, etc.) followed by encapsulation with flowable concrete fill.

1.2.3 Previous Site Investigations

Six field investigations have been conducted at the Area A Landfill. These include the following:

- the field investigation performed for the base-wide Phase I RI (Atlantic, August 1992)
- the supplemental field investigation performed for the Area A Landfill FFS (Atlantic, May 1995)
- the field investigation performed for the base-wide Phase II RI (B&R Environmental, March 1997)
- the Geotechnical Field Investigation (HNUS, May 1995) and Area A East End Investigation (B&R Environmental, December 1996a) performed in support of the Area A Landfill Remedial Design (B&R Environmental, December 1996b)
- the field investigation performed for the Groundwater/Leachate Modeling Study, which supported the Area A Landfill Remedial Design (B&R Environmental, October 1996)

1.2.3.1 Base-Wide Phase I RI

Atlantic conducted a field investigation at the Area A Landfill in 1990 as part of the base-wide Phase I RI (Atlantic, August 1992). A total of 13 monitoring wells (2LMW7S, 2LMW7D, 2LMW8S, 2LMW8D, 2LMW9S, 2LMW9D, 2LMW13S, 2LMW13D, 2LMW14D, 2LMW17S, 2LMW17D, 2LMW18S, 2LMW18D) and 7 test borings (2LTB1 through 2LTB7) were installed. A total of 12 soil and 12 groundwater samples were collected from these monitoring wells and test borings. Soil samples were analyzed for Target Compound List (TCL) organics, Target Analyte List (TAL) inorganics, polychlorinated biphenyls (PCBs),

pesticides, and Toxicity Characteristics Leaching Procedure (TCLP) pesticides and metals. Groundwater samples were analyzed for the same parameters, except TCLP, plus radiological elements.

1.2.3.2 Area A Landfill FFS

Atlantic conducted a supplemental field investigation at the Area A Landfill in October and November 1993 to support the Area A Landfill FFS (Atlantic, May 1995). The main purpose of these field activities was to characterize the subsurface soil in the vicinity of the bituminous concrete pad located at the southwestern end of the landfill.

Twenty four soil borings (2LTB8 through 2LTB31) were drilled to a depth of 16 feet or auger refusal. Based on field screening for volatile organic compounds (VOCs), with an HNu organic vapor analyzer and for PCBs with a field gas chromatograph, 13 subsurface soil sample were selected for analysis of TCL organics, PCBs, pesticides and TAL inorganics. Selected samples were also analyzed for organic content, cation exchange capacity , total organic carbon (TOC), dioxin and geotechnical parameters, including grain-size distribution, moisture content, and specific gravity. Two samples were also analyzed by the TCLP for all toxicity constituents.

1.2.3.3 Base-Wide Phase II RI

B&R Environmental conducted a field investigation at the Area A Landfill in 1994 as part of the base-wide Phase II RI (B&R Environmental, March 1997). A total of 10 monitoring wells (2LPW1S, 2LOW1S, 2LOW1D, 2LOW2S, 2LOW3S, 2LOW4S, 2LMW19S, 2LMW19D, 2LMW20S, 2LMW20D) were installed. Eleven soil samples were collected from two soil borings (2LTB13, 2LTB23). Two rounds of groundwater level measurements and groundwater sampling were conducted, including one in March and one in August 1994. Groundwater samples were analyzed for TCL organics, TAL inorganics, PCBs, and radiological elements.

1.2.3.4 Geotechnical Field Investigation

B&R Environmental conducted field activities at the Area A Landfill in February and March 1995 as part of the Geotechnical Field Investigation (HNUS, March 1995) performed in support of the remedial design for a landfill cover system. The purpose of the Geotechnical Field Investigation was to confirm the areal extent of the fill material and obtain additional geotechnical field data.

Twenty test pits (LF-TP01 to LF-TP13 and LF-TP15 to LF-TP21) were excavated along the edges of the Area A Landfill to allow for visual observation of subsurface conditions. The purpose of excavating these

test pits was primarily to determine the lateral extent of the fill material and, wherever practical (especially along the southern edge of the landfill), establish the depth and competence of bedrock.

Eight soil borings were drilled at strategic locations on the landfill plateau to establish the depth of bedrock and thickness of the fill and dredge spoil material. The soil borings were also used to collect six soil samples to be tested for geotechnical parameters (particle size, moisture content, classification, Atterberg limits, and triaxial compression) and three soil samples to be tested for analytical parameters (TCL organics, PCBs, and pesticides, and TAL inorganics). Four borings (LF-SB01 and LF-SB03 through LF-SB05) were advanced through the overburden to auger refusal at the bedrock. Two borings (LF-SB02, LF-SB06) were advanced through the overburden and approximately 5 feet into competent bedrock. Two borings (LF-TP01 and LF-TP07) were drilled through approximately 5 feet of bedrock at the bottom of previously excavated test pits.

1.2.3.5 Area A East End Investigation

B&R Environmental conducted field activities at the Area A Landfill in September 1995 as part of the Area A East End Investigation (B&R Environmental, December 1996a) performed in support of the remedial design for the landfill cover system. The purpose of the Area A East End Investigation was to verify that the fill used for the construction of the recreational facilities (Racquetball Building, tennis courts, and ball field) located at the extreme east end of Area A is of a different nature from that placed in the rest of the Area A Landfill, i.e., does not contain contaminated waste material, and therefore, does not need to be capped.

Six test trenches (LF-TP22 through LF-TP27) were excavated along the eastern boundary of the Area A Landfill cover system as designed to verify the eastern limit of contaminated fill material. The test trenches were field-screened for the presence of VOCs, and four soil samples were collected and analyzed TCL organics, PCBs, and pesticides; TAL inorganics and cyanide; and, total petroleum hydrocarbon (TPH).

Three soil borings (SB06 through SB08) were drilled in the vicinity of the Area A East End recreational facilities. These soil borings were advanced through the overburden to the bedrock to auger refusal. A total of six soil samples were collected from the fill and dredge spoil material and analyzed for TCL organics, PCBs, and pesticides; TAL inorganics and cyanide; and, TPH.

1.2.3.6 Groundwater/Leachate Modeling Study

B&R Environmental conducted field activities at the Area A Landfill in November/December 1995 as part of the Groundwater/Leachate Modeling Study (B&R Environmental, October 1996) performed in support

of the remedial design for the landfill cover system. The purpose of the Groundwater/Leachate Modeling Study was to evaluate the impact of the proposed landfill cover system on the saturated thickness of landfill material and on the flow and composition of the groundwater/leachate discharge from the landfill.

The modeling field investigation activities included the performance of the following activities:

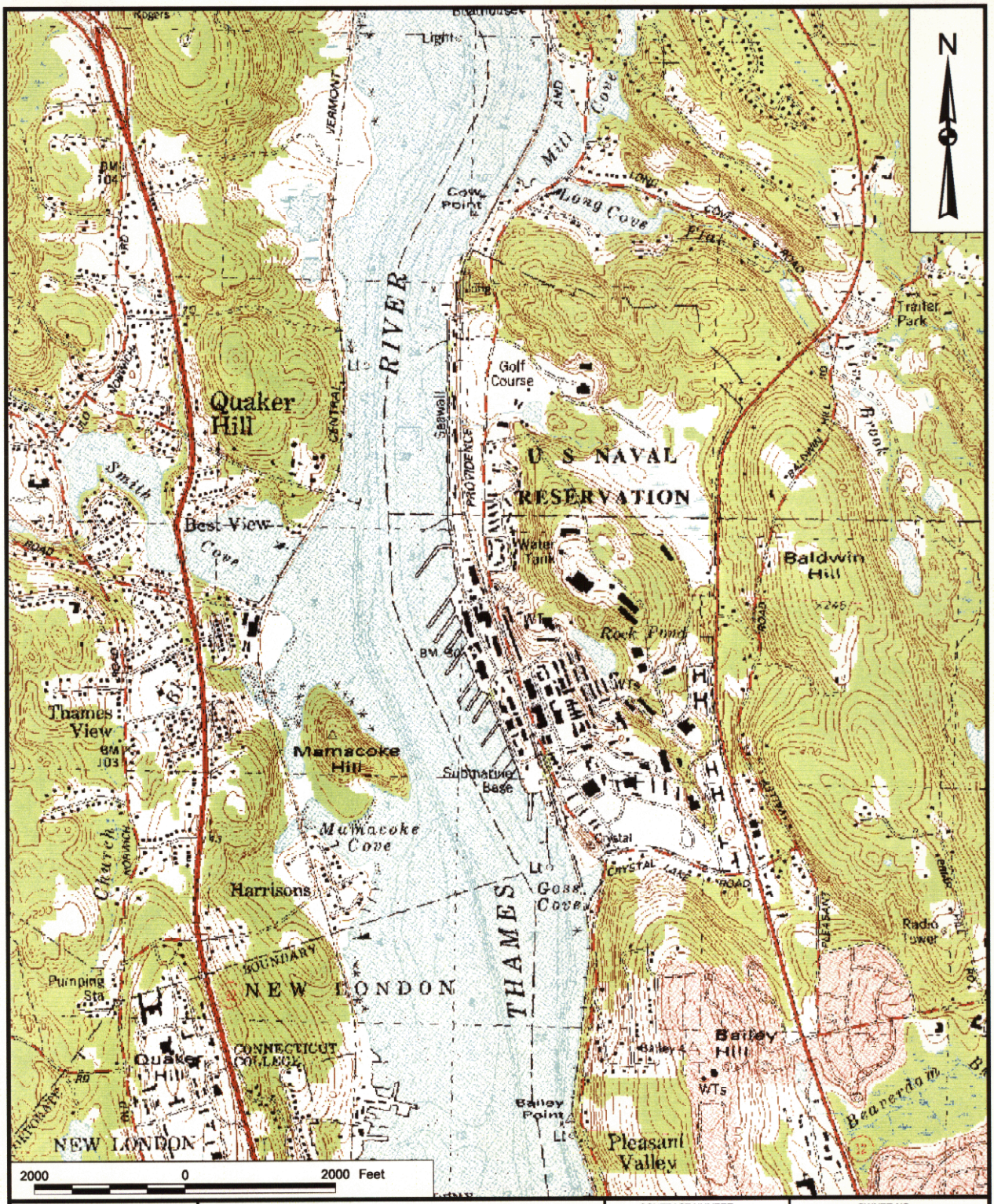
- Surface infiltration tests at 10 locations (2LT1 thru 2LT10) throughout the surface of the landfill
- Installation of 13 overburden monitoring wells, including 6 in the landfill material (2LMW28F through 2LMW33F) and 7 in the underlying dredge spoil or alluvium (2LMW28DS, 2LMW29A, 2LMW30DS through 2LMW34DS).
- Installation of three bedrock wells, including two located upgradient from the Area A Landfill (2LMW35B and 2LMW36B) and one at the northeast end of the landfill (2LMW32B).
- Installation of 10 piezometers, including 7 (2LPZ1DS thru 2LPZ7DS) along the boundary between the Area A Landfill and Area A Wetland and 3 (2LPZ1F, 2LPZ2F, and 2LMW32PZ) at the northeast end of the landfill.
- Installation of eight staff gauges (SG07 thru SG14) along the boundary between the Area A Landfill and Area A Wetland.
- Slug testing of the newly installed wells and one piezometer (2LMW32PZ).
- Water level measurement for all newly installed monitoring wells, piezometers, and staff gauges as well as for all previously existing monitoring wells.
- Flow measurement and sampling of the groundwater seep (3MSP01) from the western face of the Area A Landfill into the Overbank Disposal Area (OBDA) (Site 3) of the adjoining Area A Downstream site. This sample was analyzed for TCL organics and TAL inorganics.

The Groundwater/Leachate Modeling Study provided a comprehensive analysis of the site geology and hydrogeology. The report provided surface contour maps of the four units (landfill material, dredge spoil, alluvium and bedrock) underlying the site; thickness maps for the landfill material and dredge spoil; surface contour maps for the water table and bedrock groundwater; geologic cross-sections; conceptual flow nets; and an analysis of vertical flow gradients.

Additionally, the Groundwater/Leachate Modeling Study concluded that the Area A Landfill cover system would reduce the thickness of the saturated landfill material by approximately 0.1 foot along the Area A Wetland boundary, by approximately 0.5 foot at the eastern end of the landfill, by approximately 0.2 foot in the center of the landfill, and by over one foot at the western end of the landfill. The study concluded that the cover system would reduce the flux of groundwater COCs from the Area A Landfill to the Area A Wetland by 16 to 55 percent and that none of these COCs would exceed either the Federal AWQCs or the Connecticut's SWPCs.

1.3 REPORT ORGANIZATION

This report has been prepared in the following format to address the requirements for long-term groundwater monitoring at the Area A Landfill. Section 1.0 is this brief introduction including the project scope and objective and a discussion of previous investigations. Section 2.0 describes Round 1 field activities and the well installation and soil sampling conducted prior to Round 1. Section 3.0 presents and evaluates the analytical results from the Round 1 sampling effort.



DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NUMBER	OWNER NO.
J. BELLONE	2/16/00		5082	—
CHECKED BY	DATE	LOCATION MAP NSB-NLON GROTON, CONNECTICUT	APPROVED BY	DATE
MLM	2/18/00		Mark L. Mengel	2/18/00
COST/SCHEDULE-AREA			APPROVED BY	DATE
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SCALE			DRAWING NO.	REV
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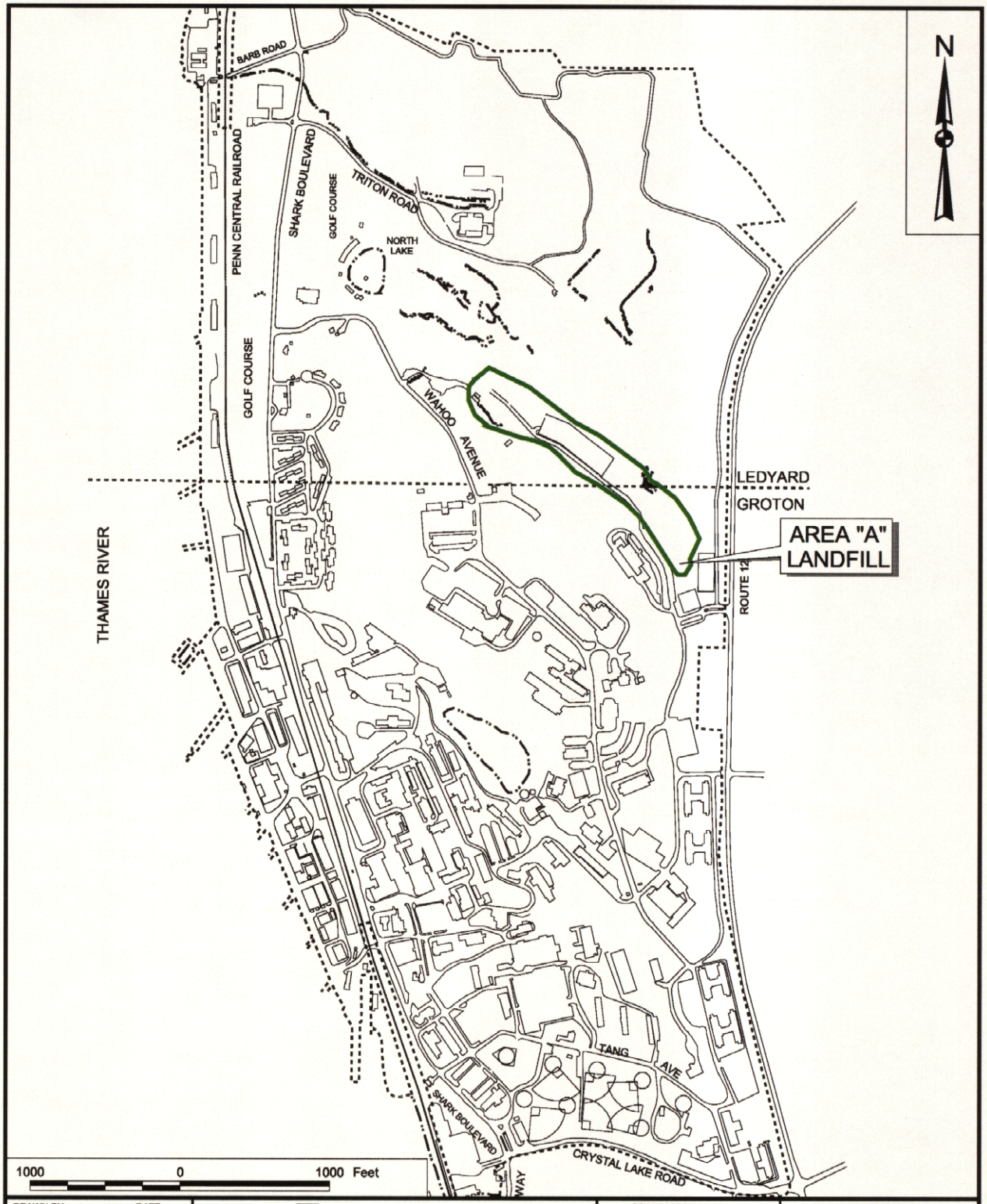

DRAWN BY J. BELLONE — DATE 2/16/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5082	OWNER NO. —
CHECKED BY MLM — DATE 2/18/00	SITE MAP NSB NLON GROTON, CONNECTICUT	APPROVED BY Mark L. Mengel — DATE 2/18/00	
COST/SCHEDULE-AREA		APPROVED BY — — DATE —	
SCALE AS NOTED		DRAWING NO. FIGURE 1-2	REV 0

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2.0 FIELD INVESTIGATION ACTIVITIES

Field investigation activities as part of the first round of the groundwater monitoring at Area A Landfill included one round of water level measurements and a round of groundwater sampling of 5 existing and 11 newly installed monitoring wells and surface water sampling at 1 seep and 11 surface water locations. Round 1 occurred in October 1999. The 11 new monitoring wells and associated surface water staff gauges were installed in May 1999 prior to the Round 1 sampling event. In addition, soil sampling occurred during the installation of the 11 new monitoring wells, and one existing monitoring well (2LMW20S) was overdrilled due to blockage in the well riser pipe and re-installed due. These activities were performed in accordance with the procedures and methodologies described in GMP for Area A Landfill (TtNUS, January 1999).

Methodologies for conducting the well installations and soil sampling prior to groundwater and surface water sampling are described in Sections 2.1 through 2.4 below. Field activities associated with Round 1 groundwater and surface water sampling are described Sections 2.5 and 2.7. Field activities associated with surveying of sample locations and decontamination and investigation-derived waste handling are described Sections 2.8 and 2.9, respectively. Figure 2-1 illustrates sampling locations. Copies of the field logbook and logsheets and sample chain-of custody records are provided in Appendices A through I.

2.1 MONITORING WELL INSTALLATION

Eleven new monitoring wells (3MW37S and 2WMW38DS through 2WMW47DS) were installed at the Area A Landfill in accordance with the GMP for Area A Landfill (TtNUS, January 1999). Existing well 2LMW20S was overdrilled due to a blockage in the riser casing and was reconstructed with the similar materials and depths as initially constructed during the Phase II RI. Locations of the new monitoring wells are illustrated in Figure 2-1. All well installation was completed by Environmental Drilling, Inc. of Massachusetts, subcontracted to TtNUS. Copies of boring logs, monitoring well construction sheets, and monitoring well development sheets are provided in Appendices B and C.

Monitoring well 3MW37S was installed in the alluvium adjacent to the OBDA seep location 3MSP01. The well was installed to monitor groundwater downgradient of the western portion of the landfill for VOCs which possibly could not adequately be analyzed from the adjacent seep sample (assuming the groundwater source was the same). The remaining ten monitoring wells (2MWM38DS through 2WMW47DS) were installed along the Area A Wetland boundary as close to the Area A Landfill cover system as possible. These monitoring wells were installed in dredge spoil, except wells 2WMW39DS and 2WMW47DS which were partially installed in the dredge spoil and the overlying sandy surficial material at each location.

All new monitoring wells, except 2LMW20S, were advanced by driving and washing 4-inch diameter temporary steel casing with a cathead mounted on a portable tripod. This methodology was used to prevent damage to the landfill cover system from conventional truck-mounted drilling equipment. Monitoring well 2LMW20S was re-installed by overdrilling with 4-1/4 inside diameter (I.D.)/8-inch outside diameter hollow stem augers to approximately 6 inches beyond the total depth of the well. The damaged well casing and screen from 2LMW20S was extracted from the well intact after overdrilling to approximately 1 foot above the bentonite seal. Soil cuttings from the new and overdilled well borings were collected and containerized in 55 gallon drums for off-site disposal by a subcontractor to TtNUS, as discussed in Section 2.9.

Two-inch I.D. split-spoon samples were collected continuously at 2-foot intervals from all new wells except 2LMW20S for lithologic classification and selection for chemical analyses. Each sample was screened with a Photo Ionization Detector (PID), and its lithology and other features (i.e., moisture, color, odor, etc.) was recorded on the boring log. Soil samples were selected for analyses as described in Section 2.3.

All well borings were converted to permanent monitoring wells and constructed of 2-inch diameter Schedule 40 PVC well screen and riser pipe. Except for 2WMW38DS, 3MW37S, and 2LMW20S, well screens were 10 feet in length with slot sizes of 0.0060 inches and had 1-foot silt traps attached to the bottom. Well 2WMW38DS was similarly constructed except it had a screen length of only 5 feet. Well 3MW37S had a screen length of only 1 foot with no silt trap due to the shallowness of bedrock and a slot size of 0.010 inches. Well 2LMW20S had a screen length of 10 feet and a slot size of 0.010 inches.

The annulus around each monitoring well was backfilled with clean silica sand filter pack from the bottom of the boring to 1 foot above the well screen. A 1- to 2-foot bentonite seal was installed above the filter pack. The remaining annulus was filled with cement-bentonite grout seal.

Each monitoring well was completed at the surface with a steel protective casing and surface pad. The protective casing were stickup-type (except for 2LMW20S) and grouted in place. A pad of gravel was installed around each stickup protective casings. Gravel was substituted for concrete due to the nature of the wetland material on which the pads sat (primarily soft, saturated organic silt/clay) and the concern with heaving during cold periods. The protective casing for 2LMW20S was installed flush with grade due to the vehicular traffic at its location, and was completed with a concrete apron, sloped away from the center of the casing. Well construction sheets are provided in Appendix C.

Each well was developed by bailing repeatedly. Well development sheets are provided in Appendix C. All development water was containerized for off-site disposal by a disposal subcontractor, as discussed in Section 2.9.

2.3 SOIL SAMPLING

One soil sample was collected for analyses from each new monitoring (2WMW38DS through 2WMW47DS and 3MW37S) from the near surface (less than 10 feet). Sample depths are summarized in Table 2-1. Soil sample logsheets are provided in Appendix D. All samples were analyzed for TCL VOCs, semivolatile organic compounds (SVOCs), PAHs, pesticides, and PCBs and TAL Metals. The analytical results of the soil sampling are presented in Appendix J.

2.4 STAFF GAUGE INSTALLATION

One staff gauge was installed near each newly installed monitoring well for measurement of surface water elevations and referencing surface water sampling. The staff gauges were constructed of ¾-inch galvanized pipe advanced 2 to 8 feet into the ground. Locations of the staff gauges are illustrated on Figure 2-1

2.5 WATER LEVEL MEASUREMENT

Prior to groundwater purging and sampling and surface water sampling, one round of water levels was measured from 11 new and 5 existing monitoring wells. Water levels were also measured at 11 new and 2 existing staff gauge locations, however, the measurements were obtained from the wrong measuring point. Therefore, the elevation data was not used in preparing the potentiometric surface map. The one existing staff gauge (SG-06) was located at the top of the headwall along the southern side of the dike. The other existing staff (SG-25, formerly SG-12) was located along the shoreline of the pond northeast of the crane test pad. Table 2-2 summarizes the water level measurements minus the staff gauge data. Figure 2-2 illustrates the potentiometric surface map for the shallow groundwater at the Area A Landfill.

2.6 GROUNDWATER SAMPLING

Two existing monitoring wells (3MW12S and 3MW12D) and 11 newly installed monitoring wells (2WMW38DS through 2WMW47DS and 3MW37S) were sampled during the first round of groundwater monitoring. Low-flow purging and sampling techniques, as described in Sections 4.1.6 and 4.1.7 of the GMP (TtNUS, January 1999), were used.

The wells were purged using a peristaltic pump with disposable Teflon® tubing. Prior to purging, the initial static water level was measured in the well using a water-level indicator. During purging, the water-level was measured every 3 to 5 minutes. The pumping rate was initially set at less than 0.3 liter per minute and reduced to 0.1 to 0.2 liter per minute. The pumping rate was adjusted so as to not allow drawdown to

exceed 0.3 foot during the purging (except for wells with low recharge rates). Copies of the low-flow purge data sheets are provided in Appendix G.

During purging, water quality parameters of pH, turbidity, specific conductance, temperature, Eh, salinity, and dissolved oxygen were measured and recorded every 5 minutes using a water quality meter and flow-through cell until all of the parameters stabilized and the minimum purge volume (equal to the stabilized drawdown volume plus the tubing volume) was removed. Stabilization of the above parameters is defined as follows:

- pH ± 0.2 standard units
- turbidity ± 10 % for values greater than 1 NTU
- specific conductance ± 10 %
- temperature ± 10 %
- Eh ± 10 mV
- dissolved oxygen ± 10 %.

Monitoring wells 2WMW38DS through 2WMW46DS were dewatered during purging due to the low recharge rate of the screened formation. The dewatered wells were sampled the following day. Wells 2WMW38DS and 2WMW40DS were sampled over 3 and 2 days, respectively, due to insufficient recharge for supplying volume for the sample containers.

All purge water was containerized in 55 gallon drums for off-site disposal by a disposal subcontractor, as discussed in Section 2.5.

Following purging, samples were collected directly from the discharge end of the tubing. All sample containers were filled by allowing the discharge to flow gently down the inside of the container with minimal turbulence. Samples analyzed for VOCs were collected by drawing a column of water into the tubing with the pump; crimping the discharge end of the tubing; disconnecting the tubing from the well; releasing the tubing; and decanting the sample into the sample vials from an intake end of the tubing via gravity flow. For filtered inorganic samples, an in-line 0.45 micron filter was used, pre-rinsed with approximately 400 ml of deionized water and attached to the discharge end of the pump tubing. Groundwater samples were analyzed for select TCL VOCs, SVOCs, PAHs, pesticides and PCBs; TAL metals (total and dissolved); TOC; chemical oxygen demand; and water chemistry parameters of total dissolved solids, alkalinity, chloride, sulfate, and hardness. Copies of the groundwater sample logsheets are provided in Appendix G. Analytical results of the samples are discussed in Section 3.0.

2.7 SURFACE WATER SAMPLING

Eight surface water samples were collected from 7 staff gauge locations (SG-18 through SG-24) and 1 seep location (3SMP01). The three remaining staff gauge locations (SG-15, SG-16, and SG-17) were dry during the Round 1 sampling event and were not sampled. Sample containers were filled directly from the surface water bodies. Surface water samples were analyzed for the same parameters as the groundwater samples (Section 2.6). Copies of surface water sample logsheets are provided in Appendix H.

2.8 SURVEYING

All newly installed monitoring wells and staff gauges and existing well 2WMW21S were surveyed for horizontal and vertical location by Guerriere & Halnon, Inc of Massachusetts. Horizontal locations were surveyed to an accuracy of 0.10 feet, and vertical elevations were surveyed to an accuracy of 0.01 feet. The elevations of the ground surface and the reference point of the well or staff gauge was surveyed for each monitoring well and staff gauge. The elevation of the top of the protective casing for each monitoring well was also surveyed.

Vertical elevations were converted from NGVD 1988 (as supplied by the surveyor) to the NSB-NLON 1982 Base Traverse system by a factor of +2.39 feet.

2.9 DECONTAMINATION AND INVESTIGATION-DERIVED WASTE

All downhole drilling and sampling equipment was decontaminated prior to and after each boring. The drilling equipment was decontaminated with a high-pressure steam wash over a decontamination pad. All decontamination fluids and residual solids were collected and containerized in 55-gallon drums. All water quality and water level meters were decontaminated by rinsing with deionized water prior to and after use.

All investigation derived waste (IDW), including soil cuttings, purge and development water, and decontamination fluids were disposed off-site by Capitol Environmental Services, Inc, a licensed disposal company, subcontracted by TtNUS.

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TABLE 2-1

SOIL SAMPLE SUMMARY
ROUND 1 GROUNDWATER MONITORING REPORT
AREA A LANDFILL, NSB-NLON, GROTON, CONNECTICUT

Well Number	Sample Depth (feet below ground)	Depth to Soil Saturation[1] (feet below ground)
2WMW38DS	2-4	2
2WMW39DS	0-2	0
2WMW40DS	6-8	0
2WMW41DS	4-6	2
2WMW42DS	7.5-9.5	0
2WMW43DS	4-6	0
2WMW44DS	4-6	0
2WMW45DS	0-2	0.5
2WMW46DS	4-6	0
2WMW47DS	2-4	1
3MW37S	2-4	0

1 As encountered during soil boring advancement.

TABLE 2-2

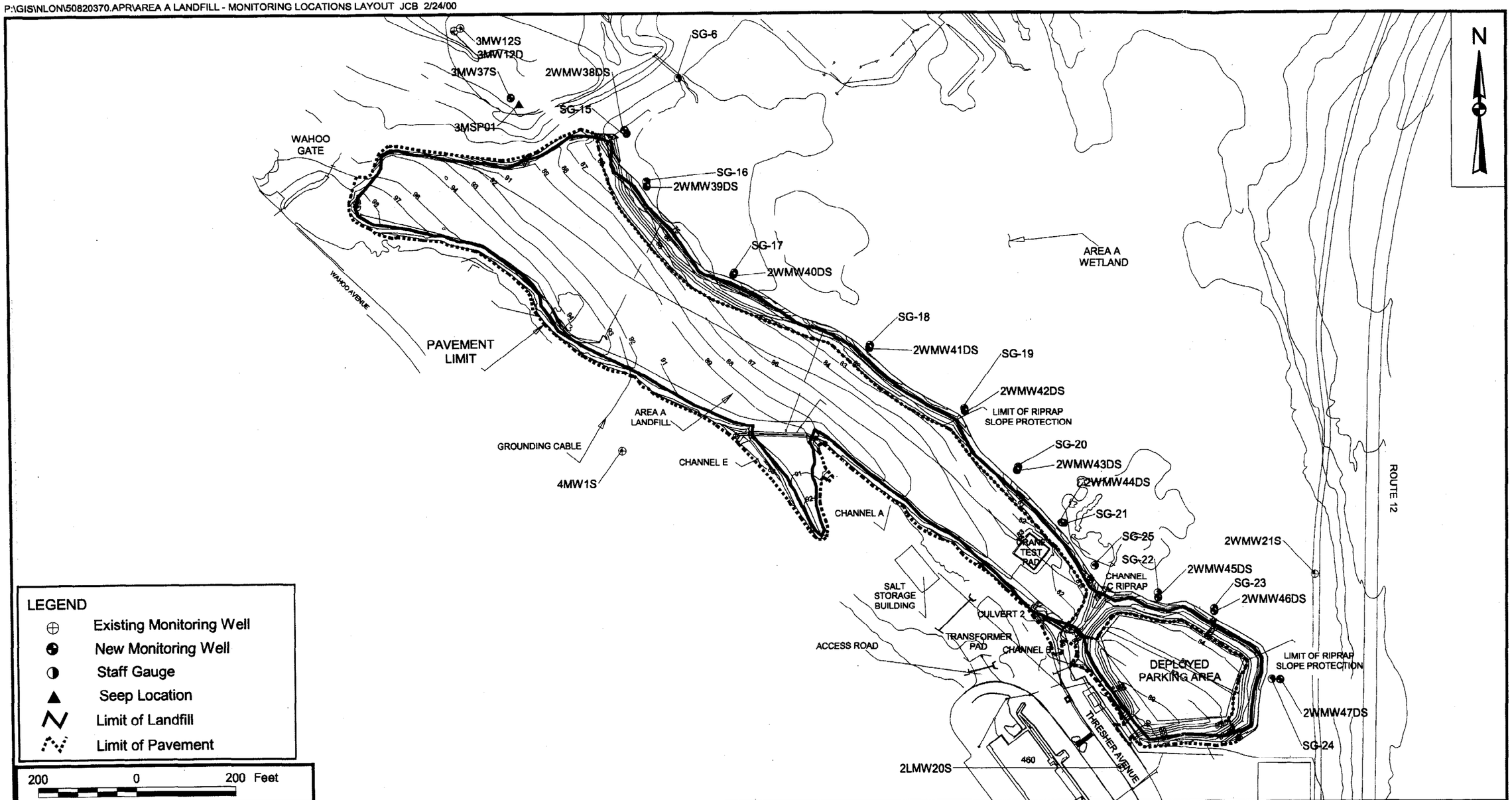
WATER LEVEL ELEVATIONS (JULY 1999)
ROUND 1 GROUNDWATER WATER MONITORING REPORT
AREA A LANDFILL, NSB-NLON, GROTON, CONNECTICUT

Well/ Staff Gauge Number	Ground Surface Elevation[1] (feet msl)	Reference Elevation[1] (feet msl)	Depth to Water[2] (feet)	Water Elevation (feet msl)	Screened Unit[3]
2LMW20S	87.19	86.83	14.28	72.55	F/A
2WMW21DS	74.59	76.31	5.28	71.03	DS
2WMW38DS	72.29	74.06	6.37	67.69	DS
2WMW39DS	71.59	73.53	2.75	70.78	SS/DS
2WMW40DS	71.49	73.21	3.20	70.01	DS
2WMW41DS	70.99	73.39	2.44	70.95	DS
2WMW42DS	71.19	73.65	2.06	71.59	DS
2WMW43DS	71.39	74.36	2.33	72.03	DS
2WMW44DS	70.99	73.72	1.48	72.24	DS
2WMW45DS	72.19	74.24	2.08	72.16	DS
2WMW46DS	71.69	73.53	3.02	70.51	DS
2WMW47DS	71.99	73.39	1.32	72.07	SS/DS
3MW12D	41.09	43.54	--[4]	--[4]	BR
3MW12S	40.79	72.25	3.31	38.94	A
3MW37S	44.09	47.39	2.37	45.02	A
4MW1S	127.99	129.55	5.76	123.79	BR
SG-6	--[5]	85.22	--	--	--
SG-15	71.29	74.03	--	--	--
SG-16	71.19	73.50	--	--	--
SG-17	71.19	73.57	--	--	--
SG-18	70.99	75.92	--	--	--
SG-19	70.99	75.83	--	--	--
SG-20	71.09	75.19	--	--	--
SG-21	70.39	75.32	--	--	--
SG-22	71.79	76.13	--	--	--
SG-23	71.09	75.83	--	--	--
SG-24	71.59	76.68	--	--	--
SG-25[6]	--	74.51	--	--	--

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 July 23, 1999.
3 F = fill; DS = dredge spoil; A = alluvium; BR = bedrock; SS = surficial sand
4 Artesian flow from well – not measured..
5 Headwall of dike – ground surface elevation not surveyed.
6 Former staff gauge SG-12

P:\GIS\NLON\50820370.APR\AREA A LANDFILL - MONITORING LOCATIONS LAYOUT JCB 2/24/00



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. BELLONE	DATE 1/12/00	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5082 / OWNER NUMBER —
CHECKED BY —	DATE —	SAMPLING LOCATIONS ROUND 1 GROUNDWATER MONITORING AREA A LANDFILL NSB-NEW LONDON, GROTON, CONNECTICUT	APPROVED BY — / DATE —
COST/SCHEDULE-AREA —			APPROVED BY — / DATE —
SCALE AS NOTED			DRAWING NO. FIGURE 2-1 / REV 0

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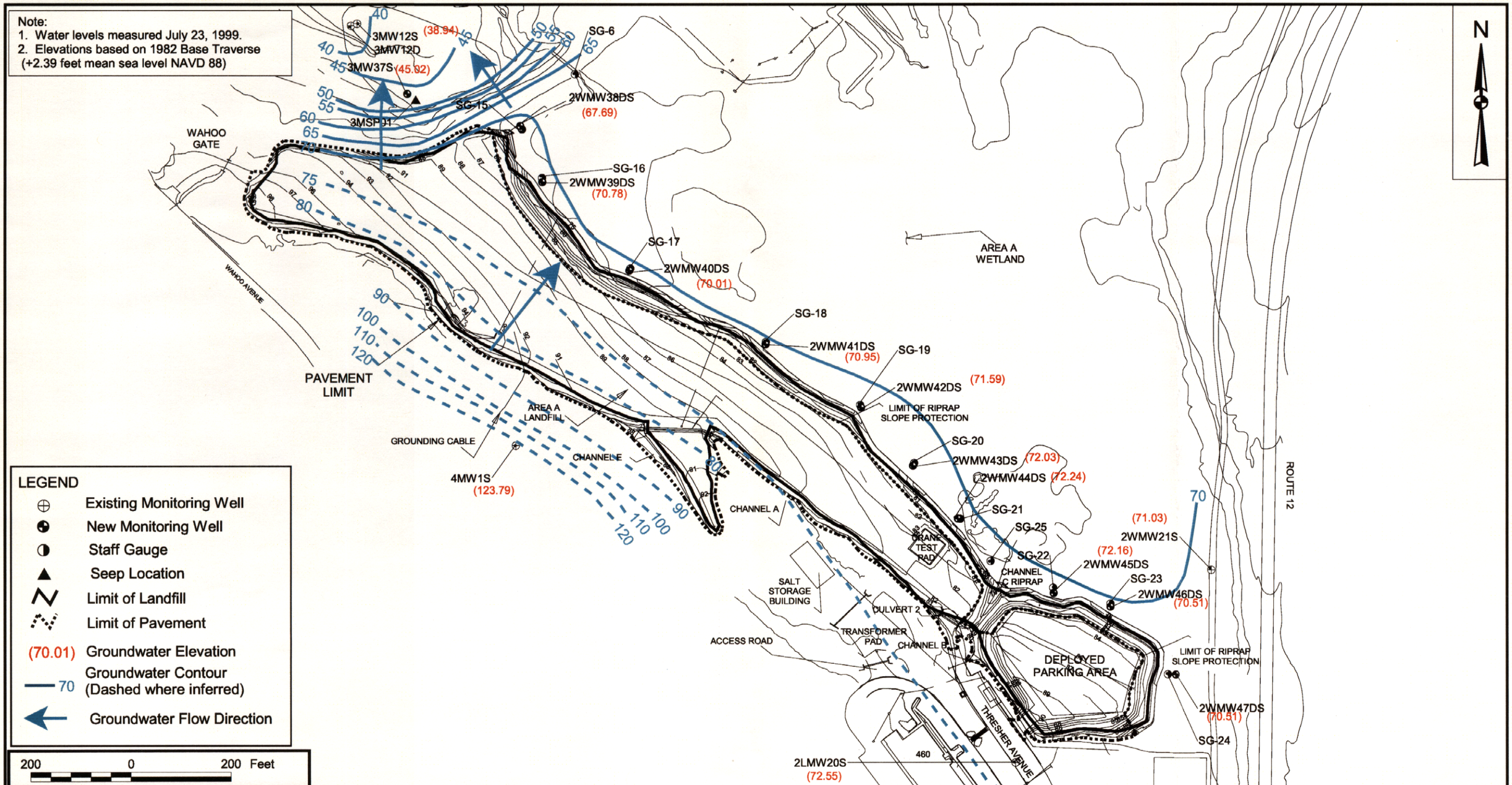

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. BELLONE	DATE 2/18/00
CHECKED BY	DATE
COST/SCHEDULE-AREA	
SCALE AS NOTED	

Tetra Tech NUS, Inc.

POTENTIOMETRIC SURFACE MAP
ROUND 1 GROUNDWATER MONITORING
AREA A LANDFILL
NSB-NEW LONDON, GROTON, CONNECTICUT

CONTRACT NUMBER 5082	OWNER NUMBER —
APPROVED BY —	DATE —
APPROVED BY —	DATE —
DRAWING NO. FIGURE 2-2	REV 0

3.0 MONITORING RESULTS

The groundwater samples collected from sixteen monitoring wells (2LMW20S, 2WMW21S, 2MW38DS through 2WMW47DS, 3MW12S, 3MW12D, 3MW37S, and 4MW01S) and seven surface water samples collected from the surface water locations (SG-18 through SG-24 and 3MSP01) were analyzed for TCL organic compounds, TAL inorganic (total and dissolved) analytes, and water chemistry parameters. Monitoring focused on the following organic and inorganic chemicals of potential concern, as identified in the GMP Monitoring Plan (TtNUS, January 1999).

- Ethylbenzene
- 1,1,2,2-Tetrachloroethane
- Xylenes
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Bis(2-ethylhexyl)phthalate
- Phenanthrene
- Aroclor 1016
- Aroclor 1254
- Aroclor 1260
- Dieldrin
- Heptachlor
- Arsenic
- Beryllium
- Cadmium
- Chromium
- Copper
- Lead
- Zinc

The contaminants listed above have been detected either in groundwater at concentrations exceeding the Connecticut Department of Environmental Protection (CTDEP) Surface Water Protection Criteria (SWPCs) or in soil and landfill material at concentrations above their respective CTDEP Pollutant Mobility Criteria for GB groundwater.

The Round 1 analytical results are summarized on Tables 3-1 and 3-2 which also compare the analytical results to the primary and secondary monitoring criteria, as established in the GMP (TtNUS, January 1999). 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 detections of VOCs, pesticides, or PCBs.

- Bis(2-ethylhexyl)phthalate (BEHP) was detected at a concentrations ranging from 0.7 to 1.3 µg/L in samples from 7 new wells, however, none of the detections exceeded either the primary or the secondary criterion.

- Detections of arsenic (in 10 of 18 groundwater samples) and zinc (in 2 of 18 groundwater samples) exceeded the primary monitoring criteria, which is the Connecticut SWPC for substances in

groundwater. Additionally, arsenic (in 3 of 9 surface water samples) and zinc (in 1 of 9 surface water samples) exceeded the primary monitoring criterion.

- Arsenic was detected in the 10 unfiltered and 9 filtered samples from monitoring wells as shown in Table 3-1. The concentrations in unfiltered samples ranged from 5.4 to 36.3 µg/L, while the concentrations in the filtered sample ranged from 4.6 to 30 µg/L. Arsenic was also detected the unfiltered and filtered sample from surface water location SG-23 (8.2 and 5.6 µg/L, respectively); and the unfiltered samples from surface water locations SG-22 (4.5 µg/L) and SG-24 (4.2 µg/L). All detections exceeded the primary criterion of 4 µg/L, which is the Connecticut SWPC for substances in groundwater. No detections exceeded the secondary criterion of 150 µg/L, which is the Federal Ambient Water Quality Criterion (AWQC) for protection of aquatic life (chronic, freshwater).

- Chromium was detected in the unfiltered and filtered samples from monitoring well 2WMW46DS at concentrations of 4.2 and 11.3 µg/L, respectively, and the unfiltered sample from the surface water location SG-22 at a concentration of 38.4 µg/L. The secondary monitoring criterion of 11 µg/L, which is the Federal AWQC for protection of aquatic life (chronic, freshwater), was exceeded by two of the detections.

- Copper was detected in the unfiltered sample from monitoring well 2WMW38DS (6.3 µg/L), the filtered sample from monitoring well 2WMW42DS (6.5 µg/L), the unfiltered sample from surface water location SG-22 (10.8 µg/L), and the unfiltered and filtered samples from the surface water location SG-24 (17 and 11.4 µg/L, respectively). All detections exceeded the secondary monitoring criterion of 4.8 µg/L, which is the Connecticut Water Quality Criteria (WQC) for the protection of human health from consumption of organisms.

- Zinc was detected in excess of the primary monitoring criteria of 123 µg/L in the unfiltered and filtered samples collected from monitoring wells 2WMW38DS (70.3 and 152 µg/L, respectively) and in the unfiltered sample from 3MW12D (172 µg/L). Additionally, zinc was detected in excess of the secondary monitoring criteria of 58.2 µg/L in the unfiltered and filtered samples from surface water locations SG-21 (duplicate sample only, 59.2 and 110 µg/L) and SG-23 (119 and 96.5 µg/L), respectively. The secondary monitoring criteria was also exceeded in the filtered sample from SG-19 (118 µg/L), SG-24 (70.7 µg/L) and the unfiltered sample from SG-22 (59.2 µg/L). The secondary criterion is the Connecticut WQC for the protection of human health from consumption of organisms.

As discussed in Section 1.2, because this is only an interim report for the initial 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. Initial conclusions and recommendations will made in the Year 1 Summary Report based on the first four quarterly rounds of results.

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

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TABLE 3-1

ROUND 1 GROUNDWATER MONITORING
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT
PAGE 1 OF 2

Chemical	Primary Monitoring Criterion [1]	Secondary Monitoring Criterion	2LMW20S 2LGW20S-01 10/24/99	2WMW21S 2WGW21S-01 10/25/99	2WMW38DS 2WGW38DS-01 10/26/99	2WMW39DS 2WGW39DS-01 10/27/99	2WMW40DS 2WGW40DS-01 10/25/99	2WMW41DS 2WGW41DS-01 10/28/99	2WMW42DS 2WGW42DS-01 10/28/99	2WMW43DS 2WGW43DS-01 10/27/99	2WMW44DS 2WGW44DS-01 10/28/99
VOCs (ug/L)											
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	5 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	580,000	NA	1 U	5 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U
XYLENES, TOTAL	NA	NA	1 U	5 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U
SVOCs (ug/L)											
BENZO(A)ANTHRACENE	0.3	NA	0.17 U	0.15 UJ	0.17 U	0.16 U	0.16 UJ	0.17 U	0.91 U	0.16 U	0.17 U
BENZO(A)PYRENE	0.3	NA	0.17 U	0.15 UJ	0.17 U	0.16 U	0.16 UJ	0.17 U	0.91 U	0.16 U	0.17 U
BENZO(B)FLUORANTHENE	0.3	NA	0.17 U	0.15 UJ	0.17 U	0.16 U	0.16 UJ	0.17 U	0.91 U	0.16 U	0.17 U
BENZO(K)FLUORANTHENE	0.3	NA	0.17 U	0.15 UJ	0.17 U	0.16 U	0.16 UJ	0.17 U	0.91 U	0.16 U	0.17 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	0.87 J	1.3 J	0.75 J	2 U	1.1 J	2 U	2 U	2 U	2 U
PHENANTHRENE	0.077	NA	1.1 U	1 UJ	1.1 U	1 U	1.1 UJ	1.1 U	6.1 U	1 U	1.1 U
Pesticides/PCBs (ug/L)											
AROCLOR-1016	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1254	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1260	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIELDRIN	0.1	0.0019[3]	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR	0.05	0.0038[2]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)											
ARSENIC	4	150[2]	3.8 U / 3.8 U	8.8 / 7.2 J	6.5 J / 4.6 J	5.4 J / 3.8 U	36.3 / 11.9	10.4 J / 12.1 J	21.8 J / 23.3 J	12.2 J / 11.9 J	3.8 U / 3.8 U
BERYLLIUM	4	NA	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U
CADMIUM	6	0.62[3]	0.3 U / 0.45 U	1.4 U / 0.87 U	0.3 U / 0.3 U	0.3 U / 0.3 U	0.3 UJ / 0.3 UJ	0.3 U / 0.3 U	0.3 U / 0.3 U	0.3 U / 0.3 U	0.32 U / 0.3 U
CHROMIUM[4]	110	11[2]	2.4 U / 2.4 U	7.4 / 8.2	2.4 U / 2.4 U	2.4 U / 4.1 J	3.7 J / 2.4 U	3.2 J / 2.4 U	4.2 J / 3.7 J	6.1 J / 2.4 J	2.4 U / 2.4 U
COPPER	48	4.8[3]	3 U / 1.6 U	1.2 U / 2 U	6.3 / 4.4 U	1.2 U / 1.2 U	1.6 U / 2.3 U	1.2 U / 1.2 U	1.2 U / 6.5 J	1.2 U / 1.2 U	1.2 U / 1.2 U
LEAD	13	1.2[3]	2.1 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.8 U / 2.3 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U
ZINC	123	58.2[3]	42.8 U / 24.4 U	3.7 U / 3.8 U	70.3 J / 152 J	11.7 J / 15.4 J	6.7 U / 10.7 U	11.8 J / 14.1 J	6.2 J / 23.9 J	9.6 J / 0.9 UJ	21.2 J / 15.5 J
Miscellaneous Parameters (mg/L)											
CHEMICAL OXYGEN DEMAND	NA	NA	20 U	584	63.3	20 U	944	620	1100	1580	63.4
CHLORIDE	NA	NA	109	4290	224	274	10500	7790	8120	12900	1660
HARDNESS AS CaCO3	NA	NA	78.8	1380	249	153	--	2210	2790	4120	718
SULFATE	NA	NA	14	48.8	94.1	10 U	534	86.7	165	196	11
TOTAL ALKALINITY	NA	NA	98.3	787	318	176	1620	1810	1460	1850	146
TOTAL DISSOLVED SOLIDS	NA	NA	315	7030	716	469	17500	12900	12300	20900	3020
TOTAL ORGANIC CARBON	NA	NA	2.6	40.1	17.1	4.3	25.7	47	32.7	35.7	32.8

DRAFT

TABLE 3-1

ROUND 1 GROUNDWATER MONITORING
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT
PAGE 2 OF 2

Chemical	Primary Monitoring Criterion [1]	Secondary Monitoring Criterion	2WMW45DS 2WGW45DS-01 10/26/99	2WMW46DS 2WGW46DS-01 10/26/99	2WMW47DS 2WGW47DS-01 10/25/99	3MW12D 3GW12D-01 10/28/99	3MW12D (DUP) 3GW12D-01-D 10/28/99	3MW12S 3GW12S-01 10/28/99	3MW37S 3GW37S-01 10/28/99	4MW1S 4GW01S-01 10/27/99	4MW1S (DUP) 4GW01S-01-D 10/27/99
VOCs (ug/L)											
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	580,000	NA	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
XYLENES, TOTAL	NA	NA	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SVOCs (ug/L)											
BENZO(A)ANTHRACENE	0.3	NA	0.16 U	0.16 U	0.16 UJ	0.16 U	0.16 U	0.15 U	0.16 U	0.16 U	0.16 U
BENZO(A)PYRENE	0.3	NA	0.16 U	0.16 U	0.16 UJ	0.16 U	0.16 U	0.15 U	0.16 U	0.16 U	0.16 U
BENZO(B)FLUORANTHENE	0.3	NA	0.16 U	0.16 U	0.16 UJ	0.16 U	0.16 U	0.15 U	0.16 U	0.16 U	0.16 U
BENZO(K)FLUORANTHENE	0.3	NA	0.16 U	0.16 U	0.16 UJ	0.16 U	0.16 U	0.15 U	0.16 U	0.16 U	0.16 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	0.79 J	1.2 J	1 J	2.1 U	2 U	2 U	2 U	2 U	2.1 U
PHENANTHRENE	0.077	NA	1.1 U	1.1 U	1.1 UJ	1 U	1 U	1 U	1.1 U	1.1 U	1.1 U
Pesticides/PCBs (ug/L)											
AROCLOR-1016	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1254	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1260	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIELDRIN	0.1	0.0019[3]	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR	0.05	0.0038[2]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)											
ARSENIC	4	150[2]	10.8 / 12.4	33.4 / 30	26.6 / 27.6	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U
BERYLLIUM	4	NA	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U
CADMIUM	6	0.62[3]	0.85 U / 0.92 U	0.3 UJ / 0.3 UJ	2.1 U / 3.2 U	0.57 U / 0.66 U	0.75 U / 0.62 U	0.47 U / 0.38 U	0.3 U / 0.3 U	0.3 U / 0.3 U	0.3 U / 0.3 U
CHROMIUM[4]	110	11[2]	2.4 U / 2.5 J	4.2 J / 11.3	5 / 2.4 U	2.4 U / 2.4 U	2.4 U / 2.4 U	2.4 U / 2.4 U	2.4 U / 2.4 U	2.4 U / 4.7	2.4 U / 2.4 U
COPPER	48	4.8[3]	1.8 U / 1.8 U	1.7 U / 2.6 U	1.2 U / 1.2 U	1.4 U / 1.2 U	1.2 U / 1.2 U	1.7 U / 1.2 U	1.2 U / 1.3 U	1.2 U / 1.2 U	1.2 U / 1.2 U
LEAD	13	1.2[3]	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U
ZINC	123	58.2[3]	7.3 U / 1.8 U	10.9 U / 9.3 U	8 U / 13.9 U	20.6 J / 17.2 J	27 J / 26.7 J	15.3 J / 8.9 J	13.4 J / 11.6 J	7 J / 5.6 J	9.7 J / 5.1 J
Miscellaneous Parameters (mg/L)											
CHEMICAL OXYGEN DEMAND	NA	NA	225	1800	180	20 U	26.4	20 U	92.4	20 U	20 U
CHLORIDE	NA	NA	1490	16800	1950	887	885	970	91.9	18.1	18.3
HARDNESS AS CaCO3	NA	NA	375	5130	635	536	498	440	172	105	134
SULFATE	NA	NA	15.8	149	10 U	93.6	93.7	98.1	19	57.7	53.9
TOTAL ALKALINITY	NA	NA	379	2220	422	217	233	224	188	28.5	33.1
TOTAL DISSOLVED SOLIDS	NA	NA	2590	26300	2300	1780	1720	1880	283	186	192
TOTAL ORGANIC CARBON	NA	NA	14.7	36.5	12.2	3.6	4	4.3	4.2	2.3	2.4

NOTES:
Bold numbers denote exceedance of primary or secondary monitoring criterion.
1 Surface Water Protection Criteria for substances in groundwater. (CTDEP, January 1996)
2 Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, freshwater). (USEPA, 1999)
3 Connecticut Water Quality Criteria for protection of human health from consumption of organisms. (CTDEP, 1997)
4 Hexavalent Chromium
J Estimated Value
R Rejected Value
U Undetected
NA Not Available
-- Not Analyzed

DRAFT

TABLE 3-2

ROUND 1 SURFACE WATER AND SEEP RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

Chemical	Primary Monitoring Criterion [1]	Secondary Monitoring Criterion	3MSP01 3MSP01-01 10/24/99	SG-18 SWSG18-01 10/27/99	SG-19 SWSG19-01 10/27/99	SG-20 SWSG20-01 10/27/99	SG-21 SWSG21-01 10/24/99	SG-21 (DUP) SWSG21-01-D 10/24/99	SG-22 SWSG22-01 10/27/99	SG-23 SWSG23-01 10/27/99	SG-24 SWSG24-01 10/27/99
VOCs (ug/L)											
1,1,2,2-TETRACHLOROETHANE	110	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
ETHYLBENZENE	580,000	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
XYLENES, TOTAL	NA	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
SVOCs (ug/L)											
BENZO(A)ANTHRACENE	0.3	NA	0.16 U	0.17 U	0.16 U	0.15 U	0.15 U	0.16 U	0.15 U	0.16 U	0.15 U
BENZO(A)PYRENE	0.3	NA	0.16 U	0.17 U	0.16 U	0.15 U	0.15 U	0.16 U	0.15 U	0.16 U	0.15 U
BENZO(B)FLUORANTHENE	0.3	NA	0.16 U	0.17 U	0.16 U	0.15 U	0.15 U	0.16 U	0.15 U	0.16 U	0.15 U
BENZO(K)FLUORANTHENE	0.3	NA	0.16 U	0.17 U	0.16 U	0.15 U	0.15 U	0.16 U	0.15 U	0.16 U	0.15 U
BIS(2-ETHYLHEXYL)PHTHALATE	59	NA	2 U	2.1 U	2 U	2 U	2 U	2 U	2 UJ	2 U	2 U
PHENANTHRENE	0.077	NA	1 U	1.1 U	1.1 U	1 U	1 U	1.1 U	1 U	1 U	1 U
Pesticides/PCBs (ug/L)											
AROCLOR-1016	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1254	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
AROCLOR-1260	0.5	0.014[2]	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
DIELDRIN	0.1	0.0019[3]	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
HEPTACHLOR	0.05	0.0038[2]	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Inorganics (total/dissolved) (ug/L)											
ARSENIC	4	150[2]	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	3.8 U / 3.8 U	4.5 J / 3.8 U	8.2 J / 5.6 J	4.2 J / 3.8 U
BERYLLIUM	4	NA	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U	0.2 U / 0.2 U
CADMIUM	6	0.62[3]	0.45 U / 0.3 U	0.3 U / 0.3 U	0.3 U / 0.3 U	0.3 U / 0.3 U	0.42 / 0.3 U	0.31 / 0.3 U	0.31 U / 0.3 U	0.33 U / 0.34 U	0.31 U / 0.3 U
CHROMIUM[4]	110	11[2]	2.4 U / 2.4 U	2.4 U / 2.4 U	3.6 J / 2.4 U	2.4 U / 2.4 U	2.4 U / 2.4 U	2.4 U / 2.4 U	38.4 J / 2.4 U	2.4 U / 2.4 U	4.3 J / 2.4 U
COPPER	48	4.8[3]	8.1 U / 4.5 U	1.2 U / 1.2 U	1.2 U / 1.2 U	1.2 U / 1.2 U	1.2 U / 1.7 U	2.3 U / 1.8 U	10.8 / 1.2 U	1.7 U / 1.2 U	17 / 11.4
LEAD	13	1.2[3]	8.8 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	1.7 U / 1.7 U	6.6 U / 2.1 U	3.2 U / 4.6 U	3.2 U / 2.9 U
ZINC	123	58.2[3]	45.3 U / 37.2 U	31 J / 49.4 J	32 J / 118 J	13.1 J / 47.3 J	26.2 U / 24.8 U	59.2 / 110	90.2 J / 37 J	119 J / 96.5 J	48.3 J / 70 / J
Miscellaneous Parameters (mg/L)											
CHEMICAL OXYGEN DEMAND	NA	NA	34.3	26.4	26.4	23.8	21.1	20 U	42.2	58.1	55.4
CHLORIDE	NA	NA	10.1	164	162	161	116	129	64.2	89.1	78
HARDNESS AS CaCO3	NA	NA	142	99.5	115	95.7	125	86.5	140	172	115
SULFATE	NA	NA	18.6	10 U	14.5	14.5	12.1	12.5	10 U	10 U	10 U
TOTAL ALKALINITY	NA	NA	161	46.6	48.6	49.2	80.2	70.4	134	99.4	24.3
TOTAL DISSOLVED SOLIDS	NA	NA	252	268	32	296	315	326	268	267	201
TOTAL ORGANIC CARBON	NA	NA	9.7	7.5	7.2	6.3	5.4	5.6	9	10.3	14.2

NOTES:
Bold numbers denote exceedance of primary or secondary monitoring criterion.
1 Surface Water Protection Criteria for substances in groundwater. (CTDEP, January 1996)
2 Federal Ambient Water Quality Criteria for protection of aquatic life (chronic, freshwater). (USEPA, 1999)
3 Connecticut Water Quality Criteria for protection of human health from consumption of organisms. (CTDEP, 1997)
4 Hexavalent Chromium
J Estimated Value
R Rejected Value
U Undetected
NA Not Available

DRAFT

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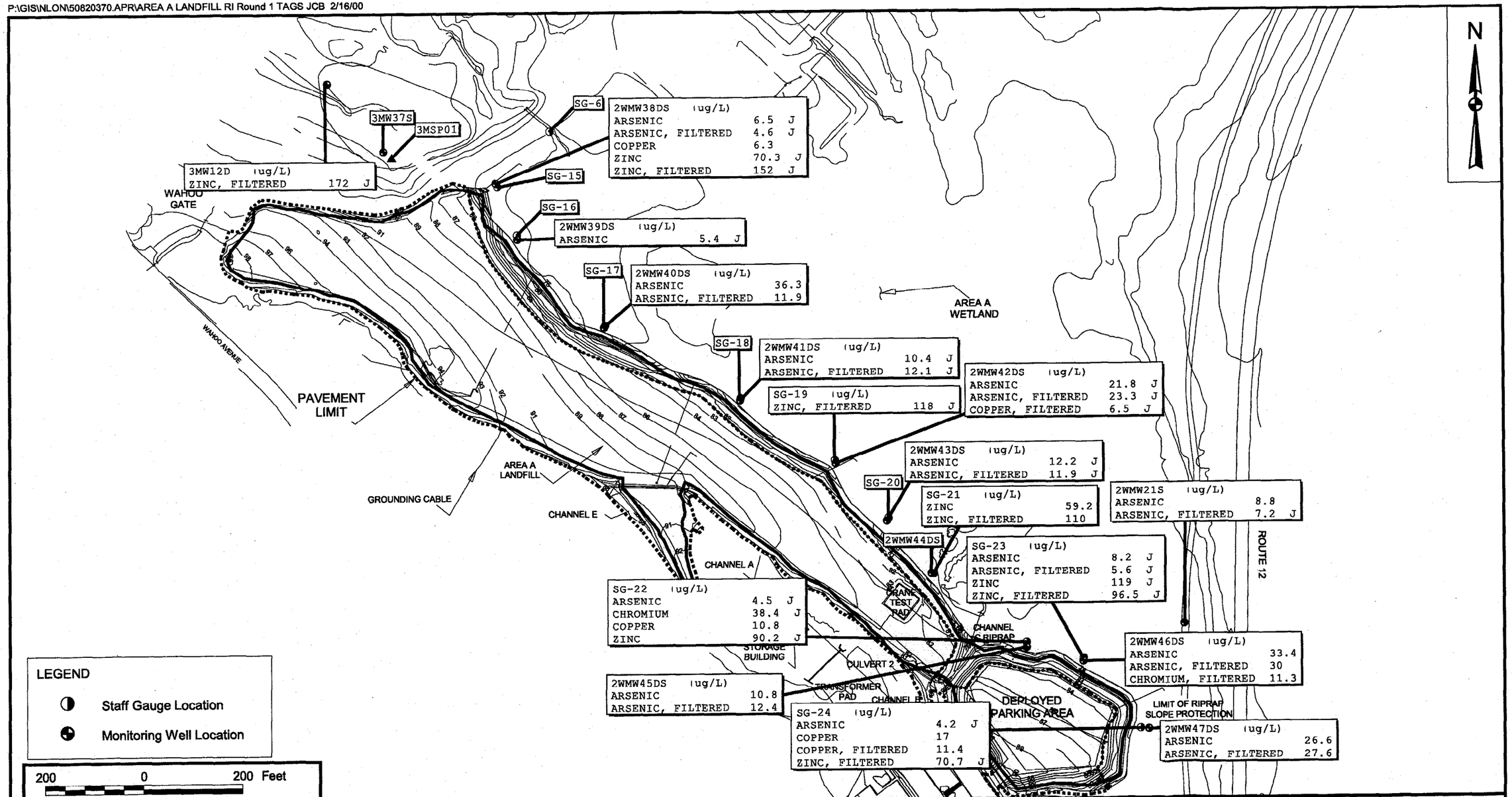
P:\GIS\NLON\50820370.APR\AREA A LANDFILL RI Round 1 TAGS JCB 2/16/00



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY J. BELLONE DATE 2/7/2000
CHECKED BY MLM DATE 2/18/00
COST/SCHEDULE-AREA
SCALE AS NOTED

Tetra Tech NUS, Inc.

COC EXCEEDANCES OF MONITORING CRITERIA
ROUND 1 GROUNDWATER SAMPLING
AREA A LANDFILL
NSB-NLON, GROTON, CONNECTICUT

CONTRACT NUMBER —
OWNER NUMBER —
APPROVED BY Mark L. Mengel DATE 2/18/00
APPROVED BY — DATE —
DRAWING NO. FIGURE 3-1
REV 0

1081B042

REFERENCES

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APPENDIX A

FIELD ACTIVITIES LOG BOOK

TITLE NSB-NLON

PROJECT NO. 5082

BOOK NO. 1244

WED 10.20.99

Work continued from Page WEATHER: RAIN (ALL DAY) 45-60°F

0735 KS & SCOTT NEIL @ PGH AIRPORT TO NSB-NLON

1130 CHECK IN TO HOTEL BEST WESTERN, PICK-UP 2 CYL OF NITROGEN

1300 TO BASE PASS & ID THEN BLD 166
MET WITH DARLENE WARD DISSCUSSED WORK @ DRMO & AREA A DARLENE PROVIDED US WITH A KEY FOR THE DRMO WE CAN WORK WEEKENDS & AFTER HOURS ALSO GAVE US A KEY TO BUILDING 166 FOR WEEKEND ACCESS.

1430 SCOTT, KEITH & DARLENE TO SAMPLE HOME OWNERS WELL OFF BASE 1ST HOUSE (NEW HOME) ON RIGHT OUT SIDE OF NORTH GATE.
HOME OWNER: MARK C. COEN
SAMPLE ID PO BOX 582
H-GW-01 @ 1450 GALES FERRY, CT 06335
860 464 2830
SAMPLED TAP IN BASEMENT PRE FILTER, THE SAMPLE WAS TAKE DIRECTLY FROM WELL (IN BASEMENT) PRIOR TO TANK OR FILTER
6 QTS WERE PURGED PRIOR TO START OF SAMPLING
FIELD PARAMETERS WERE TAKEN.

1520 RETURN TO BLD. 166 FILTER FOR DIS. METALS
PREP./CAL EQUIPMENT FOR THUR. SAMPLING
COMPLETE EQ. PREP. & CALIBRATION

1815 DEPART BASE TO HOTEL

WORK CONTINUED ON PAGE 25

SIGNATURE [signature] DATE 10.20.99

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

TITLE NSB-NION

PROJECT NO 5082

BOOK NO 1244

FRIDAY 10.22.99

Work continued from Page 24/23

COLLECTED RINSATE BLANK RB-102299 @ 1100
THIS RB COVERS AREA A. USED GEO PUMP TO
PUMP DI WATER FROM CUBE TO BOTTLE SET
5 GAL. DI CUBE, RICCA CHEMICAL CO.
LOT # 1907078 EX. DATE JUNE 2000
ALSO TB 102299 @ 1055 TAKEN COC# 102299.01
PREPED EQUIPMENT & PAPER WORK FOR
10.23.99

WORKING BOTH ORMO & AREA A
ALSO SEE LOG BOOK # 2415

Work continued to Page

SIGNATURE [signature] DATE 10.22.99

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SAT. 10.23.99

Work continued from Page WEATHER: OVERCAST 55-65°F RAIN OVERNITE

0650 SCOTT NEIL & KEITH SIMPSON @ BLD 166 PREP FOR WATER LEVELS & WELL INSPECTION @ AREA A

0750 TO AREA A START WL & INSPECTIONS

NO ACCESS TO PERIMETER RD UNTILL 1300, DEER HUNTING, COMPLETED ALL WL & INSPECTIONS EXCEPT 2MMW21S &

1150 2MMW47DS. LUNCH

1230 PICK-UP ICE FOR SAMPLES RETURN FOR LAST TWO WL. RETURN TO BLD 166 SWITCH-OUT EQUIPMENT & PREP FOR GW SAMPLING @ DRMO

CAL. METERS, CLEAN EQUIPMENT.

1405 DEPART 166 TO DRMO

Work continued to Page

SIGNATURE K. S. Simpson DATE 10.23.99

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

TITLE: NSB-NION

5082
1244

— SUMMARY AREA A ROUND 1 OCT. '99 —

SAMPLE POINT	DATE SAMPLED	QA	COMMENTS
3MW37S	10.28.99	—	—
2WMW38DS	10/24/28/29/99	—	PURGED 10.24.99
SG15	—	—	DRY
2WMW39DS	10.27.99	—	PURGED 10.26.99
SG16	—	—	DRY
2WMW40DS	10.25.99	—	PURGED 10.24.99; LOW VOL. METALS ON 10.26.99
SG17	—	—	DRY
2WMW41DS	10.28.99	—	PURGED 10.26.99
SG18	10.27.99	—	—
2WMW42DS	10.28.99	—	PURGED 10.27.99
SG19	10.27.99	—	—
2WMW43DS	10.27.99	—	PURGED 10.26.99
SG20	10.27.99	—	—
2WMW44DS	10.28.99		PURGED 10.27.99
SG21	10.24.99	DUP	—
2WMW45DS	10.26.99	—	PURGED 10.25.99
SG22	10.27.99	MS/MSD	—
2WMW46DS	10.26.99	—	PURGED 10.25.99
SG23	10.27.99	—	—
2WMW47DS	10.25.99	—	—
SG24	10.27.99	—	—
2LMW20S	10.24.99	—	—
2WMW21S	10.25.99	MS/MSD	—
3MW12S	10.28.99	—	—
3MW12D	10.28.99	DUP	—
4MW1S	10.27.99	DUP	—
3MSP01	10.24.99	—	—

K. S. Simpson 10.28.99

DAILY SUMMARY

ON SITE:

T+ NUS, SCOTT NEIL & KEITH SIMPSON
NAVY, ANDY STACKPOLE @ DRMO 1510

COMPLETE SAMPLING @ DRMO 1 WELL
START SAMPLING @ AREA A
2 SURFACE WATERS SAMPLED
1 WELL SAMPLED
2 WELLS PURGED DRY

SEE ALSO COC'S FIELD FORMS
AND LOG BOOK # 2415

SUNDAY 10-24-99 1244

WEATHER CLOUDY NO RAIN 48-64°F

0650 KS & SN STOP FOR ICE & TO BLD 166 CAL EQUIPMENT
& LOAD TRUCK.
0735 TO AREA A START PURGING @ 2LMW20S SN CONTINUE
0810 @ 2LMW20S KS TO AREA A SEEP CLEAR-OUT SAMPLE
1000 AREA. COMPLETE RETURN TO BLD 166. PACK SAMPLES RESTOCK
1110 TRUCK RETURN TO AREA A SAMPLED 3MSP01-01
@ 1145 RETURN TO BLD 166 FILTER DIS. METALS
1310 PACK SAMPLES TO LUNCH PICK-UP ICE RETURN TO
1350 BLD 166 SN TO AREA A WORKING ON MW
2WMW40DS, SN RETURNS TO BLD 166
KS & SN TO DRMO SET-UP ON LAST WELL
1520 KS TO AREA A START PURGE @ 2WMW38DS - 38DS
DRY @ 1635 DUMP PURGE WATER INTO DRUM TO
1700 BLD 166 PACK SAMPLES FOR 10-25-99 PICK-UP
1728 SN RETURNS FROM DRMO
UNLOAD TRUCKS, CLEAN EQUIPMENT, PAPER WORK.
1820 DEPART BASE TO HOTEL

K. S. Simpson 10-24-99

TITLE NSB - NION 5082

MONDAY 10-25-99 1244

CONTINUE WEATHER: SUNNY 38-56°F

0645 KS & SN BUY ICE TO BLD 166 PACK SAMPLES FOR PICK-UP. CAL. EQUIPMENT LOAD TRUCKS

0745 ACCUTEST PICK-UP 5 COOLERS OF SAMPLES

0800 SN & KS TO AREA A FOR WELL PURGE, WELL 45 & 46

1105 DUMP PURGE WATER, RETURN TO BLD 166
CALLED MARK M. TO DISCUSS SAMPLING @ AREA A
RETURNED NITROGEN TANKS, LUNCH, PICK-UP ICE.

1255 RETURN TO AREA A TO SAMPLE MW 38 & 40 THESE 2 WERE PURGED DRY 10-24-99 WELL 38 ONLY RECOVERED 1.4' OVERNITE. KS TO MW 45 TO CHECK RECOVERY. MW 45 RECOVERED ≈ 50% TO EXISTING WELL 21S

1410 START PURGE START SAMPLING 21S @ 1620 COLLECTED 3X VOL. FOR MS/MSD.

1920 COMPLETE SAMPLING TO BLD 166, PAPERWORK CLEAN & CHARGE EQUIPMENT LABEL MS/MSD BOTTLES

2010 DEPART BASE FOR HOTEL

— DAILY SUMMARY —

ON SITE: TFNUS; K. SIMPSON, S. NEIL
2 WELLS PURGED
3 WELLS SAMPLED
5 COOLERS OF SAMPLES PICKED-UP BY ACCUTEST

SEE ALSO COC'S, FIELD FORMS, LOG BOOK # 2415 & PG 29

Kel E. Simpson 10-25-99

— DAILY SUMMARY —

ON SITE: T+NUS; KEITH SIMPSON,
SCOTT NEIL & MATT COCHRAN

SAMPLED 2 WELLS + MW38 START
PURGED 3 WELLS TO DRY
PREP FOR SAMPLING 6 SW POINTS

TITLE NSB-NION PROJECT NO 5082

TUES. 10.26.99 SEQ NO 1244

continued from page WEATHER: SUNNY/ 53-65°F

0650 KS & SN PICK-UP ICE TO BLD 166 LOAD EQUIPMENT FOR GW SAMPLING CAL. EQUIPMENT.
TO AREA A SET-UP/CHECK WELLS THAT WERE PURGED ON 10.25.99
SAMPLED WELLS 45 & 46
0950 SAMPLED VOC, SVOC & TOC @ 38 DRY
TO BLD 166 PACKED & SHIPPED CONTROLL BOXES & AIR LINES TO US ENVIRONMENTAL.
1200 PICKED-UP ICE, ZIPLOC, WATER & TOOLS @ WAL-MART + LUNCH
1300 RETURN TO AREA A START PURGE @ MW 41
1430 SN COMPLETES PURGE @ MW 39 TO LUNCH
1500 SN RETURNS & STARTS PURGING, KS COMPLETES PURGING TO DRY @ MW 41.
KS TO BLD 166 PREP. TO INSPECT & CLEAR SAMPLE LOCATION AT SW LOCATIONS.
KS & MATT COCHRAN TO AREA A RECON SW LOCATIONS
KS & MATT CLEARED 6 LOCATIONS, SG 18, 19, 20, 22, 23 & 24. 21 SAMPLED ON 10.24.99. SG 15, 16 & 17 ARE DRY NO SAMPLES WILL BE TAKEN.
RETURN TO BLD 166 CLEAN, CHARGE EQUIPMENT & PAPER WORK.
1850 DEPART BASE FOR HOTEL

[signature] 10.26.99

DAILY SUMMARY

ON SITE: T+NUS; SCOTT NEIL, KEITH SIMPSON & MATT COCHRAN

SHIPPED 4 COOLERS OF SAMPLES
SAMPLED 3 WELLS
SAMPLED 6 SURFACE POINTS
PURGED 2 WELLS DRY

NSB-NION 5082 **37**

WED. 10.27.99 1244

WEATHER: 42-63°F, SUNNY

0645 SN & KS PICK-UP ICE TO BLD 166, PACK SAMPLES FOR ACCUTEST PICK-UP. SHIPPED 4 COOLERS OF SAMPLES

0810 KS & SN TO AREA A FOR GW SAMPLING

KS TO MW 38 VERY LITTLE RECHARGE WILL SAMPLE THUR.

0825 TO MW 41 SAME, INSUFFICIENT RECHARGE TO SAMPLE

0910 KS @ 4MWIS START PURGE SAMPLED @ 1040

ALSO COLLECTED DUP AT THIS LOCATION (GWFD-102799).

DARIENE WARD VIDEOTAPING SN SAMPLING @ MW 39

1235 KS COMPLETES SAMPLING @ 4MWIS TO LUNCH

* DUMPED PURGE WATER PRIOR TO LUNCH

1305 PICK-UP ICE FOR SAMPLES TO BLD 166 PREP FOR SW SAMPLING

1355 TO AREA A START SAMPLING SW LOCATIONS

1505 MATT C. ARRIVES KS & MC SAMPLED 6 SWSG LOCATIO

1805 RETURNED TO BLD 166 FILTER DIS. METALS, CLEAN EQUIPMENT & PAPER WORK

1915 MATT COCHRAN DEPARTS BASE FOR HOTEL/AM FLT. TO PGH

1940 SN RETURNED FROM AREA A STORE SAMPLES (MW43) CHARGE EQUIPMENT, CLEAN OUT TRUCK

2010 DEPART SITE FOR HOTEL

Kirk S. Lemiz 10.27.99

— DAILY SUMMARY —

ON SITE: T + NUS; R. SIMPSON, S. NEIL

6 WELLS SAMPLED

ONLY 2MMW38DS REMAINING,
NEED 2 MORE QTS.

continued from page WEATHER: SUNNY 32-55°F

0650 KS & SN @ BLD 166 CAL. EQUIPMENT, MAKE-UP BOTTLESETS LOAD TRUCKS.

0735 KS & SN TO AREA A & GW SAMPLING
KS CONTINUE SAMPLING MW 38 THIS WELL IS "MAKING" ≈ 1 QT OF GW PER DAY. SN SAMPLED MW44 THEN STARTED SAMPLING MW42. KS SAMPLED MW41.

1030 TALKED WITH KEVIN ____ FROM FOSTER WHEELER & GOT THE OK TO WORK ON THERE SITE DS AREA A BELOW THE DIKE. TO BLD 166 WILL LOAD TRUCK WITH EQUIPMENT FOR 3 REMAINING WELL BELOW THE DIKE

1140 KS ~~1340~~ KS & SN TO LUNCH, RETURN TO BLD 166 THEN TO AREA A DOWNSTREAM SN @ 3MW12S & KS @ 3MW12D

1320 START PURGE KS SAMPLED 12D @ 1440 ALSO COLLECTED DUP GWFD 102899 @ 12D
SN SAMPLED 12S @ 1510

1610 KS & SN TO 3MW37S START PURGE 1642

1940 RETURN TO BLD 166 MW 3MW37S SAMPLED PACK/ICE SAMPLES UNLOAD TRUCK CHARGE EQUIPMENT DEPART BASE FOR HOTEL

WO continue

Neil S. Simper 10.28.99

FRIDAY 10.29.99 1244

WEATHER: SUNNY 48-60°F

0640 SN & KS PICK-UP ICE TO BLD 166 ADD ICE TO COOLERS OF SAMPLES, 12 COOLERS OF SAMPLES FOR PICK-UP.

0710 KS TO AREA A AND COMPLETE SAMPLING AT MW 38

0735 RETURN TO BLD 166, KS & SN PACKING/CLEANING EQUIPMENT FOR RETURN

CLEAN ROOM USED (TRAINING ROOM) IN BUILDING 166

1150 DEPART SITE TO HOTEL, COOLERS ARE STILL IN 166

CALLED ARCHITEST 2 AND TALK TO MATT ALSO TALKED TO DRIVER ON WED. (MIKE) THEY SAID PICK-UP WOULD BE MADE TODAY (12 COOLERS).

1300 KS & SN TO AIRPORT & POH OFFICE

END OF ROUND 1
SAMPLING

Kirk S. Simpson 10.29.99

APPENDIX B

BORING LOG

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Acker 82

BORING NUMBER: 2LMW205
DATE: 5-19-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
						-	Overdrill to 4'		1345 4¼" ID	HSA			
						-	Pull riser & screen		1400 8" OD				
						-	Overdrill to 19.5'		1405			C	O
	5.0								to 19.5'				
						-	Install 2" PVC well		1425				
							10-slot screen 9-19		(9ft screen				
	10.0						Valve # 2 sand 8-19.5'		w/1ft blank)				
							Bentonite 6-8'						
							Grout 1-6'						
							Flush mount casing						
	15.0												
	20.0												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: Overdrill 2LMW205 to reset plugged well - originally installed 12-18-93

Converted to Well: Yes ✓ No _____ Well I.D. #: 2LMW205

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod w/ Cathead

BORING NUMBER: 2WMW38DS
DATE: 5-19-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		2 / 6	2.0/2.0		V Stiff	Brn	Laminated Silt	ML	0735	0.0 ~~0.6~~	0		0
	2.0	11 / 9					Tr Decayed organic layers		wet @ bottom	(PID)			
S-2		6 / 4	2.0/2.0	7.5	M Stiff	Gray Brn	Organic Clayey Silt	~~OH~~ (PID)	0745	6.6	0		0
	4.0	5 / 7	2.0					OL	Saturated				
S-3		5 / 5	~~2.0~~/2.0		Stiff	olive brn	Organic Clayey Silt	(PID) ~~OH~~	0750 No Odor	0.1	0		0
	6.0	4 / 5					Tr Shell	OH					
S-4		5 / 4	2.0/2.0		M Stiff				0820	0.0	0		0
	8.0	4 / 4											
S-5		5 / 5	2.0/2.0		Stiff				0840	2.0	0		0
	10.0	4 / 6							Drive 4" Temp Casing				
S-6		/	2.0/2.0						0905				
	12.0	/		11.9		Gry	Silty F Sand (Alluvium)	SP	0910 Heavy Rain NO PID	—	~~0~~		~~0~~
~~S-7~~		/											
	14.0	/							0940 Set well				
							Bentonite 10-12'						
							2" PVC 6-Slot	to	4-9'				
							Valve #0 sand		3'-10'				
							Bentonite		2-3'				
									0950 Rain Stops				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 3" SS
& 2W-SU-38DS-02-99

Converted to Well: Yes ✓ No _____ Well I.D. #: 2W MW 38 DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod w/ cathead

BORING NUMBER: 2wMW39DS
DATE: 5-18-99
GEOLOGIST: T. Evans
DRILLER: A-Oticky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		2/3	1.5/2.0	0.7	Loose	Brn	Silt some F sand M-C sand	ML SP	1340 Photo #	0	0		0
	2.0	2/4							Saturated				
S-2		3/3	0.5/2.0		Loose	DBrn	F-C Sand	SW	1345	0	0		0
	4.0	2/3											
S-3			0.0/2.0				No Recovery		1348	0	0		0
	6.0												
S-4		7/4	0.4/2.0		M Stiff		Poor Recovery		1420	—			
	8.0	3/3	~~0.4/2.0~~			olive brn.	Clayey silt in shoe	OH					
S-5		4/3	1.1/2.0		M Stiff	olive brn	Clayey silt	OH	1445	37.8			
	10.0	3/2					TV Shell						
S-6		1/2	1.8/2.0		Soft				1505 72.2	~~5.6~~ 12	0		0
	12.0	2/1											
S-7		4/2	2.0/2.0		Soft				1513	111	0		0
	14.0	3/1											
S-8		5/4	2.0/2.0		M Stiff				1520	29.9			
	16.0	4/3											
				EOB 16					Drive 4" temp casing to 15'				
							2" PVC 4-14		1600				
							#0 Sand 3-15		Let well				
							Bentonite 2-3						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: 3" SS
* Sample 2W-SL-39DS-00-99

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod / cathead

BORING NUMBER: 2WMW 40DS
DATE: 5/18-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0												
S-1		2/5	0.0/2.0				No Recovery		0942	—	0		0
	2.0	4/4											
S-2		6/3	0/2						0945	—			
	4.0	3/2											
S-3		5/2	0.1/2				Poor recovery		0953	0			
	6.0	3/2				olive brn	Organic Clayey Silt	OH					
S-4		3/2	1.4/2.0					OH	1008	64.9			
	8.0	3/3							1030 Drive 4" temp casing				
S-5			2.5/2.0			olive brn	Organic Clayey	OH	1040-1050 rail	162	0		0
	10.0						silt Tr shell						
S-6		4/4	2.0/2.0			olive brn	Organic Clayey	OH	1100	124	0		0
	12.0	3/4					silt Tr shell						
S-7		6/5	2.0/2.0			olive brn	Organic Clayey	OH	1105 H_2S		0		0
	14.0	5/3					silt Tr shell		odor	208			
S-8		5/6	2.0/2.0			olive brn	Organic Clayey	OH	1120 H_2S	193			
	16.0	5/4					silt Tr shell		odor				
									1130 Drive 4" temp casing to 15'				
							6-slot 4-14						
							#0 sand 3-15'						
							Bentonite 2-3						
							Protective casing w/ — stickup						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: * Sample 2W-SS-40DS-06-99

Converted to Well: Yes _____ No _____ Well I.D. #: _____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 2WMW 41DS
DATE: 5-12-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		WOH WOH	0.1/2.0		V Soft		(No Recovery)		1205	–			0
	2.0	WOH WOH											
S-2		1/2	0.3/2.0		V Soft	Blk	Organic Silty CLAY	CH	1217 H_2S odor	1.7			
	4.0	1/1					w/ phragmite stalks		Poor recovery Saturated				
** S-3		WOH WOH	1.1/2.0		M Stiff	Olive brn	Organic Silty CLAY	OH	1223	*			
	6.0	3/2					Tr Root, Plant Stalk		Moist				
S-4		2/5	2.0/2.0		M Stiff		Organic Silty CLAY		1240 H_2S odor	15.2			0
	8.0	3/3					Tr Shell						
S-5		3/3	1.3/2.0		Stiff		Organic Silty CLAY		1250 H_2S odor	14.9			.
	10.0	4/6					Tr Shell & Plant Stalks						
S-6		4/4	2.0/2.0		Stiff		Organic Silty CLAY		1305 H_2S odor	48.7			0
	12.0	4/5					Tr Shell		Drive 4" Casing to 12.0'				
S-7		4/7	2.0/2.0		Stiff				1425 H_2S odor	26.8			0
	14.0	6/5							photo #2				
S-8		3/3	2.0/2.0		M Stiff				1505 H_2S odor	20.7			
	16.0	3/3							Saturated				
				EOB 16.5'									
									1530 Wash to 16.5'				
							Install 2" pvc Screen		5/13 0.035				
							4.5-14.5' (6-Slot)						
							Silt trap		14.5-15.5'				
							#0 Valve Sand		3.5-16.5'				
							Bentonite		1.5-3.5'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 3" SS
* PID battery too low for reading
** Sampled

Converted to Well: Yes ✓ No _____ Well I.D. #: 2WMW 41DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 2WMW42DS
DATE: 5-14-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	* Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0						1' H2O		Time				
S-1		WO'H / WO'H	0.0/2.0				- No Recovery)		0824				0
	2.0	WO'H / 5											
S-2		2 / 3	0.0/2.0										
	4.0	3 / 2					- No Recovery		0834				
S-3		3 / 2	0.1/2.0				(only Phragmites stalks)			(TR) 0			
	6.0	1 / 1		6.0		Blk	Leaf Litter	PT	0848	0			0
							Organic Silty CLAY	OH	@ tip				
	8.0	WO'H							Drive 4" casing to 17.5'				
(7.5-9.5) S-4		WO'H / 1	1.9/2.0		M Stiff	Olive brn	Organic Silty CLAY	OH	1008 H_2S odor	66.2	0	0	0
(TR)	10.0	4 / WO'H					Tr Shell						
S-5		2 / 2	1.8/2.0		Soft					24.9	0	0	0
(9.5-11.5)	11.5	2 / 3											
S-6		3 / 3	1.4/2.0		M Stiff					63.8	0	0	0
(11.5-13.5)	14.0	3 / 2											
S-7		2 / 3	1.5/2.0		M Stiff					46.1			
(13.5-15.5)	16.0	4 / 5											
S-8		3 / 2	2.0/2.0		M Stiff					49.8			
(15.5-17.5)	18.0	4											
							6-slot screen 6-16		2" PVC				
							sand 5-17		#0 Valve				
							Bentonite 4-5						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: * Depth from datum (3/4" ø PVC) = 1.8' above
** Sample 2W-SH-42DS-7.5-99 water (~1.0 ft of H_2O)

Converted to Well: Yes ✓ No _____ Well I.D. #: 2WMW42DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 2WMW43DS
DATE: 5-15-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		4/6	1.4/2.0		Dense	Dk Brn	Silty F SAND	SM	1007 Dry	0	0		0
	2.0	16/23					Tr Roots, Gravel						
S-2		35/18	0.8/2.0		M Dense	Dk Brn	Silty F SAND	SP/	1018	0	0	0	0
	4.0	6/9		▽			Tr clay, Gravel	/SM	wet @ 3.7'				
* S-3		9/16	1.4/2.0		Dense	Brn	Gravelly F-C SAND	GW/SW	1040	0			
	6.0	21/12							Saturated				
S-4		17/8	1.2/2.0		M Dense	Brn	F-C Sand Tr Gravel	SW	1053	0			0
	8.0	7/11							Drive 4" casing				
S-5		35/120/4"=25	/1.25				Wood & piece of ½" cable		to 9'				
** G-6	10.0	100/0.1	0.1/0.1				Wood		1415				
									1435 Refusal @ 9.0' Relocate ~20' to east (in wetlands) - see p2				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: 3" SS
* Sample 2W-SW-43DS-04-99 - NOT SENT
** 2" SS

Converted to Well: Yes ____ No X Well I.D. #: ____

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 2WMW43DSA
DATE: 5-15-99
GEOLOGIST: T. Evans
DRILLER:

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
		0.0						6" H_2O		Time				
	S-1		1/1	0.0/2.0				No Recovery		1520				
		2.0	1/1											
	S-2		WOH/WOH	0.7/2.0		Soft	Olive brn	Organic Clayey SILT	OH	1525	0			0
		4.0	1/2											
*	S-3		WOH/WOH	1.1/2.0		V Soft	Olive brn	Organic SILT	OH	1535 H_2S odor	16.0			
		6.0	WOH/1					Some Plant Matter						
	S-4		1/2	2.0/2.0		M Stiff		Organic Clayey SILT		1545 H_2S odor	18.4			0
		8.0	3/4							Drive 4" Casing				
	S-5		WOH/WOH	2.0/2.0		Soft				1600	15.4			0
		10.0	WOH/3											
	S-6		4/3	2.0/2.0		Soft				1617	8.5			
		12.0	2/2					Tr Grass						
**	S-7		1/1	1.3/2.0		Soft				1633 H_2S odor	23.3			0
		14.0	2/1											
**	S-8		4/7	1.4/2.0		Soft		Organic Clayey Silt		1715	6.7			
		16.0	3/1					Tr Shell						
**	S-9		4/2	1.3/2.0		M Stiff				1730	9.1			0
		18.0	1/3	1.3/2.0										
					EOB @ 18'									
								Set		1830				
								2" PVC 6-slot Screen		4.0 - 14.0'				
								Valve #0 Sand		3.0 - 18.0'				
								Bentonite		← Set 5/16 @ 1745 hrs				
								2-3						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 3" SS
* Sample 2W-SU-43DSA-04-99
** 2" SS

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No ____ Well I.D. #: 2W MW 43DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod w/ Cat head

BORING NUMBER: 2WMW 44DS
DATE: 5-16-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		1/1	0.1/2.0				Phragmite Stalks		0900				
	2.0	1/2											
S-2		WOH/WOH	0.5/2.0		~~olive brn~~	olive brn	Organic Silt	OH	0905	2.3	0.0		0.0
	4.0	WOH/WOH			V soft		Tr Roots						
* S-3		WOH/WOH	2.0/2.0		V soft	olive brn	Organic Silt w/Clay	OH	0915 H2S odor	66.3	0.0		0.0
	6.0	WOH/WOH											
S-4		2/1	2.0/2.0		Soft	olive brn	Organic Clayey Silt	OH	0923	93.7	0.0		0.0
	8.0	2/2							Drive 4" temp Casing				
S-5		3/1	2.0/2.0		Soft	olive brn	Organic Clayey Silt	OH	0940	58.6	0.0		0.0
	10.0	2/1											
S-6		1/1	2.0/2.0		Soft	olive brn	Organic Clayey Silt Tr Shell	OH	1020	64.1	0.0		0.0
	12.0	2/1											
S-7		2/2	2.0		Soft			OH ~~63.7~~	1032	63.7	0.0		0.0
	14.0	2/2											
S-8		4/6	2.0/2.0		Soft				1050 H_2S odor	175	0.0		0.0
	16.0	1/2											
				TOB 16'					4" temp casing to 15'				
							Set 2" PVC 6-slot 4-14		1100 Photo #				
							#0 Sand 3-15		well installed				
							Bentonite 2-3		1230 Finish setting well				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 3" SS * Sample 2W-SU-44DS-014-99 + SUFD-051699

Converted to Well: Yes ✓ No _____ Well I.D. #: 2WMW44DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 2WMW45DS
DATE: 5-16-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION* Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm) Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
* S-1		2/1	1.6/2.0	▽	V Soft	Tan	M Sand & roots	CP	1350	0.0			
	2.0	1/1				olive brn	Organic Silt	OL	wet				
S-2		1/2	1.4/2.0		V Soft		Some Clay		1355	27.6			
	4.0	1/1				olive brn	Organic Clayey Silt		Saturated				
S-3		3/2	1.5/2.0		Soft	olive brn	tr roots	OL	1410 H_2S odor	50.3			
	6.0	2/2					Organic Clayey Silt Tr Shells	OH					
S-4		2/3	2.0/3.0		Soft			OH	1420	18.1			
	8.0	2/2											
S-5		3/1	1.5/2.0		M Stiff			OH	1430	26.9			
	10.0	2/3							Drive 4" temp casing				
S-6		2/2	2.0/2.0		Soft			OH	1555	35.0			
	12.0	2/1											
S-7		4/2	2.0/2.0		Soft			OH	1600 H_2S odor	16.0			
	14.0	2/3			M Stiff					**			
S-8		5/5	2.0/2.0		Stiff			OH	1618	48.0			
	16.0	3/7											
									Wash to 15'				
							Set 2" PVC 6-Slot (w/1' silt trap) 4-14'		1645				
							Valve #0 sand 3-15						
							Bentonite 2-3						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Drilling Area Background (ppm): 0.0

Remarks: 3" SS * Sample 2W-SW-~~MW~~ 45DS-00-99
~~2~~ * PID battery low

Converted to Well: Yes ✓ No _____ Well I.D. #: 2WMW45DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod w/ Cat head

BORING NUMBER: 2WMW46DS
DATE: 5-17-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		13/8	0.9/2.0		-	Brn	Root matter	PT	0949	0.0			0.0
	2.0	6/6							wet				
S-2		4/7	0.0/2.0		-		No Recovery	-	1000	—			
	4.0	6/3											
S-3		4/2	1.0/2.0		V Soft	olive brn-gray	Organic Clayey Silt	OH	1020	8.0	0.0		0.0
	6.0	1/1											
S-4		2/1	2.0/2.0		M Stiff	olive brn	Organic Clayey Silt	OH	1030	123	0.0		0.0
	8.0	2/3											
S-5		2/2	2.0/2.0		Soft	olive brn	Organic Clayey Silt Tr Roots (remnant)	OH	1040 H_2S odor	33.5			
	10.0	2/2							Drive 4" temp Casing				
S-6		2/2	2.0/2.0		M Stiff	olive brn	Organic Clayey Silt	OH	1100 H_2S odor	99.4	0.0		0.0
	12.0	2/3											
S-7		4/3	2.0/2.0		M Stiff	olive brn	Organic Clayey Silt Tr Shell	OH	1125	124	0.0		0.0
	14.0	2/3											
S-8		5/3	2.0/2.0		Soft				1130	132	0.0		0.0
	16.0	2/1											
									4" Temp Casing to 15'				
							2" PVC 6-Slot	4-14'					
							Valve #0 Sand	3'-15'					
							Bentonite	2-3'					
							Protective Casing		2.5' Stickup				
									1240 Ends				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0.0

Remarks: 3" SS
* Sample 2W-SU-46DS-04-99

Converted to Well: Yes ✓ No _____ Well I.D. #: 2WMW46DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 2W MW47DS
DATE: 5.17-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS*	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		21/16	1.0/2.0		Moiese		Root Matter	Pt	1440	0.1	0		0
	2.0	12/15		1.3 / 3.0		Brn	F-C Sand Tr F Gravel	SW	Saturated				
* S-2		37/28	1.4/2.0		Dense	Gray	M-C Sand Tr Silt	SP	1445	0			0
	4.0	26/19					VTr F Gravel						
S-3		41/23	0.8/2.0		M Dense	Gray	F-C Sand Tr F Gravel + Silt	SW	1453	0			
	6.0	12/4							Drive 4" temp. Cas. Refusal @ 5'				
5/21 S-4		1/2	0.7/2.0				No Recovery		more 5' east, Refusal @ 5'				
@ 1000	8.0	1/1							5/20 Redrive	@	16	3.5	hrs
S-5		2/2				Olive brn	Organic Clayey Silt	OH	Casing to 6.5'	126			0
@ 1010	10.0	2/1							Running sands				
S-6		3/3	0.5/2.0						5/21 HSA + SS	13.2			0
@ 1028	12.0	2/1					+ Tr Shell						
S-7		2/2	2.0/2.0							75.1			0
@ 1035	14.0	2/2											
S-8		3/2	2.0/2.0						H_2S odor	77.8			
@ 1040	16.0	2/1											
				EOB @ 16.0'					set 4" temp Casing to 15'				
							Install 2" PVC screen	6-	slot 4-14'				
							Valve #0 Sand		3-15'				
							Bentonite		2-3'				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: 3" SS
* Sample 2W-SN-47DS-02-99

Converted to Well: Yes ✓ No ___ Well I.D. #: 2WMW47DS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB-NLON
PROJECT NUMBER: 5082
DRILLING COMPANY: EDI, Inc.
DRILLING RIG: Tripod

BORING NUMBER: 3MW37$
DATE: 5-19-99
GEOLOGIST: T. Evans
DRILLER: A. Orlicky

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0.0								Time				
S-1		3/2	0.7/2.0			DK Brn	Humus	Pt	1330 wet	0	0		0
	2.0	5/1		~20'									
* S-2		8/15	1.3/2.0		V Dense	Tan Brn	Silty F SAND	SP	1352	0	0		0
	4.0	37/46					Tr Rock Frags		Refusal @ 4'				
									~~Ledge~~ BR				
	6.0			5.5					5/20 @ 1210				
									Drive 4" temp				
									Casing to 5' @ location				
							set 1' screen (10 slot)		4.5-5.5	~	2'	NE	
							Valu #1 Sand		3.5-5.5				
							Bentonite		2.5-3.5				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: 3"SS ; ~ 20 yds west of Seep
* Sample

Drilling Area Background (ppm): Ø

Converted to Well: Yes ✓ No _____ Well I.D. #: 37MW37$

APPENDIX C

C-1 MONITORING WELL CONSTRUCTION SHEETS

C-2 MONITORING WELL DEVELOPMENT SHEETS

APPENDIX C-1

MONITORING WELL CONSTRUCTION SHEETS

BORING NO.: 2LMW2

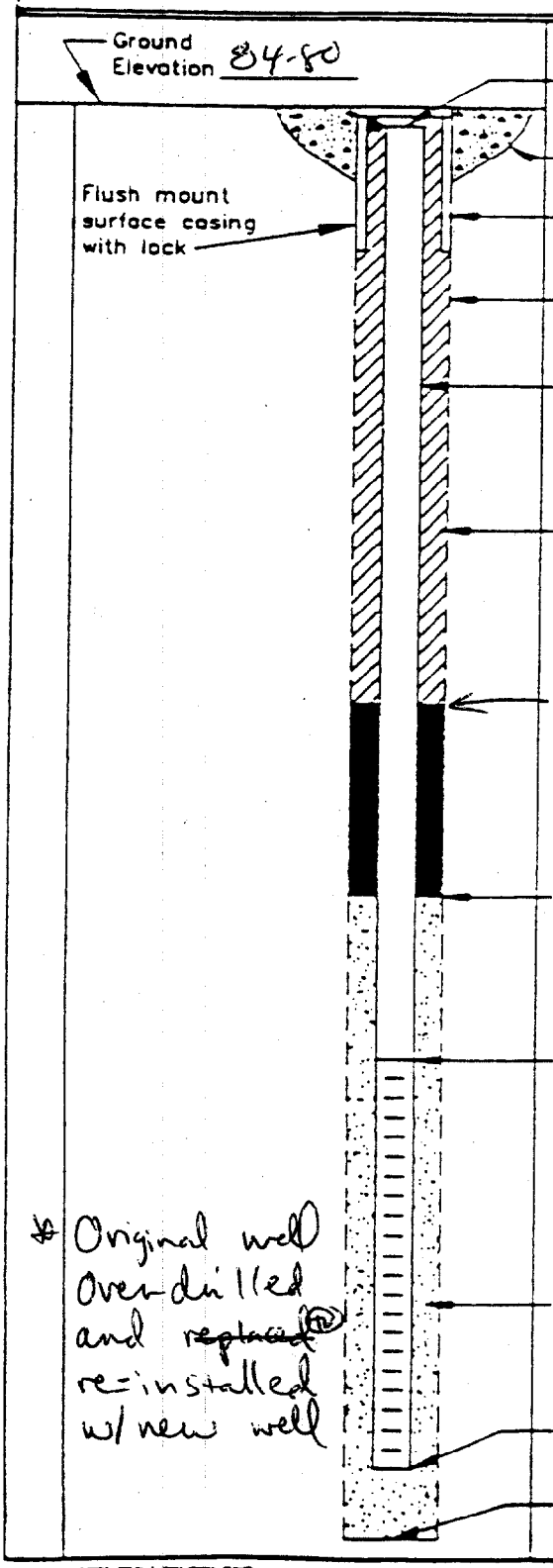
Tetra Tech NUS, Inc.

MONITORING WELL SHEET

PROJECT: NSB NLON
PROJECT NO.: 5082
ELEVATION: 84.80
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2LMW2DS
DATE: 5-19-99

DRILLER: EDI
DRILLING METHOD: HSA
DEVELOPMENT METHOD: Bail



ELEVATION TOP OF RISER: 84.44

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 8 in

DIAMETER OF HOLE: 8 in

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement/bentonite

Depth/Elevation Top of Seal 6.0/78.80

DEPTH/ELEVATION TOP OF SAND: 8.0, 76.8

DEPTH/ELEVATION TOP OF SCREEN: 9.0, 75.8

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 in x 10 ft

TYPE OF SAND PACK: Valve #2

~~DIAMETER OF HOLE IN BEDROCK:~~

DEPTH/ELEVATION BOTTOM OF SCREEN: 19.0, 65.8

DEPTH/ELEVATION BOTTOM OF SAND: 19.5, 65.3

DEPTH/ELEVATION BOTTOM OF HOLE: 19.5, 65.3

BACKFILL MATERIAL BELOW SAND: NA

* Original well over-drilled and ~~replaced~~ re-installed w/ new well

FILE: L:\70\GEOL\GBLMW01.DWG

BORING NO.: 2WMW38I

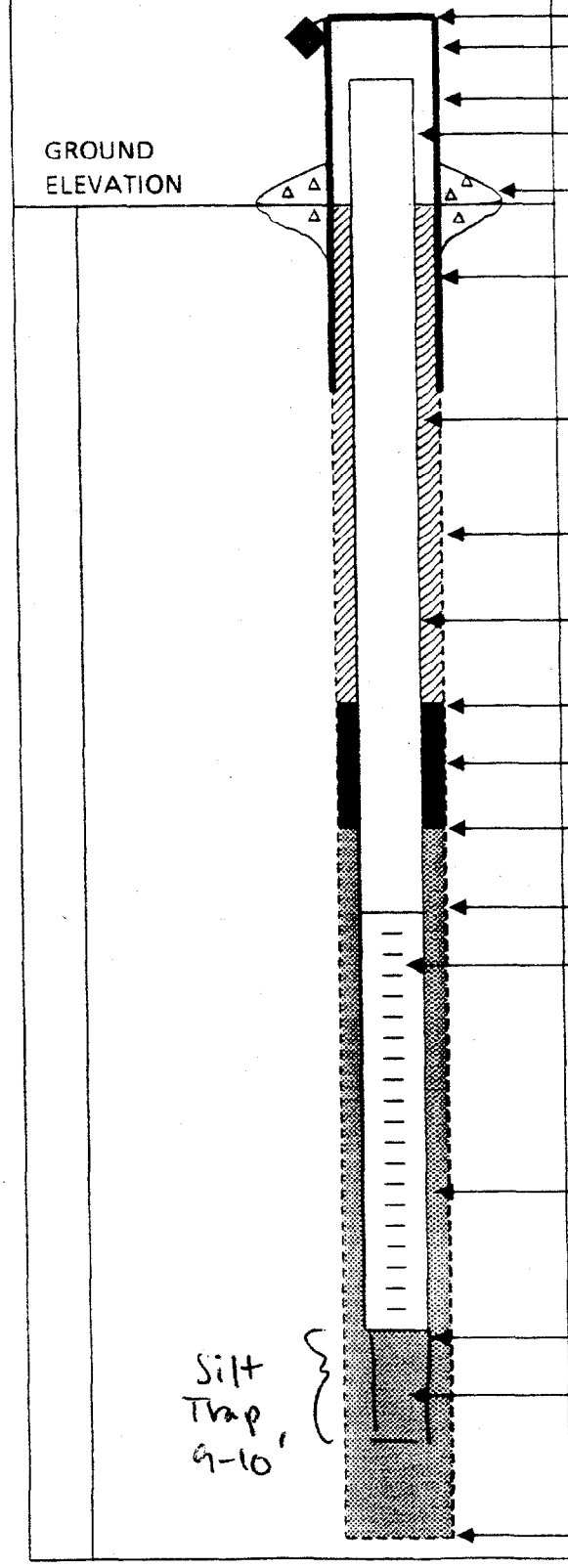
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB NLON
PROJECT NO.: 5082
ELEVATION: 69.9
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2W MW 38 DS
DATE: 5-19-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 72.19
ELEVATION OF TOP OF RISER PIPE: 71.67
STICK - UP TOP OF SURFACE CASING: 2.29
STICK - UP RISER PIPE: 1.77
TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 4"
TYPE OF BACKFILL: Grout
ELEVATION / DEPTH TOP OF SEAL: 67.9 / 2.0'
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 3.0'
ELEVATION / DEPTH TOP OF SCREEN: 65.9 / 4.0'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.006" x 5'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Valve #0 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 60.9 / 9.0'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 59.9 / 10.0'
TYPE OF BACKFILL BELOW OBSERVATION WELL: Bentonite
ELEVATION / DEPTH OF HOLE: 57.9 / 12.0'

BORING NO.: 2WMW39DS

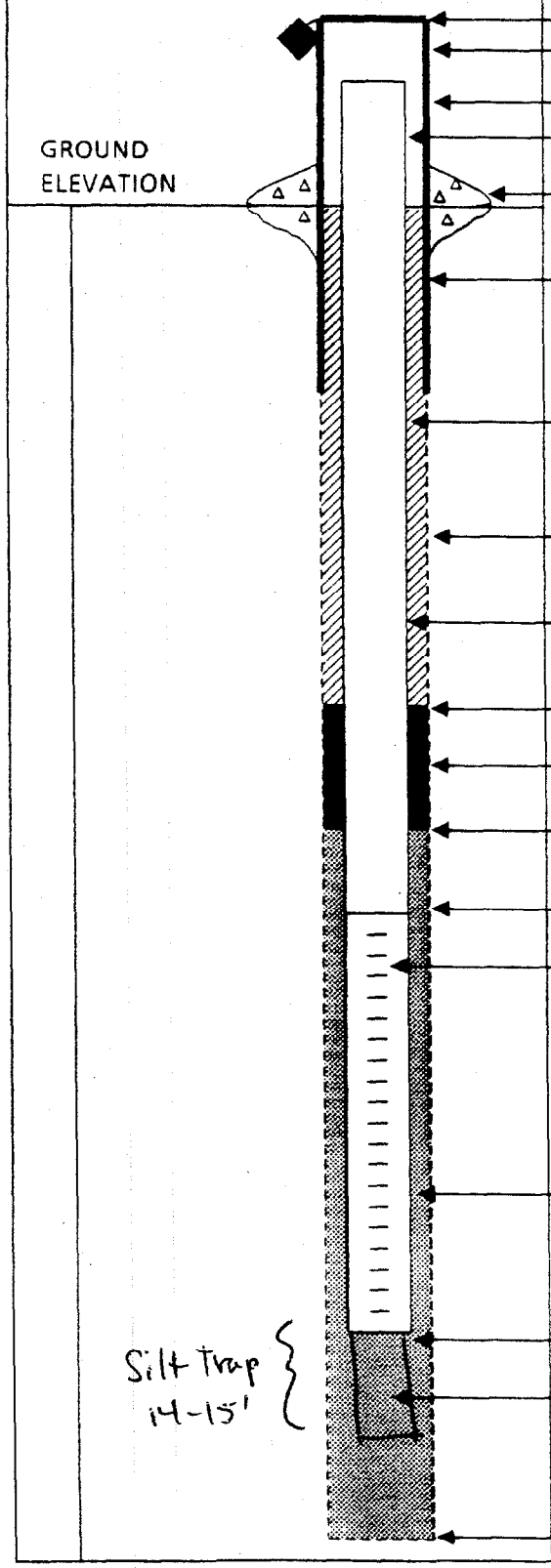
Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB NLON
PROJECT NO.: 5052
ELEVATION: 69.20
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW39DS
DATE: 5-18-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.57
ELEVATION OF TOP OF RISER PIPE: 71.14

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad (3'x3')

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL:

ELEVATION / DEPTH TOP OF SEAL: 12.0'

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 3.0'

ELEVATION / DEPTH TOP OF SCREEN: 14.0'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve # 0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: 15.0'

BORING NO.: 2WMW40DS

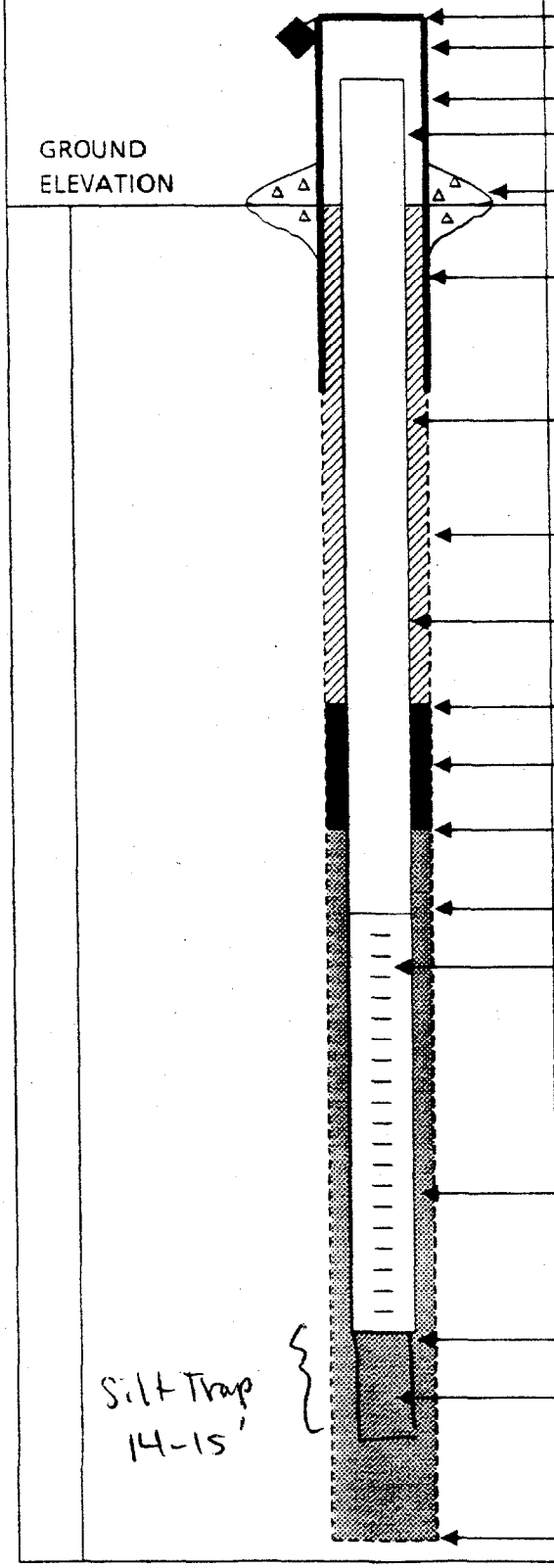
Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB NLON
PROJECT NO.: 5082
ELEVATION: 69.1
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW40DS
DATE: 5-18-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.30
ELEVATION OF TOP OF RISER PIPE: 70.82

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: /2.0

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 3.0

ELEVATION / DEPTH TOP OF SCREEN: /4.0

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve #0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: /14.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: /14.0

TYPE OF BACKFILL BELOW OBSERVATION WELL:

ELEVATION / DEPTH OF HOLE: /15.0

BORING NO.: 2WMW41DS

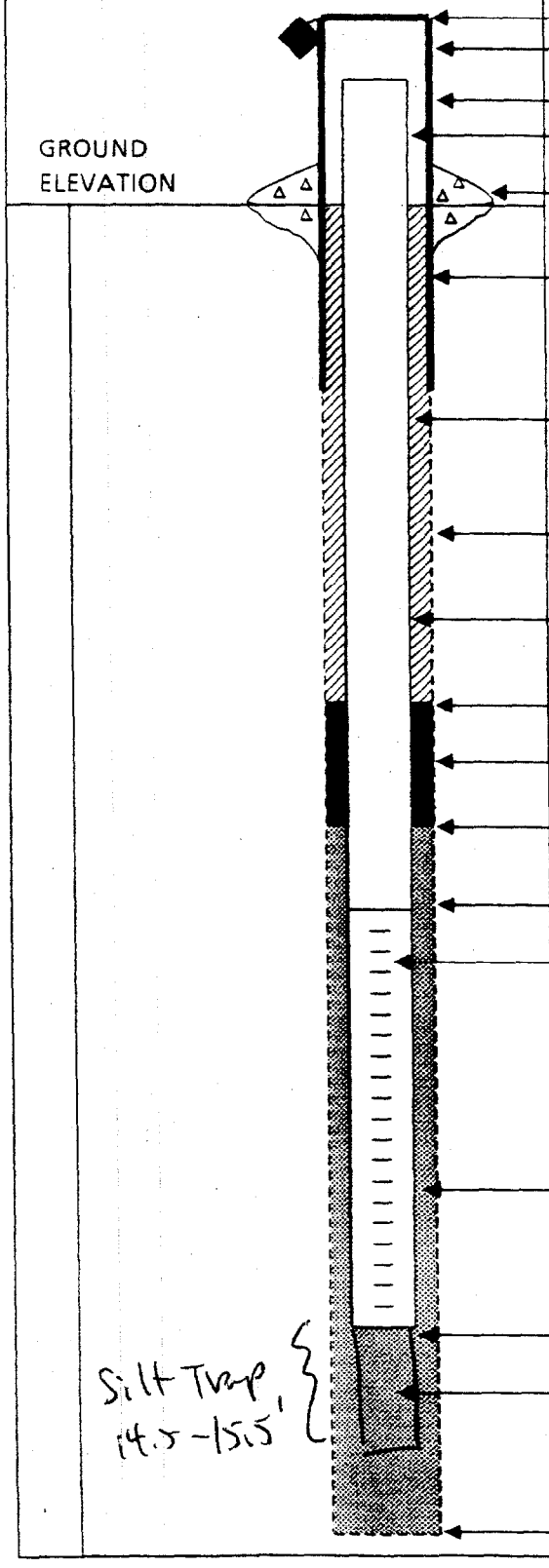
Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB - NLON
PROJECT NO.: 5082
ELEVATION: 68.6
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW41DS
DATE: 5-12-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.25
ELEVATION OF TOP OF RISER PIPE: 71.00
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING:
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 4"
TYPE OF BACKFILL: Grout
ELEVATION / DEPTH TOP OF SEAL: / 1.5
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 3.5
ELEVATION / DEPTH TOP OF SCREEN: / 4.5
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.006" X 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Valve #0 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: / 14.5
ELEVATION / DEPTH BOTTOM OF SAND PACK: / 16.5
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: / 16.5

BORING NO.: 2WMW42D

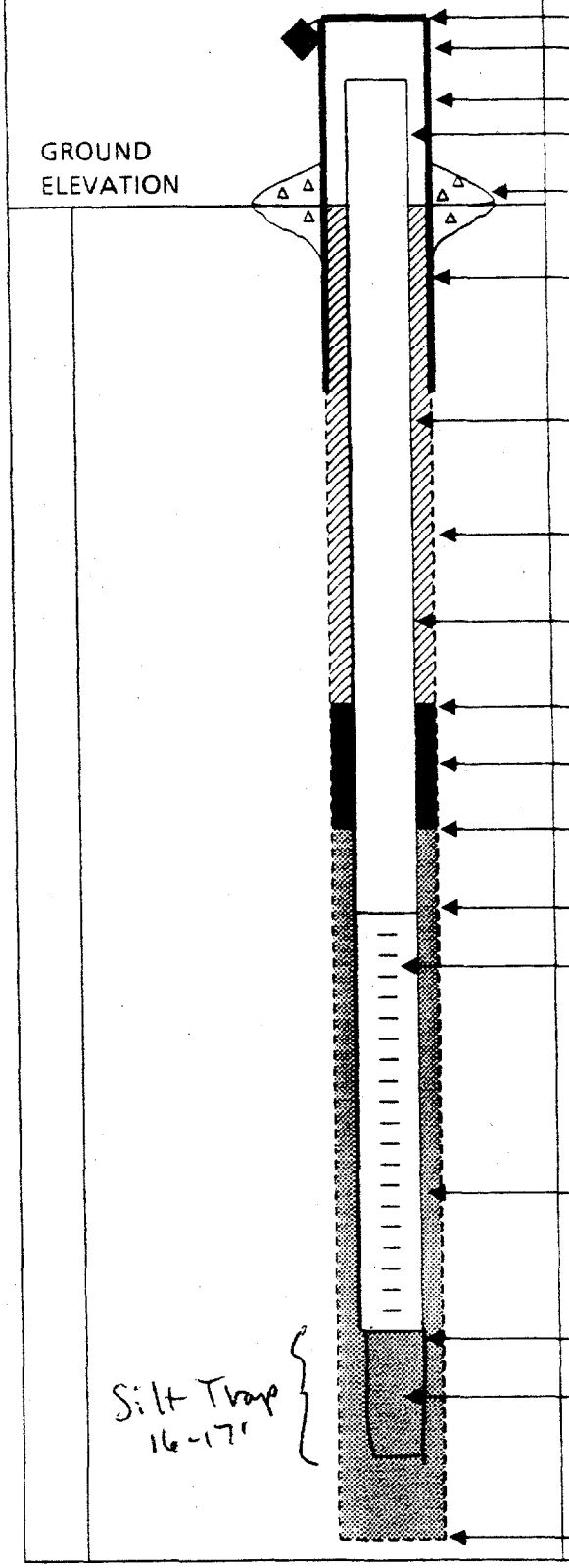
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NJB NLON
PROJECT NO.: 5082
ELEVATION: 65.8
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW42DS
DATE: 5.14.99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.45
ELEVATION OF TOP OF RISER PIPE: 71.26

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: 14.0

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 5.0

ELEVATION / DEPTH TOP OF SCREEN: 16.0

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve #0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 16.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: 17.0

TYPE OF BACKFILL BELOW OBSERVATION WELL: –

ELEVATION / DEPTH OF HOLE: 17.0

BORING NO.: 2WMW 43C

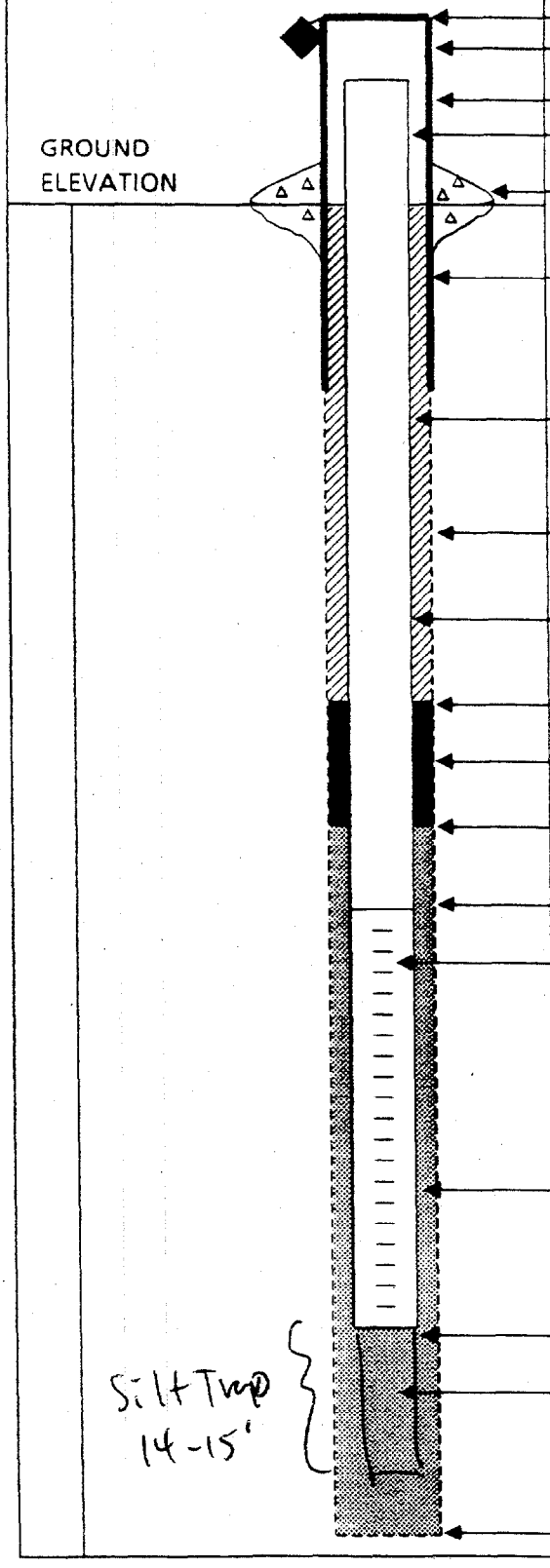
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 5082
ELEVATION: 69.0
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW43DSA
DATE: 5-15-99

DRILLER: EDF
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 72.10
ELEVATION OF TOP OF RISER PIPE: 71.97

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: /2.0

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 3.0

ELEVATION / DEPTH TOP OF SCREEN: /4.0

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve #0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: /14.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: /18.0

TYPE OF BACKFILL BELOW OBSERVATION WELL: —

ELEVATION / DEPTH OF HOLE: /18.0

BORING NO.: 2WMW44I

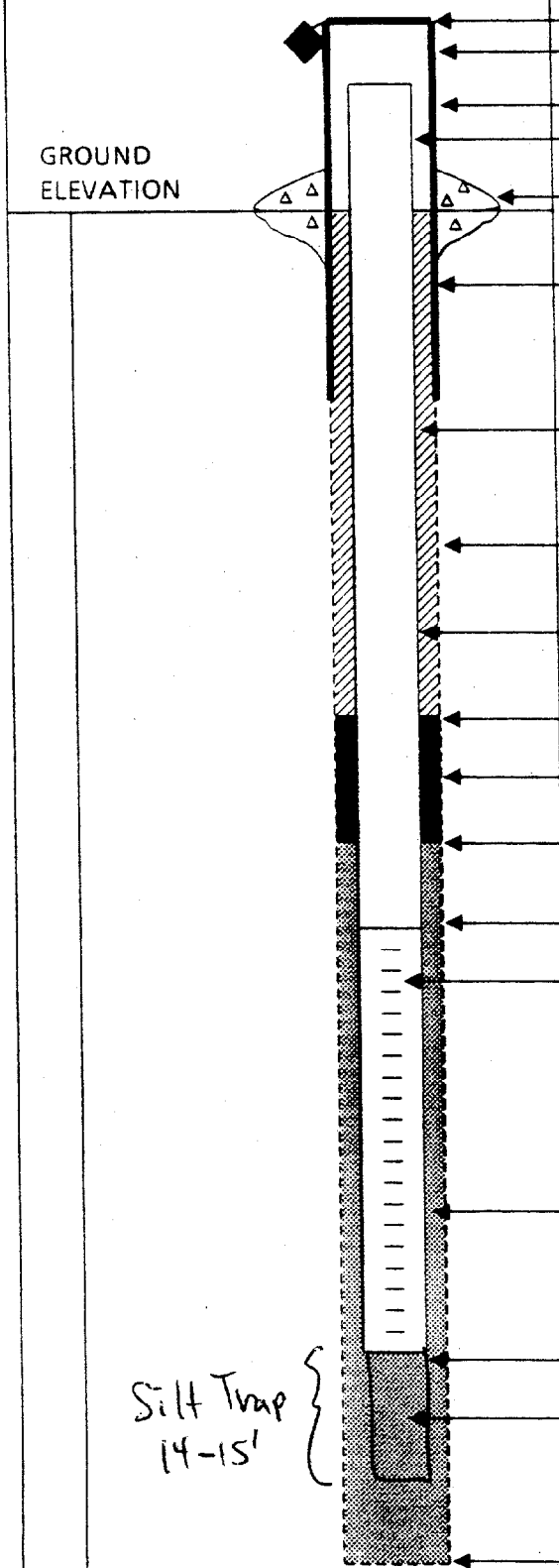
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON
PROJECT NO.: 5082
ELEVATION: 68.6
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW44DS
DATE: 5.16.99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.64
ELEVATION OF TOP OF RISER PIPE: 71.33

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: 12.0

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 3.0

ELEVATION / DEPTH TOP OF SCREEN: 14.0

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve # 0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0

TYPE OF BACKFILL BELOW OBSERVATION WELL: —

ELEVATION / DEPTH OF HOLE: 15.0

BORING NO.: 2WMW45DS

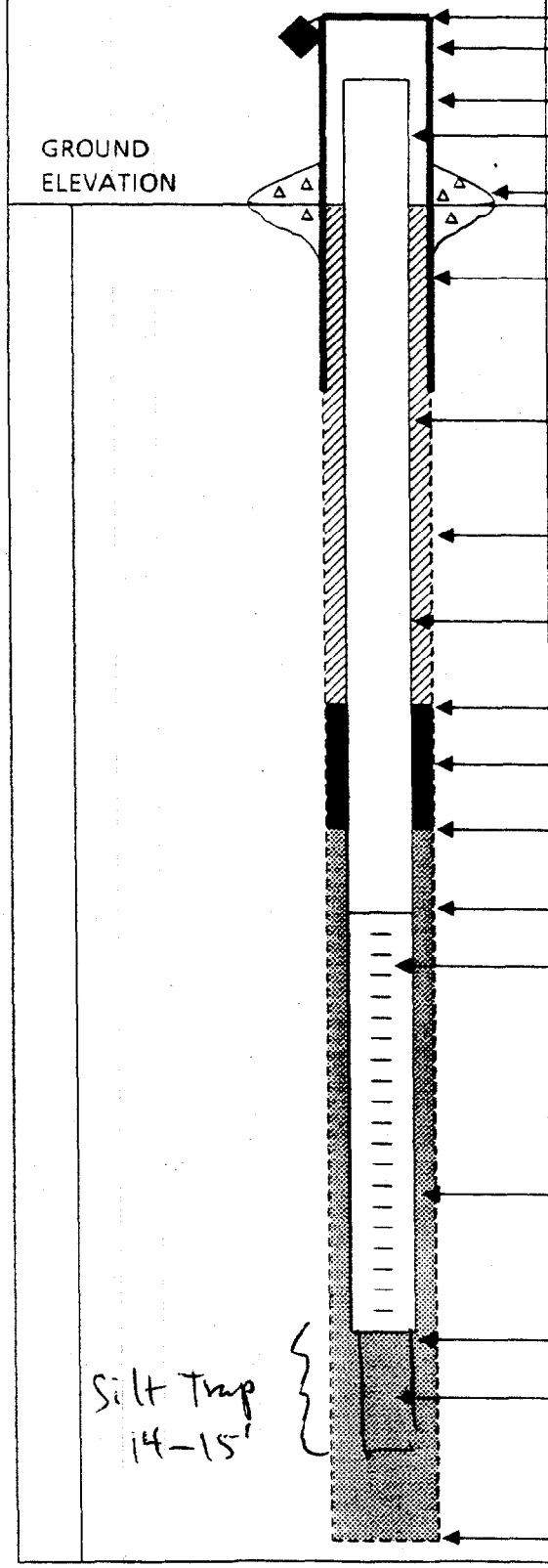
Tetra Tech NUS, Inc.

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB NLON
PROJECT NO.: 5082
ELEVATION: 69.8
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW45DS
DATE: 5-16-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 72.23
ELEVATION OF TOP OF RISER PIPE: 71.85

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: / 2.0

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 3.0

ELEVATION / DEPTH TOP OF SCREEN: / 4.0

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" x 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve #0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: / 14.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: / 15.0

TYPE OF BACKFILL BELOW OBSERVATION WELL: —

ELEVATION / DEPTH OF HOLE: / 15.0

BORING NO.: 2W MW46DS

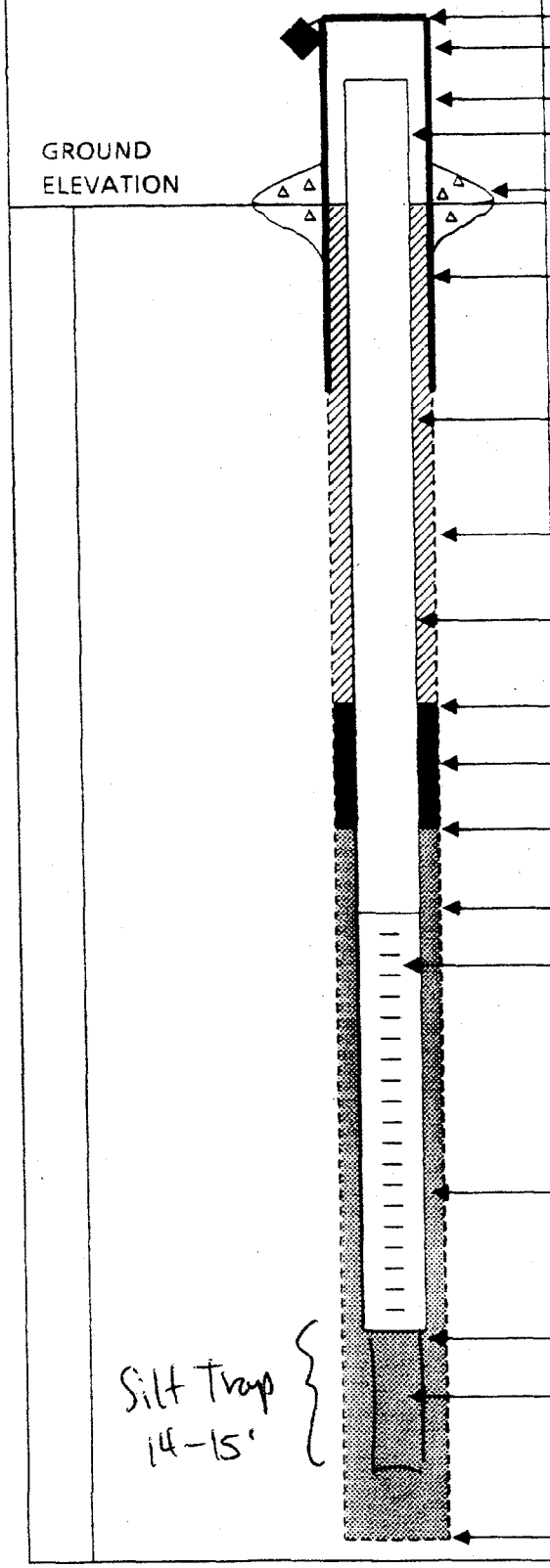
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON
PROJECT NO.: 5082
ELEVATION: 69.3
FIELD GEOLOGIST: T. E Evans

LOCATION: Area A Landfill
BORING: 2W MW46 Ds
DATE: 5-17-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.71
ELEVATION OF TOP OF RISER PIPE: 71.14
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 4"
TYPE OF BACKFILL: Grout
ELEVATION / DEPTH TOP OF SEAL: 12.0
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 14.0
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.006" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Valve #0 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: ⌒
ELEVATION / DEPTH OF HOLE: 15.0

BORING NO.: 2WMW47DS

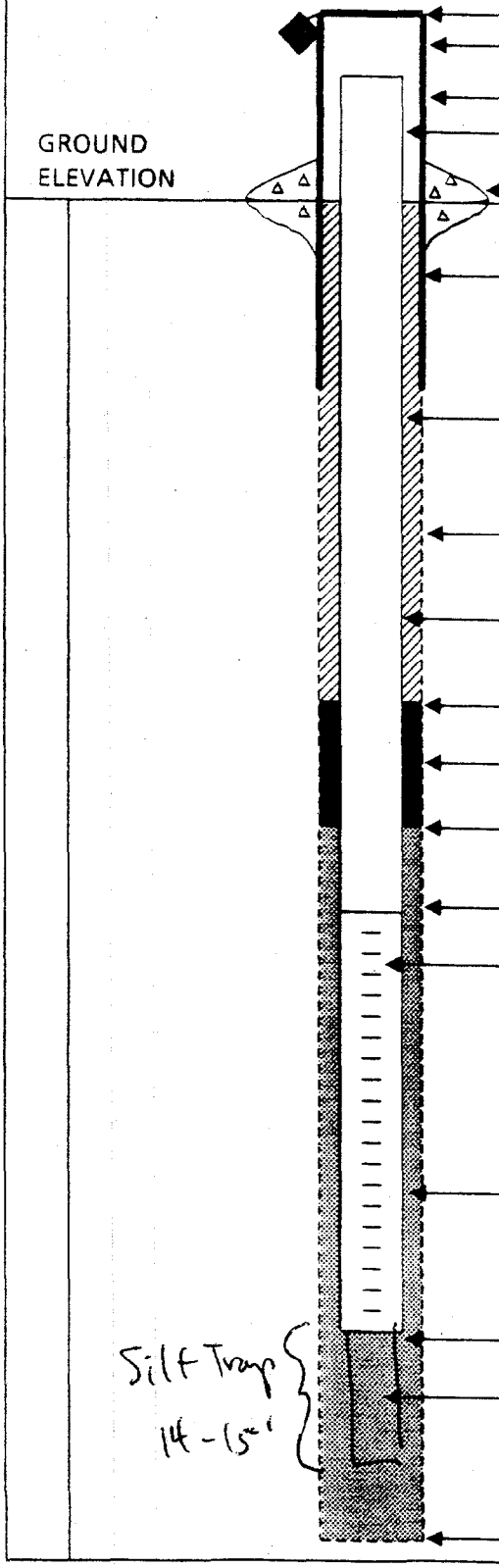
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON
PROJECT NO.: 5082
ELEVATION: 69.6
FIELD GEOLOGIST: T. Evans

LOCATION: Area A Landfill
BORING: 2WMW47DS
DATE: 5-17-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bail



ELEVATION OF TOP OF SURFACE CASING: 71.56
ELEVATION OF TOP OF RISER PIPE: 71.00

STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:

TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')

I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC

BOREHOLE DIAMETER: 4"

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: 12.0

TYPE OF SEAL: Bentonite

DEPTH TOP OF SAND PACK: 3.0

ELEVATION / DEPTH TOP OF SCREEN: 14.0

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.006" X 10'

I.D. OF SCREEN: 2"

TYPE OF SAND PACK: Valve #0 Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0'

ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0'

TYPE OF BACKFILL BELOW OBSERVATION WELL: —

ELEVATION / DEPTH OF HOLE: 15

BORING NO.: 3MW37S

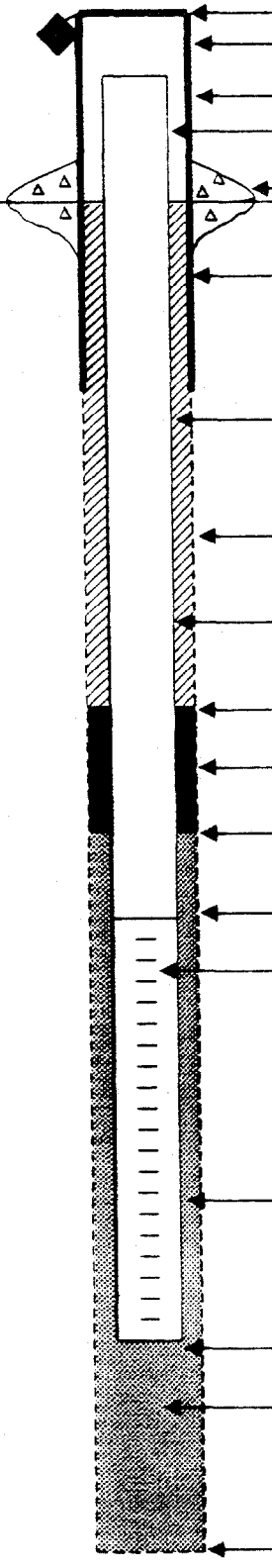
Tetra Tech NUS, Inc.

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB NLON
PROJECT NO.: 5082
ELEVATION: 41.7
FIELD GEOLOGIST: T. Evans

LOCATION: Area A landfill
BORING: 3MW37S
DATE: 5-20-99

DRILLER: EDI
DRILLING METHOD: Drive & Wash
DEVELOPMENT METHOD: Bailing



ELEVATION OF TOP OF SURFACE CASING: 45.00
ELEVATION OF TOP OF RISER PIPE: 44.87
STICK - UP TOP OF SURFACE CASING: 3.30
STICK - UP RISER PIPE: 3.17
TYPE OF SURFACE SEAL: Gravel Pad (3' x 3')
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 4"
TYPE OF BACKFILL: Grout
ELEVATION / DEPTH TOP OF SEAL: 39.2 / 2.5
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 3.5
ELEVATION / DEPTH TOP OF SCREEN: 37.2 / 4.5
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: ~~0.006" x~~ 0.010" x 1.0'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Valve # 1
ELEVATION / DEPTH BOTTOM OF SCREEN: 36.2 / 5.5
ELEVATION / DEPTH BOTTOM OF SAND PACK: 36.2 / 5.5
TYPE OF BACKFILL BELOW OBSERVATION WELL: —
ELEVATION / DEPTH OF HOLE: 36.2 / 5.5

APPENDIX C-2

MONITORING WELL DEVELOPMENT SHEETS

Tetra Tech NUS, Inc. WELL DEVELOPMENT DATA SHEET

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2LMW20S
DATE INSTALLED: 5.19.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 19 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 8 inches

PURGE DATA

START TIME: (hr.) METHOD: DISPOSABLE BAILER SURGE & PURGE
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	1200	2½ gal / REMOVED		WELL	ALMOST DRY	(Buckets	Full)			LT. BRN
	1540	(Fully RECOVERED)			6.92	0.408	12.7	999	0.01	BRN
		REMOVED 3 more gals (WELL DRY)								

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:

~~purged 5/21~~ (TE)

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 3MW37~~8~~S
DATE INSTALLED: 5/20/99
DATE DEVELOPED:
DRILLING Co.: EDF

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 5.5 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 1 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: DISPOSABLE BAILER SURGE & PURGE
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL.	Remarks (Color/Odor)
5/26/99	1000	Removed	1½ gal	(WELL DRIED)			→			BRN
	1503	(Almost Recovered)			6.80	1.12	11.7	999	0.05	BRN

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 2½ gal

Tetra Tech NUS, Inc. WELL DEVELOPMENT DATA SHEET

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW38DS
DATE INSTALLED: 5.19.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 10 feet (TOC / bgs) CASING ID: 2" inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 5 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable Bailer Surge & Purge
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	0810	Removed	1½gal	1 (WELL	DRIED)	→	→	→	→	BRN
	1457	(Minimal	Recovery)		7.72	1.69	10.5	843	0.07	Olive BRN

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 3½ gal
Silt Trap 9-10'

Tetra Tech NUS, Inc. WELL DEVELOPMENT DATA SHEET

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW 39 DS
DATE INSTALLED: 5-18-99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15 ~~14~~ (TC) feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: DISPOSABLE BAILER SURGE & PURGE
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	0825	3gal. Removed		(WELL DRIED)						Olive Grey
	1454	(MODERATE RECOVERY)			8.82	12.3	10.2	865	0.69	Olive

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 4 gal
Silt Trap 14-15'

ORGANIC ODOR

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW40DS
DATE INSTALLED: 5.18.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable Bailer Surge & Purge
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	0857	2½ gals	Removed (		WELL	Dried)	→			BLACK
	1446	(Minimal	Recovery)		7.49	30.8	10.0	999	1.68	BLACK

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS: Strong organic odor

Purged 5/21 3 gal

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW41DS
DATE INSTALLED: 5.12.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15.5 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: DISPOSABLE BAILER SURGE & PURGE
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	Sal	Remarks (Color/Odor)
5/26/99	1026	4 gals	Removed	(Dry	WELL)	→			→	BLACK
	1441	(Almost	Recovered)		7.41	28.1	10.1	999	1.71	BLACK

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS: Strong organic odor

Purged 5/21 4 gal

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW40DS
DATE INSTALLED: 5.14.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☐ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 17 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable BAILER SURGE & PURGE
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	Salinity	Remarks (Color/Odor)
5/26/99	1039	Removed 3 gals.			(WELL	DRY)	→		→	BLACK
	1435	(Almost Recovered)			7.45	33.1	10.3	999	2.04	BLACK

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 4 gal
Silt Trap 16 - 17'
Strong Organic ODOR

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW43DS
DATE INSTALLED: 5.15.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15.0 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable Bailer SURGE & PURGE
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	Sal.	Remarks (Color/Odor)
5/26/99	1053	Removed 2½ gals			(Dry Well)	→				BLACK
	1430	(Almost Recovered)			7.17	33.2	10.5	999	2.05	"

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS: Strange Organic ODOR

purged 5/21
Silt Trap 14-15'

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW44DS
DATE INSTALLED: 5-16-99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable Bailer Surge & Purge
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	1120	Removed	2½ gal	(	WELL	DRY)	—	—	SAL →	BLACK
	1422	—	—	—	7.41	24.7	11.3	993	1.48	BLACK

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 5 gal (clean) Strong organic odor
Silt Trap 14 - 15'

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW45DS
DATE INSTALLED: 5-16-99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable Bailer Surge + Purge
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	1410	—	—	—	7.53	28.8	10.4	999	1.74	Black
	1146	Removed	2½	gal	(Dry	well)	→			Black

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 4 gal (clear) Strong organic odor
Silt Trap 14-~~14~~ 15'

Tetra Tech NUS, Inc. **WELL DEVELOPMENT DATA SHEET**

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW46DS
DATE INSTALLED: 5.17.99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 4 inches

PURGE DATA

START TIME: (hr.) METHOD: Disposable Bailer Surge & Purge
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	Sal	Remarks (Color/Odor)
5/26/99	1135	2½ gal	Removed (WELL DRY)						→	BLACK
	1403	—	—	—	7.50	37.5	11.1	999	2.33	Black

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 4 gal
Silt Trap 14-15'

Strong Organic ODOR

Tetra Tech NUS, Inc. WELL DEVELOPMENT DATA SHEET

PROJECT: NSB-NLON
PROJECT No.: 5082
SITE: AREA A LANDFILL
PROJECT GEOLOGIST: T. EVANS

WELL No.: 2WMW47DS
DATE INSTALLED: 5-17-99
DATE DEVELOPED:
DRILLING Co.: EDI

WELL DATA

WELL MATERIAL: ☑ PVC ☐ STAINLESS STEEL ☐ OTHER:

TOTAL DEPTH: 15 feet (TOC / bgs) CASING ID: 2 inches
STATIC WATER LEVEL: feet (TOC / bgs) SCREEN LENGTH: 10 feet
CASING VOLUME (gal. / L) BOREHOLE DIA.: 8 inches

PURGE DATA

START TIME: (hr.) METHOD: Dis/Baike Surge & Purge
STOP TIME: (hr.) PUMP TYPE: —

	Time	Cumulative Volume (gal. / L)	Pumping Rate gpm / Lpm	Water Level (ft. / m.)	Water Meter Type: pH	Sp. Cond. (mS/cm)	Temp. (°C)	Turbidity (NTU)	SAL	Remarks (Color/Odor)
5/26/99	1351	8L	—	—	7.02	20.1	11.1	999	1.17	Olive Brn
		PURED an additional 4L & DRIED up WELL								

TOTAL PURGE VOLUME: (gal. / L) TOTAL PURGE TIME: (min. / hrs.)

NOTE: All depth measurements to nearest 0.01 foot.

COMMENTS/CALCULATIONS:
Purged 5/21 5
Silt Trap 14-15'

APPENDIX D

SOIL SAMPLE LOGSHEETS

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON / Area A LF
Project No.: 5082

[ ] Surface Soil
[x] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-38DS-02-99
Sample Location: 2WMW38DS
Sampled By: TE
C.O.C. No.:

Type of Sample:
[M] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-19-99			
Time: 0745	2-4	Gray Brown	Organic Clayey Silt
Method: Split Spoon			
Monitor Reading (ppm): 0.6			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSBNLON / Area A LF
Project No.: 5082

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-39DS-00-99
Sample Location: 2WMW39DS
Sampled By: TE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-18-99	0-2	Brn	Silt Some F Sand to
Time: 1340			M-C Sand (Saturated)
Method: Split Spoon			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES	MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSBNLON/Area A LF
Project No.: 5082

Sample ID No.: 2W-SU-4005-06-99
Sample Location: 2WMW4005
Sampled By: TE
C.O.C. No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-18-99			
Time: 1008	6-8	olive brown	Organic clayey silt
Method: Split Spoon			
Monitor Reading (ppm): 64.9			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES	MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON/Area A LF
Project No.: 5082

Sample ID No.: 2W-SU-MDS-04-99 (411)
Sample Location: 2WMW411DS
Sampled By: TE
C.O.C. No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-12-99			
Time: 1223	4-6	Olive brown	Organic silty clay trace shell
Method: Split Spoon			
Monitor Reading (ppm): —			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

H_2S odor

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON/Area A LF
Project No.: 5083

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-42DS-7.5-99
Sample Location: 2WMW42DS
Sampled By: TE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-14-99			
Time: 1008	7.5-9.5	Olive brn	Organic Silty Clay Trace shell
Method: Split Spoon			
Monitor Reading (ppm): 66.2			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

H_2S odor

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON / Area A LF
Project No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-43DSA-04-99
Sample Location: 2WMW43DS
Sampled By: JE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-15-99			
Time: 1535	4-6	Olive Brown	Organic Silt
Method: Split Spoon			
Monitor Reading (ppm): 10			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

H_2S odor

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Tuttle

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON / Area A LF
Project No.: 5082

Sample ID No.: 2W-SU-44DS-04-99
Sample Location: 2WMW44DS
Sampled By: TE
C.O.C. No.:

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-16-99			
Time: 0915	4-6	olive brown	Organic Silt w/Clay
Method: Split spoon			
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

H_2S odor

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.: SUFD-051699

Signature(s): [illegible]

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON / Area A LF
Project No.: 5082

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-45DS-00-99
Sample Location: 2WMW45DS
Sampled By: TE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-16-99			
Time: 1350	0-2	olive brown	Organic Silt Some Clay
Method: Split Spoon			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)		
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass		
% solids	60 mL soil vial		

OBSERVATIONS / NOTES	MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [illegible]

Page 1 of 1

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSBNLON / Area ALF
Project No.: 5082

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-4605-04-99
Sample Location: 2WMW4605
Sampled By: TE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-17-99			
Time: 1020	4-6	Olive Brown	Organic Clayey Silt
Method: Split Spoon			
Monitor Reading (ppm): 8			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): [illegible]

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON / Area A LF
Project No.: 5082

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 2W-SU-4705-02-99
Sample Location: 2WMW4705
Sampled By: TC
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5/17-99			
Time: 1445	2-4	Gray	M-C Sand Trace Silt
Method: Split Spoon			V trace F gravel
Monitor Reading (ppm):			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)	✓	
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass	✓	
% solids	60 mL soil vial	✓	

OBSERVATIONS / NOTES

MAP

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

Tetra Tech NUS,

SOIL / SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NCON
Project No.: 5082

[ ] Surface Soil
[X] Subsurface Soil
[ ] Sediment
[ ] Other:
[ ] QA Sample Type:

Sample ID No.: 3-SU-375-02-99
Sample Location: 3MW375
Sampled By: TE
C.O.C. No.:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

GRAB SAMPLE DATA

	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 5-19-99			
Time: 1352	2-4	Tan Brown	Silty FSand (wet)
Method: Splitspoon			
Monitor Reading (ppm): 0			

COMPOSITE SAMPLE DATA

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Method:				
Monitor Readings (Range in ppm):				

SAMPLE COLLECTION INFORMATION

Analysis	Container Requirements	Collected	Other
CLP VOCs	3 x Encore ® sampler (5 g)		
CLP SVOCs, Pesticides/PCBs, PAHs, Metals	300 mL Amber glass		
% solids	60 mL soil vial		

OBSERVATIONS / NOTES

MAP

Circle if Applicable:

MS/MSD	Duplicate ID No.: SUFD-051999

Signature(s): [illegible]

APPENDIX E

GROUNDWATER LEVEL MEASUREMENT SHEET

WATER LEVEL MEASUREMENT SHEET

Project Name: AREA A
Location: NSB-NLON
Weather Conditions: OVERCAST 60°F
RAIN OVERNITE

Project No.: CTO 203 5082
Personnel: SIMPSON / NEIL
Measuring Device: SOLINST SER. # 20350
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments SG #	Comments WL	Comments
2WMW21S	10.23.99	1305	5.28	NA	8.3	0	—	—	
2LMW20S		0802	14.28		8.3	0	—	—	
2WMW47DS		1254	1.32		0	0	SG-24	OBSTRUCTED	SEE WELL INSPECTION FORM
2WMW46DS		0828	3.02		0.5	0	SG-23	5.56	
(45) 2WMW45DS		0905	2.08		0	0	SG-22	5.27	
2WMW44DS		0930	1.48		0	0	SG-21	6.14	
2WMW43DS		0941	2.33		121	0	SG-20	3.36	HIGH PID READING
2WMW42DS		0952	2.06		0	0	SG-19	11.34	
2WMW41DS		1004	2.44		0	0	SG-18	OBSTRUCTED	SEE WELL INSPECTION FORM
2WMW40DS		1024	3.20		0	0	SG-17	2.67	
2WMW39DS		1032	2.75		0	0	SG-16	2.61	
2WMW38DS		1045	6.37				SG-15	2.79	

* All measurements to the nearest 0.01 foot

Signature(s): N. S. Simpson

Pg 1

WATER LEVEL MEASUREMENT SHEET

Project Name: NSB - NION
Location: AREA A
Weather Conditions: Pg 1

Project No.: CTO 203 5082
Personnel: SIMPSON / NEIL
Measuring Device: Pg 1
Remarks:

Well ID	Date	Time	Water Level *	Thickness of Free Product	PID Reading ppm RP	PID Reading ppm BZ	Comments
3MW/37S	10.23.99	1105	3.31	NA	0	0	
3MW/12S		1115	2.37		0	0	TALLER, WHITE STICK-UP
3MW/12D		1120	0.0		0	0	ARTESIN
4MW/1S		1133	5.76		0	0	
SG6		1051	16.88		NA	0	ON RIGHT SIDE
SG25		0920	2.40		NA	0	FORMER SG 12 ON PG 3-1

* All measurements to the nearest 0.01 foot

Signature(s): Neil S. Simpson

APPENDIX F

MONITORING INSTRUMENT CALIBRATION LOGS

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI / 610-DM

PROJECT NAME : NSB-NLON

MANUFACTURER : YSI - Serial # 143/220649R

PROJECT NUMBER : 7363/CTO 267 and 5082/CTO 203

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
10/21/99	—	pH 4/7 SP Cond 1000 µS/cm	Direct Read	None	pH 7 = 7.02	Scott Neil	Calibrated all param. per manufacturer.
10.22.99	—	"	"	"	PH = 7.02	RSP	"
10/23/99	—	"	"	"	pH = 7.03	SWN	"
10/24/99	—	"	"	"	PH = 6.99	RSP	"
10.25.99	—	"	"	"	PH = 7.00	RSP	"
10.26.99	—	"	"	"	PH = 7.02	RSP	"
10.27.99	—	"	"	"	PH = 7.00	RSP	"
10.28.99	—	"	"	"	PH = 7.00	RSP	"

Instrument Rented From: U.S. Environmental

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : YSI / 610-DM

PROJECT NAME : NSB - NLON

MANUFACTURER : YSI - SERIAL # 1SD/222137R

PROJECT NUMBER : 7363 / CTO 267 and 5082 / CTO 203

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
10/21/99	—	PH 4 & 7 COND 1000 uS/cm	DIRECT READ	NONE	PH7 = 7.04	[illegible]	Calibrated all param. per manufacturer.
10.22.99	—	"	"	"	PH = 7.02	RSP	"
10/23/99	—	"	"	"	PH = 7.02	[illegible]	"
10/24/99	—	"	"	"	PH = 7.00	RSP	"
10/25/99	—	"	"	"	PH = 6.98	RSP	"
10/26/99	—	"	"	"	PH = 7.02	RSP	"
10.27.99	—	"	"	"	PH = 7.01	RSP	"
10.28.99	—	"	"	"	PH = 7.00	RSP	"
							PH 7.0 BUFFER
							LOT 990504 EXP 5/4/00
							PH 4.0 BUFFER
							LOT 990601 EXP 6/1/01
							S. COND. 1000 uS/CM
							LOT 990903 EXP 9/00
							YSI ZOBEL SOL.
							LOT 98M0410 EXP 10/99

Instrument moved from U. S. [illegible]

EQUIPMENT CALIBRATION LOG

INSTRUMENT NAME/MODEL : PHOTOVAC 2020

PROJECT NAME : NSG - NLCN

MANUFACTURER : PE

PROJECT NUMBER : 7363 / CTO 267 and 5012 / CTO 203

CALIBRATION DATE	INITIAL SETTINGS	STANDARDS USED	PROCEDURE	ADJUSTMENTS MADE	FINAL SETTINGS	SIGNATURE	COMMENTS
10/21/99	0.0	ISOBUTYLENE	PER MANUFACTURER	NONE	100 ppm	Scott [illegible]	100 ppm SPAN GAS
10/22/99	0.0	"	"	"	"	KSP	"
10/23/99	0.0	"	"	"	"	SWM	"
10.24.99	0.0	"	"	"	"	KSP	"
10.25.99	0.0	"	"	"	"	KSP	"
10.26.99	0.0	"	"	"	"	KSP	"
10.27.99	0.0	"	"	"	"	KSP	"
10.28.99	0.0	"	"	"	"	KSP	"

Instrument Rented From: TENUS WAREHOUSE

APPENDIX G

GROUNDWATER SAMPLE LOGSHEETS AND LOW-FLOW PURGE DATA SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N LCN / AREA A
Project No.: JOB # 5082 CTO #03

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

Sample ID No.: 4 GW015-01
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01
Type of Sample:
[x] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 10-27-99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 1040	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump	CLEAR	5.69	0.293	13.7	0.1	1.37	124	0.14

PURGE DATA:

Date: 10-27-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 20.30								
Static Water Level (WL): 7.13			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal): 2.2								
Start Purge (hrs): 0927								
End Purge (hrs): 1035								
Total Purge Time (min): 68								
Total Vol. Purged (gal): 2.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	6 (3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	4 (2) 1L Amber Glass	✓
TCL PAH	4°C	4 (2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	4 (2) 1L Amber Glass	✓
TAL Metals (Total) + HARDNESS	HNO_3/4°C	2 (1) 1L Polyethylene	✓
Dissolved Metals	HNO_3/4°C	2 (1) 1L Polyethylene	✓
Total Organic Carbon (TOC)	HCl/4°C	2 (1) 60mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	2 (1) 250mL Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	2 (1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	
		2X VOL FOR DUP	

OBSERVATIONS / NOTES:

END SAMPLE @ 1225
END WL = 7.39'

SET PUMP INLET 1' OFF BTM.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	GWFD-102799

Signature(s): K. E. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 4MW01
DATE: 10.27.99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
0925	7.13	180	—	—	—	—	—	—	—	START PURGE
0930	7.20		6.30	0.358	1.6	8.36	12.7	65	0.16	CLEAR, NO ODOR
0935	7.20		5.76	0.314	0.5	8.45	13.3	87	0.15	
0945	7.22		5.71	0.296	0.3	5.54	13.5	110	0.14	
0950	7.20	155	5.70	0.295	0.4	4.14	13.5	116	0.14	
1000	7.21		5.67	0.298	0.1	2.97	13.6	124	0.14	
1005	7.22		5.68	0.292		2.43	13.6	127	0.14	
1010	7.23		5.70	0.291		2.21	13.6	125	0.14	
1015	7.23		5.68	0.294		1.82	13.7	129	0.14	
1020	7.24		5.70	0.290		1.57	13.7	124	0.14	
1025	7.24		5.70	0.293		1.35	13.7	128	0.14	
1030	7.25		5.70	0.292		1.40	13.7	126	0.14	
1035	7.25	145	5.69	0.293		1.37	13.7	124	0.14	
1035	END PURGE									

SIGNATURE(S): [illegible]

~~DOT - 50 MIN.~~

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB# 5082 CTO 203

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

Sample ID No.: 3-GW125-01
Sample Location: 3MW125 - AREA A
Sampled By: S. NEIL
C.O.C. No.: 102899-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/28/99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 1510	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump/LOW FLOW	CLEAR	6.08	3.288	12.3	9.7	0.29	50.4	1.73

PURGE DATA:

Date: 10/28/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump/LOW FLOW								
Monitor Reading (ppm): 1.6								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 15.11'								
Static Water Level (WL): 2.53'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.1								
Start Purge (hrs): 1321								
End Purge (hrs): 1507								
Total Purge Time (min): 106								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	✓
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

End sampling @ 1628.
Final water level = 2.75 ft.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Scott A. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 3MW12S
DATE: 10/28/99

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
	1321	2.53								→	BEGIN PURGING
	1326	2.69	120	6.15	3.205	50.1	1.53	12.8	0.7	1.69	RUST-COLORED SOLIDS
	1331	2.74	120	6.15	3.210	25.5	1.71	12.6	1.3	1.69	Changed battery
	1336	2.74	120	6.13	3.217	19.9	1.18	12.4	6.6	1.69	Solids have cleared
	1341	2.74	120	6.14	3.231	13.1	1.51	12.4	6.5	1.70	
3000	1346	2.76	120	6.11	3.243	24.3	1.00	12.4	12.9	1.70	
	1351	2.77	130	6.10	3.249	31.6	1.03	12.4	17.0	1.71	
1300	1356	2.78	130	6.10	3.257	32.9	0.83	12.4	18.6	1.71	
	1401	2.79	140	6.09	3.260	34.4	0.68	12.4	20.5	1.72	
	1406	2.77	140	6.10	3.267	31.9	0.74	12.3	22.3	1.72	
	1411	2.77	140	6.10	3.273	27.8	0.67	12.3	21.8	1.72	
	1416	2.77	140	6.11	3.276	27.4	0.59	12.3	22.9	1.73	
3500	1421	2.77	140	6.09	3.277	24.1	0.53	12.3	24.1	1.73	
	1426	2.78	130	6.08	3.278	21.2	0.46	12.3	25.1	1.73	
	1431	2.78	130	6.09	3.280	18.9	0.48	12.3	26.0	1.73	
	1436	2.77	130	6.09	3.280	16.0	0.47	12.3	26.7	1.73	
	1441	2.77	130	6.08	3.281	14.8	0.46	12.3	28.7	1.73	
	1446	2.78	130	6.08	3.283	13.0	0.44	12.3	29.5	1.73	
	1451	2.78	130	6.09	3.285	10.99	0.39	12.3	29.1	1.73	
	1456	2.78	130	6.08	3.287	11.7	0.33	12.3	30.5	1.73	
	1501	2.78	130	6.08	3.288	10.5	0.32	12.3	31.3	1.73	
	1504	2.77	130	6.08	3.288	10.1	0.33	12.3	30.3	1.73	
	1507	2.77	130	6.08	3.288	9.7	0.29	12.3	30.4	1.73	End purging

Begin sampling @ 1510 - Sample ID 3-GW12S-01
End sampling @

SIGNATURE(S): Scott A. Neil

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO #03

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

Sample ID No.: 3GW12D-01
Sample Location: AREA A
Sampled By: R. SIMPSON
C.O.C. No.: 102999-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10-28-99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 1440	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump	CLEAR	6.44	3.48	11.9	11	0.50	-86	1.84

PURGE DATA:

Date: 10.28.99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: ~~Sched PVC~~ 4" STEEL								
Total Well Depth (TD): 27.50								
Static Water Level (WL): 0.39			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 17.7								
Start Purge (hrs): 1319								
End Purge (hrs): 1435								
Total Purge Time (min): 76								
Total Vol. Purged (gal/L): 3.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL Volatile Organic Compounds	HCl/4°C	6	(3) 40mL Vials	—
TCL Semivolatile Organic Compounds	4°C	4	(2) 1L Amber Glass	—
TCL PAH	4°C	4	(2) 1L Amber Glass	—
TCL Pesticides/PCB	4°C	4	(2) 1L Amber Glass	—
TAL Metals (Total) + HARDNESS	HNO_3/4°C	2	(1) 1L Polyethylene	—
Dissolved Metals	HNO_3/4°C	2	(1) 1L Polyethylene	—
Total Organic Carbon (TOC)	HCl/4°C	2	(1) 60mL Glass	—
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	2	(1) 250mL Polyethylene	—
Alkalinity, Chloride, Sulfate, TDS	4°C	2	(1) 1L Polyethylene	—
~~Hardness~~	~~HNO_3/4°C~~	~~—~~	~~(1) 250mL Polyethylene~~	~~—~~
		2X VOC FOR DUP		

OBSERVATIONS / NOTES:

NO PVC RISER, OPEN 4" STEEL PIPE

4" OPEN BORE HOLE 17.7 GAL, NO DRAWDOWN STABLE PARAMETERS SAMPLED @ 1440
VERY SLIGHT SULFUR ODOR

4" WELL = .653 GAL/FT

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	GWFD 102999

Signature(s): R. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082
WELL ID.: 3MW12D
DATE: 10-28-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1322	0.45	240	6.54	3.482	50	4.53	12.4	-83	1.84	
1335	0.49	180	6.46	3.419	17	5.09	12.0	-73	1.80	
1340			6.50	3.477	13	1.57	12.0	-97	1.84	
1345			6.52	3.481	13	1.38	11.9	-100	1.84	
1350			6.50	3.482	13	1.31	11.9	-101	1.84	
1355			6.51	3.484	15	1.16	11.9	-101	1.84	
1400			6.52	3.489	14	0.87	12.0	-102	1.84	
1405			6.51	3.490	13	0.80	11.9	-102	1.84	
1410			6.46	3.487	12	0.64	11.9	-93	1.84	
1415			6.44	3.485	12	0.58	11.8	-85	1.84	
1420			6.46	3.483	13	0.62	11.9	-85	1.84	
1425			6.50	3.483	12	0.59	11.9	-89	1.84	
1430			6.45	3.483	11	0.49	11.9	-88	1.84	
1435			6.44	3.481	11	0.50	11.9	-86	1.84	

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N LCN / AREA A
Project No.: JOB# 5082 CTO 203

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

Sample ID No.: 2L-GW205-01
Sample Location: 2LMW205
Sampled By: S. NEIL
C.O.C. No.: 102399-01
Type of Sample:
[x] Low Concentration
[ ] High Concentration

SAMPLING DATA:

Date: 10/24/99	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Time: 0900								
Method: Peristaltic Pump / LOW FLOW	CLEAR	6.09	0.568	15.7	0.0	1.37	32	0.28

PURGE DATA:

Date: 10/24/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump / LOW FLOW								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 18.85'								
* Static Water Level (WL): 14.58'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 0.7								
Start Purge (hrs): 0754								
End Purge (hrs): 0855								
Total Purge Time (min): 61								
Total Vol. Purged (gal/L): 2.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) & Hardness	HNO_3/4°C	(1) 1L Polyethylene	✓
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

Final H_2O Level = 14.71 FT.
End Sampling @ 1007.

* water level is below top of the screen.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Scott Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2LMW205
DATE: 10/24/99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
0754	14.58	—							→	BEGIN PURGING.
0757	14.68	310	6.23	0.645	9.6	3.25	15.8	6.5	0.31	930 Adjust pump
0800	14.69	180	6.16	0.590	4.2	5.89	15.6	17.1	0.29	540
0805	14.73	180	6.13	0.580	2.3	6.01	15.8	27.2	0.28	900
0810	14.74	210	6.16	0.583	0.3	5.43	15.7	28	0.28	1050 Adjust pump
0815	14.72	155 ✓	6.13	0.580	0.0	4.28	15.6	31	0.28	775
0820	14.72	155 ✓	6.14	0.577	0.0	3.72	15.7	31	0.28	775
0825	14.72	155	6.12	0.574	0.0	3.01	15.7	31	0.28	775
0830	14.73	164 ✓	6.12	0.570	0.0	2.43	15.8	30	0.28	820
0835	14.73	164	6.12	0.568	0.0	1.98	16.1	32	0.28	820
0840	14.72	188 ✓	6.10	0.567	0.0	1.79	15.8	32	0.28	940 Adjust pump.
0845	14.72	148 ✓	6.10	0.564	0.0	1.62	15.7	31	0.28	740
0850	14.72	148	6.09	0.566	0.0	1.51	15.8	33	0.27	740
0855	14.72	148 ✓	6.09	0.568	0.0	1.37	15.7	32	0.28	740 END PURGING
	BEGIN SAMPLING @ 0900 - SAMPLE ID 2L-GW205-01.									
	END SAMPLING @									

SIGNATURE(S): Scott W. Neal

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N CON / AREA A
Project No.: JOB # 5082 CTO 303

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

Sample ID No.: 2W~~AA~~GW215-01
Sample Location: AREA A
Sampled By: R. SIMPSON
C.O.C. No.: 102399-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10-25-99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 1625	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump	BLACK	6.72	30.27	13.5	190	5.78	-333	18.79

PURGE DATA:

Date: 10-25-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump								
Monitor Reading (ppm): 44.5	← IN RISER		0 PPM	IN BZ				
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 17.30								
Static Water Level (WL): 4.71			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal): 2.1								
Start Purge (hrs): 1425								
End Purge (hrs): 1620								
Total Purge Time (min): 115								
Total Vol. Purged (gal): 3.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	9
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	6
TCL PAH	4°C	(2) 1L Amber Glass	6
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	6
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	3
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	3
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	3
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	3
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	3
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	
		3X VOL FOR MS/MSD	

OBSERVATIONS / NOTES:

PUMP INLET SET ~~IN CENTER~~ 1.5' OFF BTM
END SAMPLE @ 1915
END WL = 8.51'

SAMPLE EFFERVESCING IN HCL

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	

Signature(s): R. P. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2W MW21S
DATE: 10.25.99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1427	5.55	180	6.94	44.67	18	14.68	14.2	-303	28.73	STRONG SULFUR ODOR
1435	5.90	125	6.90	43.72	13	12.13	14.6	-314	28.24	
1440	6.16		6.94	43.39	10.0	12.14	14.8	-316	27.97	
1445	6.37		6.94	42.85	7.5	13.27	14.8	-318	27.59	
1455	6.63		6.92	41.16	7.5	14.45	14.9	-320	26.38	
1500	6.79		6.90	40.38	7.6	13.82	14.9	-320	25.88	
1505	6.75	140	6.87	38.84	6.1	12.29	15.0	-319	24.75	
1510	6.78		6.87	37.58	6.3	12.13	14.9	-317	23.95	
1515	6.80		6.87	35.84	6.7	10.47	14.6	-313	22.56	
1520	6.82		6.84	34.97	8.2	8.78	14.4	-310	22.06	
1525	6.81		6.84	34.47	9.1	8.93	14.3	-312	21.70	
1530	6.81		6.85	33.89	30	9.04	14.2	-320	21.07	
1535	6.81		6.78	33.37	39	7.55	14.1	-323	20.94	
1540	6.79		6.74	33.90	65	7.03	14.1	-332	20.69	TURNING BLACK COLOR
1550	6.72		6.75	31.87	120	7.57	13.9	-354	19.87	
1600	6.68	120	6.70	31.41	160	6.35	13.8	-353	19.57	
1610	6.67		6.68	30.63	180	5.56	13.65	-353	19.03	
1615	6.65		6.68	30.44	190	5.46	13.56	-352	18.91	
1620	6.62		6.72	30.27	190	5.78	13.5	-355	18.79	
	END PURGE									

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 3GW375-01
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102899-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/28/99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 1750	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump / LOW FLOW	CLEAR	6.10	0.581	12.7	5.8	2.08	60	0.28

PURGE DATA:

Date: 10.29.99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump / LOW FLOW								
Monitor Reading (ppm): 8.3								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 8.45								
Static Water Level (WL): 3.54			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 0.8								
Start Purge (hrs): 1645								
End Purge (hrs): 1745								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 1.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	✓
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

OBSERVATIONS / NOTES:

PUMP INLET SET 1' OFF BTM.
END SAMPLE @ 1915 WL = 4.12

Circle if Applicable:

MS/MSD — Duplicate ID No.: —

Signature(s): K. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 3MW37S
DATE: 10-28-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1650	3.83	110	6.33	0.592	34	8.24	12.1	66	0.29	Changed battery
1655	3.86	110	6.27	0.578	27	5.71	11.8	75	0.28	
1700	4.95	110	6.24	0.576	19	5.96	12.0	73	0.28	
1705	4.01	110	6.26	0.573	12	5.62	12.2	71	0.28	
1710	4.03	110	6.23	0.572	10	5.18	12.4	71	0.28	
1715	4.05	110	6.22	0.571	8.9	4.54	12.6	73	0.28	
1720	4.05	110	6.19	0.571	7.1	3.15	12.7	72	0.28	
1725	4.03	110	6.15	0.572	6.0	2.55	12.8	71	0.28	
1730	3.99	110	6.12	0.575	5.4	2.29	12.7	69	0.28	
1735	3.98	90	6.10	0.579	6.3	2.14	12.7	61	0.28	LOW PUMP BATTERY.
1740	3.96	85	6.10	0.580	6.0	2.24	12.7	64	0.28	
1745	3.98	95	6.10	0.581	5.8	2.08	12.7	60	0.28	END PURGING CHANGED BATTERY AT BEGINNING OF SAMPLING.
	BEGIN SAMPLING @ 1750 - SAMPLE ID 3-GW37S-01.									
	END SAMPLING @									

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N LCN / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W GW 38DS-01
Sample Location: AREA A
Sampled By: R. SIMPSON
C.O.C. No.: 102599-01, 102799-01 & 102899-01
3 COC's
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10-26/28/29-99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: SEE BELOW	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump	CLEAR	6.83	1.130	14.8	6.8	2.48	199	0.57

PURGE DATA:

Date: 10-24-99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump								
Monitor Reading (ppm): 11.6 RP	← RISER PIPE			BZ=0				
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 11.70								
Static Water Level (WL): 6.92			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 0.8								
Start Purge (hrs): 15.54								
End Purge (hrs): 1635								
Total Purge Time (min): 42								
Total Vol. Purged (gal/L): 1.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials 10-26-99	0950
TCL Semivolatile Organic Compounds	4°C	1 ☒ 1L Amber Glass 10-26-99	0950
TCL PAH	4°C	(2) 1L Amber Glass 10-28-99	0755
TCL Pesticides/PCB	4°C	1 ☒ 1L Amber Glass 10-26-99	0950
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene 10-29-99	0715
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene 10-29-99	0715
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass 10-26-99	0950
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene 10-28-99	0755
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene 10-29-99	0715
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

PUMP INLET SET @ 1' OFF BTM PRIOR TO SAMPLING PURGED 300ML±
10-25-99 WL @ 1310 = 10.25'
10-26-99 WL @ 0745 = 9.45' @ 0945 WL = 9.37
TURB. 10-26-99 ALL OTHER PARAMETERS 10-24-99
PURGE 10-24-99 TO DRY - SAMPLE 10-25-99, 10-28-99

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): R. E. Simpson

10-28-99 WL @ 0745 = 9.22'

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2WGW38DS-01
DATE: 10 24 99

Time (Hrs.)	Water Level (ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1600	7.80	150	7.02	1.014	31	5.64	15.4	198	0.50	
1605	8.35	120	6.88	0.980	21	4.37	15.3	209	0.49	120 ML/MIN IS
1610	8.77		6.90	0.966	12	4.70	15.3	212	0.48	LOWER LIMIT OF PUMP
1615	9.31		6.80	1.018	6.6	4.00	15.2	217	0.51	
1620	9.68		6.82	1.056	6.3	3.45	15.1	214	0.53	
1625	10.19		6.82	1.107	6.2	2.90	15.0	207	0.56	
16,30	10.68		6.83	1.130	7.9	2.48	14.8	199	0.57	
1632	10.70		DRY	TO 10.70'						
	DISCONNECT CELL AND PUMP WELL DRY TO BTM.									
	WILL ALLOW TO RECHARGE OVERNITE & SAMPLE 10.25.99									

SIGNATURE(S): K. J. E. Simpson

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W-GW39DS-01
Sample Location: 2WGW39DS-AREA A
Sampled By: S. NEIL
C.O.C. No.: 102799-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/27/99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 0828	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump/LOW FLOW	LT. GRAY	6.82	4.398	13.6	112	2.03	-125	2.47

PURGE DATA:

Date: 10/26/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump/LOW FLOW								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.7'								
Static Water Level (WL): 3.01'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.2								
Start Purge (hrs): 1128								
End Purge (hrs): 1410								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	3
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	2
TCL PAH	4°C	(2) 1L Amber Glass	2
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	2
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

Water level at beginning of sampling = 4.14 FT.
Turbidity at beginning of sampling = 18 NTUs.
Sample flow rate = 100 mL/min
End sampling @ 1011
Final H_2O Level = 12.54 FT.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Scott Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2WMW39DS
DATE: 10/26/99

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
	1128	3.01								→	BEGIN PURGING. ORANGE
450	1133	3.58	90	6.81	4.911	80	4.79	13.5	-77	2.65	SOLIDS AT BEGINNING OF
900	1138	3.98	90	6.87	4.811	50	4.38	13.5	-79	2.59	PURGE.
1350	1143	4.51	90	6.81	4.455	36	4.15	13.4	-73	2.39	SOLIDS HAVE CLEARED.
1800	1148	4.97	90	6.72	4.277	24	3.24	13.4	-76	2.29	TRACE ORANGE SOLIDS
2225	1153	5.20	85	6.71	4.059	26	3.14	13.3	-76	2.16	↓
2650	1158	5.57	85	6.70	3.853	22	2.70	13.3	-72	2.05	
3100	1203	5.93	90	6.68	2.936	17	4.11	13.3	-70	1.54	CLEANED SOLIDS FROM BOTTOM
3550	1208	6.27	90	6.67	2.872	15	3.44	13.4	-67	1.50	OF FLOW-THRU CELL.
4000	1213	6.58	90	6.62	2.584	19	3.59	13.4	-66	1.34	TRACE ORANGE SOLIDS
4450	1218	6.58	90	6.64	2.336	16	2.76	13.4	-63	1.21	
4900	1223	6.80	90	6.61	2.098	23	2.34	13.5	-55	1.07	
5325	1228	7.05	85	6.56	1.908	21	2.16	13.5	-49	0.98	
5750	1233	7.31	85	6.55	1.725	26	2.14	13.5	-43	0.87	
6250	1238	7.48	100	6.48	1.584	20	1.91	13.5	-39	0.80	CHANGED PUMP BATTERY
6750	1243	7.73	100	6.47	1.522	27	2.06	13.6	-36	0.77	
	1248	8.00	100	6.49	1.625	34	1.44	13.5	-37	0.83	CHANGED PUMP BATTERY
	1253	8.24	100	6.47	1.530	32	1.71	13.6	-36	0.77	CHANGED PUMP BATTERY
	1258	8.52	90	6.45	1.454	32	1.67	13.6	-38	0.73	~~water level~~
	1303	8.78	90	6.44	1.421	28	1.56	13.6	-33	0.72	~~[illegible]~~ not stabilizing -
	1308	9.40	160	6.44	1.392	25	1.11	13.2	-40	0.70	will purge "dry" and
	1313	9.87	160	6.44	1.386	23	1.00	13.2	-46	0.70	sample on 10/27/99.
	1318	10.33	175	6.45	1.464	22	0.98	13.2	-53	0.74	CHANGED PUMP BATTERY
	1323	10.77	175	6.46	1.533	22	0.88	13.3	-57	0.78	↓
	1328	11.36	185	6.55	2.104	29	0.83	13.2	-70	1.08	
	1333	12.03	185	6.53	2.056	31	0.72	13.2	-74	1.06	
	1338	12.79	190	6.54	2.242	40	0.82	13.3	-73	1.16	
	1343	13.27	190	6.56	2.405	32	0.75	13.1	-81	1.25	
	1348	13.66	180	6.57	2.541	20	0.51	13.4	-86	1.32	
	1351	14.03	160	6.61	3.138	23	0.56	13.5	-92	1.65	

SIGNATURE(S): [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2WMW39DS
DATE: 10/26/99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1356	14.47	170	6.67	3.829	57	0.98	13.5	-99	1.77	
1401	14.91	170	6.72	4.117	79	1.21	13.6	-109	2.01	
1406	15.39	170	6.79	4.301	101	1.79	13.6	-122	2.30	
1410	15.57	170	6.82	4.398	112	2.03	13.6	-125	2.47	END PURGE - DRY
										WILL SAMPLE ON
										10/27/99

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N LCN / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W-GW40DS-01
Sample Location: 2W MW40DS
Sampled By: S. NTIL
C.O.C. No.:
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 10/25/99 & 10/26/99								
Time: 1310 & 0745								
Method: Peristaltic Pump/Low Flow	LT. GRN	7.14	19.23	13.8	11	3.29	-324	11.48

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Date: 10/24/99								
Method: Peristaltic Pump/Low Flow								
Monitor Reading (ppm): 0.4								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.40'								
Static Water Level (WL): 3.85			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume(gal/L): 2.0								
Start Purge (hrs): 1058								
End Purge (hrs): 1204								
Total Purge Time (min): 66								
Total Vol. Purged (gal/L): 2.9								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials 10/25/99	3
TCL Semivolatile Organic Compounds	4°C	1 (~~2~~) 1L Amber Glass 10/25/99	1
TCL PAH	4°C	(2) 1L Amber Glass 10/25/99	2
TCL Pesticides/PCB	4°C	1 (~~2~~) 1L Amber Glass 10/25/99	1
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene 10/26/99	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene 10/26/99	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass 10/25/99	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene 10/25/99	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene 10/25/99	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

-well purged dry on 10/24/99 - will sample on 10/25/99.

10/26/99 - METALS
H_2O LEVEL = 11.4 FT
TURBIDITY = 14 NTUs

-Sample data parameters measured on 10/25/99 prior to sampling.
-well did not recover enough to sample all parameters at the same time - will will sample Metals (T + Dis) on 10/26/99.
-Water level at start of sampling = 9.03 ft. Sample flow rate ≈ 100 mL/min.

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): Scott W. [illegible]

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082
WELL ID.: 2WMW40DS
DATE: 10/24/99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1058	3.85									BEGIN PURGING
1101	4.78	155	6.93	35.31	26.0	9.40	12.5	-259	20.26	465
1104	5.71	160	6.85	32.86	23.8	2.17	12.3	-285	20.49	480
1109	6.74	163	6.85	31.97	23.6	2.34	12.3	-288	19.94	815
1114	7.19	169	6.82	31.37	21.4	2.05	12.4	-291	19.52	845
1119	7.80	163	6.86	28.54	22.5	2.15	12.5	-297	17.60	815
1124	8.58	163	6.86	26.13	16.1	2.27	12.6	-299	15.97	815
1129	9.34	163	6.87	23.42	13.2	2.78	12.7	-298	14.17	815
1134	9.92	163	6.87	20.82	13.9	2.66	12.8	-295	12.46	815
1139	10.85	163	6.90	19.09	12.7	2.74	12.8	-294	11.75	815 Changed pump battery.
1144	11.54	175	6.99	18.72	21.8	2.60	12.8	-291	11.14	875
1149	(SN) ~~12.28~~ 12.28	175	6.99	19.47	33.7	2.41	12.7	-298	11.64	875
1154	13.20	180	6.97	21.13	41.4	2.52	12.6	-306	12.72	900
1159	14.53	180	6.98	23.82	115	2.77	12.6	-314	14.49	900
1204	15.00	180	6.93	26.01	179	2.83	12.6	-310	15.93	900 Dry - recovery rate = 0.20 FT/10 min. Dewatered the well - will sample on 10/25/99.
~~1209~~ (SN)										

SIGNATURE(S): Scott W. Weid

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N CON / AREA A
Project No.: JOB # 5082 CTO #03

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

Sample ID No.: 2W GW 41DS01
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102899-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10.28.99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 0925	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump	CLEAR	6.88	31.86	12.2	14	8.94	-292	19.82

PURGE DATA: 10.28.99 — 10.26.99 — 10.28.99 — 10.26.99 —

Date: 10.26.99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump								
Monitor Reading (ppm): 15.7								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.65								
Static Water Level (WL): 2.51			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.3								
Start Purge (hrs): 1347								
End Purge (hrs): 1519								
Total Purge Time (min): 92								
Total Vol. Purged (gal/L): 3.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total)	HNO_3/4°C	(1) 1L Polyethylene	✓
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

OBSERVATIONS / NOTES:

PUMP INLET SET @ 1' OFF BTM. SAMPLE EFFERVESCING IN HCL
LIGHT SULFUR ODOR

WL 10.28.99 @ 0911 = 6.75'
WL 10.27.99 @ 0826 = 10.35'

END WL 10.28.99 @ 1006 = 14.35'

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2W GW 41 DS 01
DATE: 10.26.99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1350	3.82	200	6.93	29.83	66	19.11	12.9	-249	18.47	VERY LT. YELLOW COLOR
1355	4.44	135	6.86	28.66	41	17.67	13.1	-282	17.75	
1400	5.15	↓	6.84	27.30	25	15.39	13.2	-290	16.87	
1405	6.16	↓	6.84	25.71	26	12.65	13.3	-286	15.49	
1410	KS 6.93	140	6.81	23.80	27	12.37	13.3	-282	14.50	
1415	7.62	↓	6.83	20.63	28	10.91	13.4	-278	12.45	
1420	8.11	↓	6.86	19.21	27	10.43	13.3	-276	11.36	
1425	8.85	↓	6.89	17.80	27	9.65	13.3	-275	10.60	
1430	9.28	↓	6.91	17.27	21	9.59	13.3	-276	10.22	
1440	10.23	↓	6.86	17.03	16	7.47	13.4	-282	10.14	
1445	11.11	↓	6.86	17.87	19	7.76	13.2	-290	10.61	
1450	11.83	150	6.86	19.26	22	6.49	13.2	-291	11.39	TURNING DARK GRAY
1455	12.25	↓	6.83	19.78	23	6.60	13.1	-296	11.80	BACK TO LT TEA/YELLOW COLOR
1500	13.08	↓	6.85	21.54	20	7.98	13.0	-298	12.91	
1505	14.09	170	6.82	23.39	30	6.68	12.8	-300	14.32	
1510	14.65	↓	6.85	25.54	73	6.51	12.7	-301	15.51	
1515	15.34	↓	6.88	31.86	104	8.94	12.2	-292	19.82	
1518	15.60	↓	DRY	TO	PUMP	INLET,	LOWERED	TO	BTM	& PUMP DRY

SIGNATURE(S): [illegible]

BTM 16.65

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-N LCN / AREA A
Project No.: JOB# 5082 CTO 203

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

Sample ID No.: 2W-GW420S-01
Sample Location: 2WMW420S-AREA A
Sampled By: S. NEIL
C.O.C. No.: 102899-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 10/28/99 Time: 0945 Method: Peristaltic Pump/LOW FLOW	GRAY	6.97	32.56	12.1	142	9.65	-339	20.39

PURGE DATA:

Date: 10/27/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump/LOW FLOW								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.25'								
Static Water Level (WL): 2.10'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.3								
Start Purge (hrs): 1242								
End Purge (hrs): 1412								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 3.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	3
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	2
TCL PAH	4°C	(2) 1L Amber Glass	2
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	2
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

Water level at sample time = 5.80 ft.
Turbidity at sample time = 71.1 NTUs.
Water has strong sulfur odor.
Sample flow rate ≈ 115 mL/min.
End sampling @ 1127.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): Scott W. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082
WELL ID.: 2WMW42DS
DATE: 10/27/99

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
	1242	SW 2.50 2.10	—								Begin Purging.
700	1247	2.97	140	7.02	37.04	47.0	4.55	12.6	-304	23.45	Decrease Flow. Water
	1252	3.92	120	6.97	36.23	19.6	6.13	12.6	-332	22.87	Has sulphur odor.
	1257	4.45	120	6.98	35.39	20.4	9.01	12.7	-333	22.30	
	1302	5.29	120	6.95	33.99	19.7	8.58	12.7	-330	21.28	
	1307	5.88	120	6.94	30.12	15.1	8.98	12.7	-328	18.69	
	1312	6.64	120	6.91	31.17	12.5	9.57	12.8	-323	20.01	
	1317	7.33	120	6.86	27.73	11.0	9.75	12.9	-315	17.05	
	1322	8.14	120	6.83	24.98	12.8	9.71	13.0	-314	15.22	
400 900	1327	8.73	120	6.82	22.85	18.6	9.62	13.00	-306	13.73	Water level not stabilizing.
	1332	9.34	160	6.83	20.65	21.8	9.84	12.9	-321	12.37	Well not making much
	1337	10.03	160	6.86	19.96	24.2	9.70	12.8	-326	11.92	water. Increase flow to
2400 4800	1342	10.66	160	6.92	19.07	23.6	9.47	12.8	-328	11.35	Purge dry - sample on
	1347	11.35	180	6.95	18.47	29.8	9.90	12.8	-326	10.97	10/28/99.
	1352	12.03	180	6.94	19.20	22.4	9.87	12.7	-320	11.46	
SW	1357	12.68	180	6.93	21.53	27.3	9.79	12.5	-319	12.99	
	1402	13.59	180	6.94	25.42	53.5	8.31	12.6	-325	15.55	
	1407	14.23	180	6.91	27.71	75.8	9.43	12.4	-332	17.10	
	1412	SW 14.90 14.90	180	6.97	32.56	142	9.65	12.1	-339	20.39	Well purged dry - will
											sample on 10/28/99.

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

2WMW43D

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W-GW43DS-01
Sample Location: 2WMW43DS - Area A
Sampled By: S. Neo
C.O.C. No.: 102799-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 10/27/99								
Time: 1750								
Method: Peristaltic Pump/LOW FLOW	LT. GRAY	6.52	36.50	12.3	109	8.29	-345	23.06

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Date: 10/26/99								
Method: Peristaltic Pump/LOW FLOW								
Monitor Reading (ppm): 231								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 15.45'								
Static Water Level (WL): 2.47'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.2								
Start Purge (hrs): 1623								
End Purge (hrs): 1757								
Total Purge Time (min): 94								
Total Vol. Purged (gal/L): 3.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	3
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	2
TCL PAH	4°C	(SN) (2) 1L Amber Glass	2
TCL Pesticides/PCB	4°C	(1) ~~(2)~~ 1L Amber Glass	1
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

Water level at sample time = 6.78 ft.
Turbidity at sample time = 360 NTUs
Pump rate at sampling = 115 mL/min.
Strong effervescing in VOAs & TOC (HCL preservative)
End sampling @ 1927. Filled all bottles except one PCB.
All samples had strong sulfur odor.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Scott W. Neo

— MW 43 —

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2W MW 4 ~~1~~ 3 (2) DS
DATE: 10/26/99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1623	2.47									BEGIN PURGING
1628	3.33	120	6.54	41.48	45	1.16	13.0	-338	26.57	STRONG SWAMP/
1633	4.17	120	6.48	39.24	20	0.55	13.0	-338	24.95	SULPHUR ODOR.
1638	4.86	120	6.48	37.99	15	0.02	13.0	-336	24.11	
1643	5.45	120	6.45	37.05	14	3.87	12.9	-334	23.45	
1648	6.06	120	6.49	35.93	14	6.09	12.9	-330	22.64	
1653	6.63	120	6.51	34.50	12	6.75	12.8	-331	21.68	
1658	7.18	120	6.57	32.67	16	7.74	12.8	-333	20.41	
1703	7.70	120	6.59	31.89	17	7.22	12.8	-336	19.48	
1708	8.23	120	6.63	30.93	20	7.12	12.7	-339	19.24	
1713	8.93	120	6.65	30.58	22	7.21	12.7	-343	19.01	
1718	9.71	120	6.65	30.54	23	7.26	12.6	-346	18.97	
1723	10.23	120	6.64	30.54	20	7.26	12.6	-348	18.98	
1728	10.77	120	6.63	30.70	19.7	6.90	12.6	-347	19.08	
8410 1733	11.28	120	~~6.60~~ (2)	30.88	23.4	6.86	12.6	-345	19.21	INCREASE FLOW TO PURGE
1738	12.02	170	6.59	31.43	40.5	7.65	12.5	-342	19.58	DRY - SAMPLE ON
1743	12.62	170	6.57	32.16	45.6	7.41	12.5	-344	20.08	10/27/99 WATER LEVEL
1748	13.20	170	6.55	33.15	63.1	7.21	12.5	-344	20.76	NOT STABILIZING.
1753	14.00	170	6.53	34.74	96.5	7.61	12.4	-344	21.86	
4150 1757	14.43	170	6.52	36.50	109	8.29	12.3	-345	23.06	END PURGE - DRY.
										WILL SAMPLE ON
										10/27/99.

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB-N LCN / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W-GW44DS-01
Sample Location: 2WMW44DS - AREA A
Sampled By: S. NEIL
C.O.C. No.: 102799-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 10/28/99								
Time: 0750								
Method: Peristaltic Pump / LOW FLOW	GRAY	6.96	18.73	12.9	145	13.21	-307	11.04

PURGE DATA:

Date: 10/27/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump / LOW FLOW								
Monitor Reading (ppm):								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.9'								
Static Water Level (WL): 1.62'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.5								
Start Purge (hrs): 1510								
End Purge (hrs): 1720								
Total Purge Time (min): 130								
Total Vol. Purged (gal/L): 4.8								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	3
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	2
TCL PAH	4°C	(2) 1L Amber Glass	2
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	2
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

water level at sampling = 1.73 FT.
Turbidity at sampling = 21.6 NTUs.
water has strong sulfur odor.
Sample flow rate = 115 ml/min.
End sampling @ 0919.
Water level at end of sampling = 7.83 FT.

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082
WELL ID.: 2WMW440S
DATE: 10/27/99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
1510	1.62								→	Begin purging - water
1515	2.47	140	6.98	42.81	54.0	13.64	13.1	-336	27.52	has strong sulfur
1520	3.29	125	6.92	42.53	43.0	11.75	13.3	-337	27.33	odor.
1525	4.05	125	6.92	42.24	43.9	10.57	13.2	-337	27.12	
1530	4.68	125	6.93	41.97	40.8	10.47	13.3	-337	26.93	
1535	5.22	125	6.94	41.24	31.8	12.04	13.2	-338	26.41	
1540	5.69	125	6.94	40.59	33.2	13.10	13.3	-338	25.95	
1545	5.98	125	6.92	38.95	30.2	14.01	13.3	-337	24.78	
1550	6.29	125	6.91	36.45	32.0	14.18	13.3	-336	23.38	
1555	6.57	125	6.91	33.42	37.7	15.56	13.3	-331	20.92	
1600	6.84	125	6.91	28.97	44.9	14.38	13.2	-328	17.87	
1605	7.07	125	6.90	24.85	48.0	11.96	13.2	-324	15.12	
1610	7.27	125	6.90	22.79	47.8	11.45	13.2	-322	13.77	
1615	7.52	125	6.90	21.09	64.9	11.08	13.1	-322	12.66	
1620	8.14	150	6.93	19.36	66.4	9.86	13.1	-322	11.54	water level continuing
1625	8.90	150	6.92	18.06	77.2	9.27	13.0	-319	10.70	to drop. Increase flow
1630	9.39	150	6.83	16.32	91.0	8.37	13.1	-324	9.59	to purge dry, then
1635	10.04	150	6.79	15.32	110	7.66	13.2	-323	8.97	sample on 10/28/99.
1640	10.55	150	6.79	16.14	125	6.83	13.2	-318	9.49	
1645	11.27	150	6.82	16.98	117	6.84	13.1	-315	10.04	
1650	11.82	150	6.86	17.68	116	8.08	13.1	-315	10.47	
1655	12.25	155	6.87	17.99	131	7.52	13.1	-311	10.56	
1700	12.81	155	6.87	17.84	122	8.30	13.1	-308	10.90	
1705	13.40	150	6.89	18.20	140	8.59	13.0	-312	10.91	
1710	13.95	150	6.93	18.73	163	10.96	13.0	-313	11.15	
1715	14.55	150	6.94	18.95	156	11.44	12.9	-312	11.29	
1720	15.03	150	6.96	18.73	145	13.21	12.9	-307	11.04	End purging - dry.

SIGNATURE(S): Scott W. [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N CON / AREA A
Project No.: JOB # 5082 CTO 303

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

Sample ID No.: 2WSAW45DS
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102599-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10.26.99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 0830	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump	CLEAR	6.79	42.12	11.3	17	6.22	-321	26.43

PURGE DATA:

Date: 10.25.99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump								
Monitor Reading (ppm): 258	← RISER PIPE; BZ = 0							
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.75								
Static Water Level (WL): 2.19			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.4								
Start Purge (hrs): 0846								
End Purge (hrs): 1045								
Total Purge Time (min): 119								
Total Vol. Purged (gal/L): 4.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	✓
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	✓
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

OBSERVATIONS / NOTES:

PUMP INLET SET @ 1' OFF BTM. END WL 10.26.99 = 9.47
STRONG SULFUR ODOR
TURBIDITY 10.26.99 ALL OTHER PARAMETERS 10.25.99
WL 10.26.99 @ 0825 = 2.25, REMOVED 300mL± PRIOR TO START OF SAMPLING

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2W MW45 DS
DATE: 10-25-99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
0850	3.41	140	6.81	41.58	6.3	8.52	11.6	-282	26.65	
0855	3.75	110	6.80	42.20	5.8	7.12	11.6	-306	27.04	
0900	4.33	↓	6.81	42.01	5.2	6.34	11.6	-312	26.89	
0910	5.31		6.84	41.35	7.3	6.97	11.7	-320	26.44	
0915	5.85		6.85	40.69	7.5	7.58	11.8	-322	26.00	WELL IS MAKING VERY
0920	6.28	↓	6.85	39.59	7.9	7.27	11.9	-322	25.15	LITTLE WATER INCREASE
0925	6.60	150	6.85	37.40	9.5	6.49	12.0	-317	23.73	PUMP RATE, PUMP DRY
0930	6.93 ⇔	↓	6.85	34.72	10.0	5.76	12.0	-316	22.02	& SAMPLE 10-26-99
0940	7.75	↓	6.88	28.28	17	6.20	12.1	-310	17.50	
0945	8.45	155	6.90	27.02	20	6.58	12.2	-307	16.54	
0950	9.03	↓	6.87	26.04	21	5.99	12.3	-304	15.89	
1000	9.68	↓	6.82	25.01	19	6.47	12.0	-302	15.26	
1005	10.52	220	6.80	24.40	12	5.60	12.4	-306	14.84	
1010	11.38	↓	6.81	25.99	9.0	5.03	12.4	-310	15.85	
1015	11.95	↓	6.84	28.37	9.0	4.56	12.4	-310	17.45	
1020	12.37	240	6.85	29.15	8.7	4.42	12.3	-307	18.00	
1025	12.67	140	6.84	31.46	10.2	5.21	12.1	-315	19.94	BAT. RUNNING LOW
1030	13.70	250	6.83	35.21	11	3.73	12.1	-319	22.01	NEW BAT.
10.35	14.32	250	6.88	39.15	20	5.02	11.9	-329	24.90	
1040	15.23	↓	6.78	42.87	33	7.83	11.3	-313	27.40	MOVED INLET TO BTM.
1045	16.38	↓	6.79	42.12	140	6.22	11.3	-321	26.43	
	DRY @ 1045		END	PURGE						

SIGNATURE(S): Kirk E. Simpson

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - N LCN / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W-GW46DS-01
Sample Location: 2WMW46DS
Sampled By: S. Neil
C.O.C. No.: 102599-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Eh mV	Salinity ppt
Date: 10/26/99								
Time: 0830								
Method: Peristaltic Pump/LOW FLOW	GRN-TINT	6.83	41.17	11.3	223	3.97	-331	26.30

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Date: 10/25/99								
Method: Peristaltic Pump/LOW FLOW								
Monitor Reading (ppm): 0.4								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.46								
Static Water Level (WL): 1.58			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.4								
Start Purge (hrs): 0845								
End Purge (hrs): 1011								
Total Purge Time (min): 86								
Total Vol. Purged (gal/L): 3.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	3
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	2
TCL PAH	4°C	(2) 1L Amber Glass	2
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	2
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

* Water level steadily dropping - well making very little water. Increased the flow rate on purging. Will dewater and sample within 24 hours.
- water level at beginning of sampling (10/26/99) = 5.73 FT.
- Turbidity at the beginning of sampling = 8.9 NTUs.
- Samples have "swampy" odor.
- Samples effervescing in vials (HCL preservative).

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): Scott W. Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082

WELL ID.: 2WMW46DS
DATE: 10/25/99

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (ml/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
0845	1.58	—							→	Begin Purging.
0850	2.40	125	6.92	44.66	26.5	1.71	10.1	-267	28.74	625 Water has a
0855	3.37	125	6.74	44.94	19.5	0.04	10.2	-328	28.62	1250 "Swampy" odor.
0900	4.16	120	6.73	44.96	19.8	0.05	10.7	-341	28.96	1850
0905	4.93	120	6.74	44.95	18.8	0.01	10.8	-337	28.96	2450
0910	5.70	130	6.79	44.95	13.0	0.34	10.9	-338	28.97	3100
0915	6.51	130	6.77	44.77	13.9	0.92	11.1	-341	28.84	3750
0920	7.08	120	6.77	44.61	13.5	1.40	11.1	-343	28.74	4350
0925	7.73	120	6.75	44.37	14.8	2.62	11.2	-343	28.57	4950
0930	8.74	160	6.72	43.79	15.4	3.82	11.4	-339	28.16	5750 Increased flow to
0935	9.83	160	6.73	42.38	23.7	6.47	11.5	-335	27.08	6550 purge dry
0940	10.88	160	6.75	40.29	50.0	5.40	11.6	-327	25.68	7350
0945	11.68	165	6.79	39.73	70	3.98	11.6	-329	25.29	8175
0950	12.53	165	6.82	39.65	130	4.11	11.7	-330	25.25	9000
0955	13.48	165	6.83	40.03	120	3.17	11.7	-331	25.53	9825
1000	14.50	165	6.84	40.44	200	4.02	11.5	-333	25.80	10650
1005	15.21	150	6.84	40.86	210	4.00	11.4	-332	26.09	11400
1011	16.40	150	6.83	41.17	223	3.97	11.3	-331	26.30	Dry - End Purging
	Begin sampling on 10/26/99 @ 0830 - Sample ID 2W-GW46DS-01.									
	End sampling on 10/26/99 @ 1021.									

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 203

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

Sample ID No.: 2W-GW47DS-01
Sample Location: 2WMW47DS
Sampled By: S. NEIL
C.O.C. No.: 102599-01
Type of Sample:
[x] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 10/25/99	Color	pH	S.C.	Temp.	Turbidity	DO	Eh	Salinity
Time: 1720	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	ppt
Method: Peristaltic Pump / LOW FLOW	LT. GRAY	6.45	7.183	13.2	19	0.60	-187	3.97

PURGE DATA:

Date: 10/25/99	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Eh	Salinity
Method: Peristaltic Pump / LOW FLOW								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 16.2'								
Static Water Level (WL): 1.32'			SEE LOW FLOW PURGE DATA SHEET					
One Casing Volume (gal/L): 2.4								
Start Purge (hrs): 1500								
End Purge (hrs): 1715								
Total Purge Time (min): 135								
Total Vol. Purged (gal/L): 4.0								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	3
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	2
TCL PAH	4°C	(2) 1L Amber Glass	2
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	2
TAL Metals (Total) + Hardness	HNO_3/4°C	(1) 1L Polyethylene	1
Dissolved Metals	HNO_3/4°C	(1) 1L Polyethylene	1
Total Organic Carbon (TOC)	HCl/4°C	(1) 60mL Glass	1
Chemical Oxygen Demand (COD)	H_2SO_4/4°C	(1) 250mL Polyethylene	1
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	1
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

OBSERVATIONS / NOTES:

END SAMPLING @ 1858
FINAL WATER LEVEL = 7.48 FT.

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	

Signature(s): Scott Neil

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB-NLON / AREA A
PROJECT NUMBER: CTO 203 JOB # 5082
WELL ID.: 2WMW47DS
DATE: 10/25/99

	Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	Eh mV	Sal. (%)	Comments
	1500	1.32								→	BEGIN PURGING. HEAVY BLK
575	1505	2.40	115	6.90	37.29	55	1.27	14.1	-332	23.64	SOLIDS AT BEGINNING.
1165	1510	2.83	118	6.87	35.25	21	0.49	13.7	-326	22.21	SOLIDS HAVE CLEARED.
1755	1515	3.18	118	6.82	32.67	11	0.33	13.7	-323	20.30	↓
2345	1520	3.42	118	6.78	30.06	10	0.37	13.6	-320	18.54	↓
2920	1525	3.71	115	6.74	27.78	22	0.43	13.7	-320	17.09	WATER TURNING GRAY.
3495	1530	3.93	115	6.62	24.37	55	0.39	13.7	-317	14.88	BLACK SOLIDS RETURN
4070	1535	4.08	115	6.54	21.16	75	0.54	13.8	-320	12.71	↓
4645	1540	4.25	115	6.51	18.62	80	0.65	13.8	-310	10.75	↓
5220	1545	4.36	115	6.51	12.19	37	1.05	13.8	-236	7.05	WATER BEGINNING TO CLEAR
5795	1550	4.46	115	6.52	9.314	26	1.03	13.8	-223	5.23	↓
6355	1555	4.51	112	6.53	7.772	21	1.27	13.8	-213	4.32	↓
6915	1600	4.55	112	6.51	7.083	18	1.39	13.8	-208	3.90	↓
7465	1605	4.63	110	6.51	6.635	22	0.85	13.8	-203	3.65	↓
8015	1610	4.66	110	6.51	6.518	12	1.23	13.8	-198	3.58	WATER IS "CLEAR"
8565	1615	4.68	110	6.51	6.422	15	1.06	13.8	-197	3.53	↓
9115	1620	4.70	110	6.51	6.385	13	1.21	13.8	-189	3.50	↓
9665	1625	4.73	110	6.50	6.345	12	1.13	13.7	-188	3.48	↓
10215	1630	4.73	110	6.49	6.378	13	1.18	13.7	-191	3.50	↓
10765	1635	4.74	110	6.47	6.445	15	1.21	13.6	-185	3.54	WATER TURNING DRK GRAY
11315	1640	4.74	110	6.45	6.652	16	1.14	13.6	-207	3.66	↓
11865	1645	4.75	110	6.46	6.782	15	1.05	13.5	-209	3.74	↓
12415	1650	4.75	110	6.45	6.866	18	0.80	13.5	-212	3.79	↓
12965	1655	4.76	112	6.45	7.157	18	0.85	13.4	-227	3.96	↓
13515	1700	4.76	112	6.44	7.151	17	0.74	13.4	-207	3.96	↓
14065	1705	4.76	112	6.46	7.167	18	0.55	13.3	-183	3.96	↓
14615	1710	4.76	112	6.46	7.166	18	0.61	13.2	-182	3.96	↓
15215	1715	4.75	112	6.45	7.183	19	0.60	13.2	-187	3.97	End Purging.
		Begin sampling @ 1720 - SAMPLE ID 2W-GW47DS-01									
		END sampling @									

SIGNATURE(S): Scott W. Reid

APPENDIX H

SURFACE WATER SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 203

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: SEEP
[] QA Sample Type:

Sample ID No.: 3MSP01-01
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102399-01

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	Salinity %	Other Eh NA
Date: 10.24.99								
Time: 1145								
Depth: 0-10"								
Method: DIRECT FILL	CLEAR	6.57	0.371	14.0	12.5	7.25	0.18	184

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	✓
TAL Metals (Dissolved)	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC) vs HCL	~~H_2SO_4~~/4°C	(1) 1L Polyethylene	✓
~~Total Dissolved Solids (TDS)~~	~~4°C~~	~~(1) 250mL Polyethylene~~	
Chemical Oxygen Demand (COD) vs	H_2SO_4 ~~HCl~~/4°C	(1) 1L Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
Hardness w/T. TAL METALS	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	

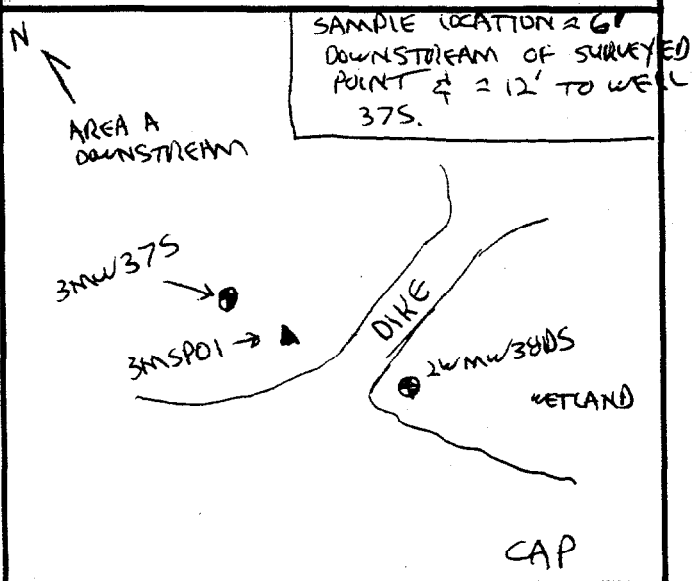
OBSERVATIONS / NOTES:

FLOW EST. 0.5 GPM

TRACE SOLIDS (FINES) WERE STIRRED-UP DURING SAMPLING.

DUG A AREA ≈ 18" DIA. & 10" DEEP @ 0815 TO CREATE A PONDED AREA FOR SAMPLING.

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): K. S. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 103

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other:
[] QA Sample Type:

Sample ID No.: SWSG-18-01
Sample Location: AREA A - WELL 41
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01

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	Salinity %	Other Eh NA
Date: 10.27.99								
Time: 1752								
Depth: 0 - 10"	LT. TEA TO CLEAR	6.45	0.639	10.1	6.1	3.81	0.31	-24
Method: DIRECT FILL								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	
TCL PAH	4°C	(2) 1L Amber Glass	
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	
TAL Metals (Dissolved)	HNO_3/4°C	(1) 1L Polyethylene	
Total Organic Carbon (TOC) HCL	~~H_2SO_4~~/4°C	(1) 1L Polyethylene	
~~Total Dissolved Solids (TDS)~~	~~4°C~~	~~(1) 250mL Polyethylene~~	—
Chemical Oxygen Demand (COD) H_2SO_4	~~HCl~~/4°C	(1) 1L Polyethylene	
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	
~~Hardness~~	~~HNO_3/4°C~~	(1) ~~250mL Polyethylene~~	—

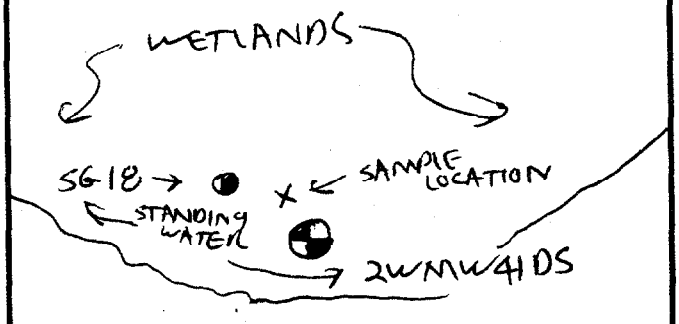
OBSERVATIONS / NOTES:

CLEARED & DUG A 18" Ø X 10" DEEP SAMPLE AREA

STANDING WATER, NO FLOW

SOME PLANT MATERIAL IN SAMPLE

MAP:



GABION BASKETS

RIPRAP

ASPHALT

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5080 CTO 103

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other:
[] QA Sample Type:

Sample ID No.: SWSG19-01
Sample Location: AREA A - WELL 42
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01

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	Salinity %	Other NA
Date: 10-27-99								
Time: 1731								
Depth: 0 - 10"	CLEAR	6.62	0.628	10.5	6.2	5.05	0.31	23.3
Method: DIRECT FILL								

Eh

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	
TCL PAH	4°C	(2) 1L Amber Glass	
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	
TAL Metals (Dissolved)	HNO_3/4°C	(1) 1L Polyethylene	
Total Organic Carbon (TOC) HCL	~~H_2SO_4~~/4°C	(1) 1L Polyethylene	
~~Total Dissolved Solids (TDS)~~	~~4°C~~	~~(1) 250mL Polyethylene~~	—
Chemical Oxygen Demand (COD) H_2SO_4	~~HCl~~/4°C	(1) 1L Polyethylene	
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

OBSERVATIONS / NOTES:

CLEAR & DUG 14" Ø X 10" DEEP SAMPLE AREA

STANDING WATER, NO FLOW

SOME PLANT MATERIAL IN SAMPLE

MAP:

GABION BASKETS

RIPRAP

ASPHALT

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. S. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 103

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other:
[] QA Sample Type:

Sample ID No.: SW SG20-01
Sample Location: AREA A-WELL 43
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01

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	Salinity %	Other NA (Eh)
Date: 10.27.99 Time: 1710 Depth: 0 - 10" Method: DIRECT FILL	CLEAR TO LT. TEA	6.63	0.624	11.0	6.3	4.95	0.31	7.4

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	
TCL PAH	4°C	(2) 1L Amber Glass	
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	
TAL Metals (Total)	HNO_3/4°C	(1) 1L Polyethylene	
TAL Metals (Dissolved) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	
Total Organic Carbon (TOC) HCL	~~H_2SO_4~~/4°C	(1) 1L Polyethylene	
~~Total Dissolved Solids (TDS)~~	~~4°C~~	~~(1) 250mL Polyethylene~~	—
Chemical Oxygen Demand (COD) H_2SO_4	~~HCl~~/4°C	(1) 1L Polyethylene	
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

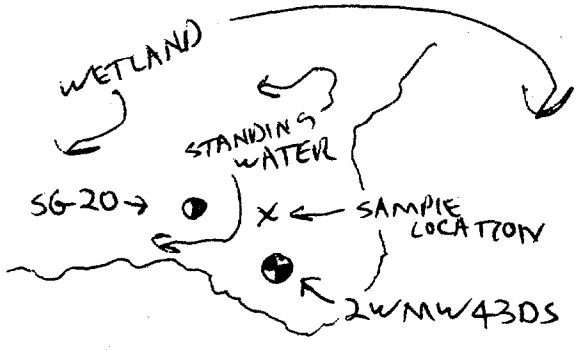
OBSERVATIONS / NOTES:

SAMPLE AREA 10" ± DEEP

STANDING WATER, NO FLOW

SOME ORGANIC (PLANT MATERIAL) IN SAMPLE

MAP:



GABION BASKETS
RIPRAP
ASPHALT

Circle if Applicable:

MS/MSD

Duplicate ID No.:

Signature(s): K. S. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5080 CTO 103

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: SURFACE WATER
[] QA Sample Type:

Sample ID No.: SWSG21-01
Sample Location: SURFACE WATER
Sampled By: R. SIMPSON
C.O.C. No.: 102399-01
AREA A

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	Salinity %	Other ORP/EH
Date: 10.24.99								
Time: 0915								
Depth: 14"	VERY LT YELLOW	6.68	0.568	9.4	6.3	1.80	0.28	46
Method: DIRECT FILL								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total)	HNO_3/4°C	(1) 1L Polyethylene	✓
TAL Metals (Dissolved)	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC) KS	HCl ~~H_2SO_4~~/4°C	(1) 1L Polyethylene	✓
Total Dissolved Solids (TDS)	4°C	~~(1) 250mL Polyethylene~~	
Chemical Oxygen Demand (COD) KS	H_2SO_4 ~~HCl~~/4°C	(1) 1L Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
Hardness W/ T. TAL METALS	HNO_3/4°C	~~(1) 250mL Polyethylene~~	

OBSERVATIONS / NOTES:

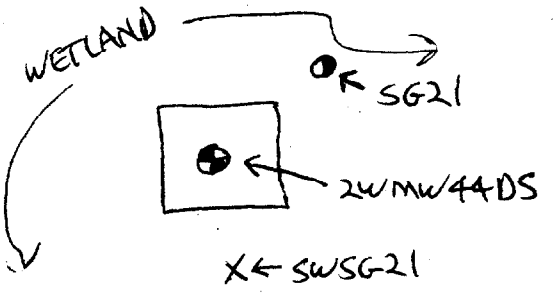
2X VOL. FOR DUP.

"GOOD" SAMPLE VERY FEW FINES STIRRED-UP DURING SAMPLING
TRACE ORGANIC MATERIAL IN SAMPLE. (PLANT MAT.).

NO FLOW NOTED, STANDING WATER

MAP:

SEE ALSO FIG. 3-1 FSP



GABION BASKETS

RIPRAP

Circle if Applicable:

MS/MSD	Duplicate ID No.:
	SWFD-102499-01

Signature(s): R. S. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5080 CTO 103

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other:
[] QA Sample Type:

Sample ID No.: SWSG-22-01
Sample Location: AREA A WEL45
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01

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	Salinity %	Other Eh NA
Date: 10.27.99								
Time: 1610								
Depth: 0 - 10"								
Method: DIRECT FILL	LT TEA COLOR	6.39	0.559	14.0	30.2	4.35	0.27	-50

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements		Collected
TCL Volatile Organic Compounds	HCl/4°C	9	(3) 40mL Vials	
TCL Semivolatile Organic Compounds	4°C	6	(2) 1L Amber Glass	
TCL PAH	4°C	6	(2) 1L Amber Glass	
TCL Pesticides/PCB	4°C	6	(2) 1L Amber Glass	
TAL Metals (Total) + HARDNESS	HNO_3/4°C	3	(1) 1L Polyethylene	
TAL Metals (Dissolved)	HNO_3/4°C	3	(1) 1L Polyethylene	
Total Organic Carbon (TOC)	H_2SO_4/4°C	3	(1) 1L Polyethylene	
~~Total Dissolved Solids (TDS)~~	~~4°C~~		~~(1) 250mL Polyethylene~~	—
Chemical Oxygen Demand (COD)	HCl/4°C	3	(1) 1L Polyethylene	
Alkalinity, Chloride, Sulfate, TDS	4°C	3	(1) 1L Polyethylene	
~~Hardness~~	~~HNO_3/4°C~~		~~(1) 250mL Polyethylene~~	—

OBSERVATIONS / NOTES:

DUG A 18" Ø X 10" DEEP SAMPLE PIT 10.26.99

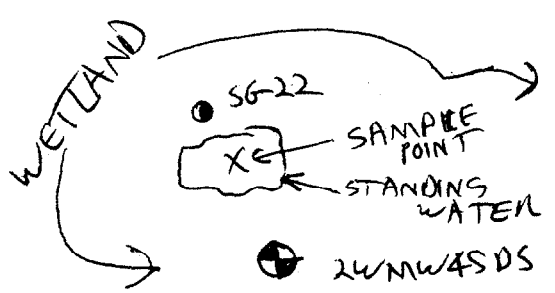
STANDING WATER, NO FLOW

TRACE PLANT MATERIAL IN SAMPLE

"PUDDLE" LIKE SAMPLE SOME SOLIDS WERE STIRRED-UP DRYING SAMPLING

3 X VOL COLLECTED FOR MS/MSD

MAP:



GABION BASKETS

RIPRAP

DEPLOYED PARKING

Circle if Applicable:

MS/MSD: YES

Duplicate ID No.:

Signature(s): K. E. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 203
WELL 46

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other:
[] QA Sample Type:

Sample ID No.: SW SG-23-01
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01

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	Salinity %	Other ER NA
Date: 10-27-99								
Time: 1540								
Depth: 0 TO 10"	LT TEA TO CLEAR	6.16	0.500	11.0	6.8	4.01	0.24	-19
Method: DIRECT FILL								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	✓
TAL Metals (Dissolved)	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC) HCL	~~H_2SO_4~~/4°C	(1) 1L Polyethylene	✓
~~Total Dissolved Solids (TDS)~~	~~4°C~~	~~(1) 250mL Polyethylene~~	—
Chemical Oxygen Demand (COD) H_2SO_4	~~HCl~~/4°C	(1) 1L Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

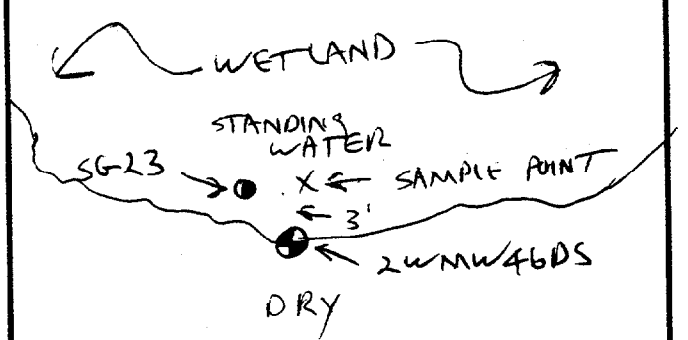
OBSERVATIONS / NOTES:

DUG A SAMPLE PIT 14" Ø
X 10" DEEP 10-26-99

STANDING WATER, NO FLOW

TRACE PLANT MATERIAL IN SAMPLE

MAP:



GABION BASKETS

RIPRAP

DEPLOYED PARKING

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. Simpson

Tetra Tech NUS, Inc.

SURFACE WATER SAMPLE LOG SHEET

Project Site Name: NSB - NLON / AREA A
Project No.: JOB # 5082 CTO 103

[] Stream
[] Spring
[] Pond
[] Lake
[x] Other: SURFACE WATER
[] QA Sample Type:

Sample ID No.: SWSG-24-01
Sample Location: AREA A
Sampled By: K. SIMPSON
C.O.C. No.: 102799-01

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	Salinity %	Other ~~ORP~~ NA
Date: 10-27-99 Time: 1430 Depth: 10" (0-10") Method: DIRECT FILL	LT. TEA TO CLEAR	7.32	0.403	12.7	3.9	6.46	0.19	-29

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
TCL Volatile Organic Compounds	HCl/4°C	(3) 40mL Vials	✓
TCL Semivolatile Organic Compounds	4°C	(2) 1L Amber Glass	✓
TCL PAH	4°C	(2) 1L Amber Glass	✓
TCL Pesticides/PCB	4°C	(2) 1L Amber Glass	✓
TAL Metals (Total) + HARDNESS	HNO_3/4°C	(1) 1L Polyethylene	✓
TAL Metals (Dissolved)	HNO_3/4°C	(1) 1L Polyethylene	✓
Total Organic Carbon (TOC) HCL	vs ~~H_2SO_4~~/4°C	(1) 1L Polyethylene	✓
~~Total Dissolved Solids (TDS)~~	~~4°C~~	~~(1) 250mL Polyethylene~~	—
Chemical Oxygen Demand (COD)	H_2SO_4 ~~+HCl~~/4°C	(1) 1L Polyethylene	✓
Alkalinity, Chloride, Sulfate, TDS	4°C	(1) 1L Polyethylene	✓
~~Hardness~~	~~HNO_3/4°C~~	~~(1) 250mL Polyethylene~~	—

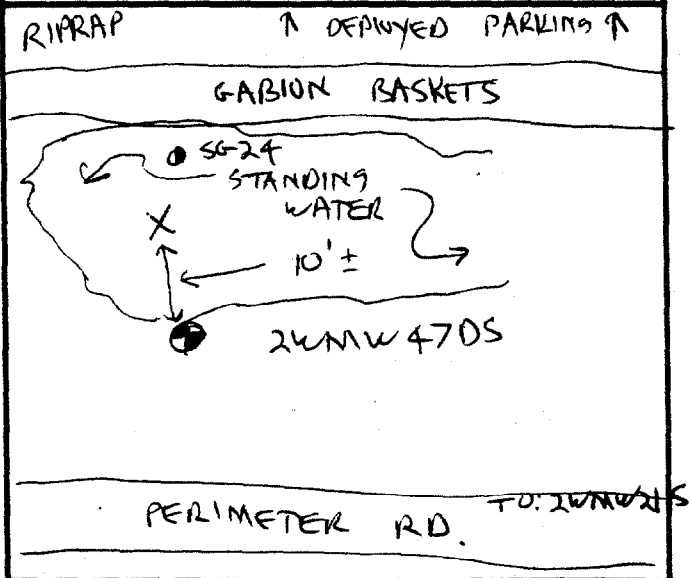
OBSERVATIONS / NOTES:

DUG A SAMPLE AREA 14" Ø x 10" DEEP ON 10.26.99

NO FLOW, STANDING WATER

SOME ORGANIC MATERIAL IN SAMPLE (PLANT MATERIAL)

MAP:



Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): K. E. Simpson

APPENDIX I

CHAIN OF CUSTODY RECORDS

AREA A CTO 203

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 102799-01 | PAGE 1 OF 2

PROJECT NO: 5082	SITE NAME: NSB-NLON	PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL 412 921 8723	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS: 2235 ROUTE 130
		CARRIER/WAYBILL NUMBER: ACCUTEST PICK-UP	CITY, STATE: DAYTON, NJ 08810

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

DATE YEAR 1999	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ml VIAL	TCL SVOC (L)	TCL PAH (L)	TCL PESTICIDES (L)	ALK. CHLORIDE, SULFATE, TDS (L)	TAL METALS (L)	HARDNESS DISSOLVED	TAL METALS (L)	TOC	COD	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	P	G/P		
PRESERVATIVE USED						HCL	/	/	/	/	HNO3	HNO3	HCL	H2SO4		
10/27	0730	TB 102799	AQ	G	2	2										TRIP BLANK
	0800	2W-GW38DS-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	0000	GWFD 102799	GW	G	14	3	2	2	2	1	1	1	1	1		DUP OF 4GW01S-01
	1040	4GW01S-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	1752	SWSG18-01	SW	G	14	3	2	2	2	1	1	1	1	1		
	1731	SWSG19-01	SW	G	14	3	2	2	2	1	1	1	1	1		
	1710	SWSG20-01	SW	G	14	3	2	2	2	1	1	1	1	1		
	1610	SWSG22-01	SW	G	42	9	6	6	6	3	3	3	3	3		BUP ALSO MS/MSD
	1540	SWSG23-01	SW	G	14	3	2	2	2	1	1	1	1	1		
	1430	SWSG24-01	SW	G	14	3	2	2	2	1	1	1	1	1		
↓	1750	2WGW43DS-01	GW	G	13	3	2	2	1	1	1	1	1	1		LOW VOL. ON PESTICIDES
10/29	0755	2WGW38DS-01	GW	G	3			2						1		
↓	0750	2WGW44DS-01	GW	G	14	3	2	2	2	1	1	1	1	1		

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: [signature]	10.29.99		1. RECEIVED BY	10.29.99	
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

PINK (FILE COPY)

3/99

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 102999-01 | PAGE 2 OF 2

PROJECT NO: 5092	SITE NAME: NSB-NION	PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL 412 921 9723	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITA SIMPSON 412 921 9131	ADDRESS: 2235 ROUTE 130
		CARRIER/WAYBILL NUMBER: ACCUTEST PICK-UP	CITY, STATE: DAYTON NJ 08810

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

DATE YEAR 1999	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ml VIA	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCBs (L)	ALK, CHLORIDE, SULFATE, TDS	TAL METALS (L)	HARDNESS	DISSOLVED TAL METALS (L)	TOC	COD	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	G	P		
PRESERVATIVE USED						HCL	/	/	/	/	HNO3	HNO3	HCL	HCL		
10/28	0925	2WGW41DS-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	0945	2WGW42DS-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	1440	3GW12D-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	1510	3GW12S-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	1750	3GW37S-01	GW	G	14	3	2	2	2	1	1	1	1	1		
	0000	GW FD 102999	GW	G	14	3	2	2	2	1	1	1	1	1		DUP OF 3GW12D01
10/29	0715	2WGW38DS-01	GW	G	3					1	1	1				low vol.

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	10.29.99		1. RECEIVED BY	10.29.99	
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 102599-01 | PAGE 1 OF 1

PROJECT NO.	SITE NAME	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT
5082	NSB-NLON	MARK MENGEL 412 921 8723	ACCUTEST

SAMPLERS (SIGNATURE)	FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
[signature]	KEITH SIMPSON 412 921 8131	2235 ROUTE 130

CARRIER/WAYBILL NUMBER	CITY, STATE
ACCUTEST PICK-UP	DAYTON, NJ 08810

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

DATE YEAR 1999	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ml VIAL	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCBs (L)	ALK, CHLORIDE, SULFATE, TDS (L)	TAL METALS, HARDNESS (L)	DISSOLVED TAL METALS (L)	TOC	COD	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	G	G	
PRESERVATIVE USED						HCL	/	/	/	/	HNO_3	HNO_3	HCL	H_2SO_4	
10/25	0706	TB-102599	AQ	G	2	2									TRIP BLANK
	1625	2W GW 21S-01	GW	G	42	9	6	6	6	3	3	3	3	3	RUN ALSO MS/MSD
	1720	2W GW 47 DS-01	GW	G	14	3	2	2	2	1	1	1	1	1	
	1310	2W GW 40 DS-01	GW	G	12	3	1	2	1	1			1	1	LOW VOC. SVOC & P/PCB's
10/26	0745	2W GW 40 DS-01	GW	G	2						1	1			
	0830	2W GW 45 DS-01	GW	G	14	3	2	2	2	1	1	1	1	1	
	0830	2W GW 46 DS-01	GW	G	14	3	2	2	2	1	1	1	1	1	
	0930	2W GW 38 DS-01	GW	G	6	3	1		1				1		LOW VOC. SVOC & P/PCBS

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	10-27-99	0750	1. RECEIVED BY [signature]	10-27-99	0750
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

AREA A CTO 203

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER 102399-01 | PAGE 1 OF 1

PROJECT NO: 5082	SITE NAME: NSB-NLON	PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL 412 921 8723	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE): Scott A. Reid / Keith S. Simpson		FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131	ADDRESS: 2235 ROUTE 130
		CARRIER/WAYBILL NUMBER: ACCUTEST PICK-UP	CITY, STATE: DAYTON, NJ 08810

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

DATE YEAR 1999	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ml VIAL	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCB (L)	ALK, CHLORIDE, SULFATE, TDS (L)	TAL METALS, (L) HARDNESS	DISSOLVED TAL METALS (L)	TOC	COD	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	P	G	
PRESERVATIVE USED						HCL	—	—	—	—	HNO_3	HNO_3	HCL ~~HNO3~~	H_2SO_4 ~~HCL~~	
10/23	0705	TB-102399	AQ	G	2	2									
10/24	0915	SWSG-21-01	SW	G	14	3	2	2	2	1	1	1	1	1	
	0900	2L GW205-01	GW	G	14	3	2	2	2	1	1	1	1	1	
	0000	SWFD-102499-01	SW	G	14	3	2	2	2	1	1	1	1	1	DUP OF SWSG-21-01
	1145	3M SP01-01	SP	G	14	3	2	2	2	1	1	1	1	1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: Keith S. Simpson	10-25-99	0750	1. RECEIVED BY: [signature]	10-25-99	0750
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

YELLOW (FIELD COPY) (FILE COPY)

AREA A CTO 203

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER 102299-01 | PAGE 1 OF 1

PROJECT NO: 5082
SITE NAME: NSB-NLON
PROJECT MANAGER AND PHONE NUMBER: MARK MENGEL 412 921 8723
LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE): Scott [illegible] / Keith S. Simpson
FIELD OPERATIONS LEADER AND PHONE NUMBER: KEITH SIMPSON 412 921 8131
ADDRESS: 2235 ROUTE 130
CARRIER/WAYBILL NUMBER: FED EX 8168 8343 5807
CITY, STATE: DAYTON, NJ 08810

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

DATE YEAR 1999	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TCL VOC 40 ml VAL	TCL SVOC (L)	TCL PAH (L)	TCL PEST/PCB (L)	ALK, CHLORIDE, SULFATE TDS (L)	TAL METALS, HARDNESS (L)	DISSOLVED METALS (L)	TOC	COD	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	P	G	
PRESERVATIVE USED						HCL	/	/	/	HNO_3	HNO_3	H_2SO_4	HCL		
10/22	1055	TB-102299	AQ	G	2	2									TRIP BLANK
↓	1100	RB-102299	AQ	G	14	3	2	2	2	1	1	1	1	1	RINSATE BLANK

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY: Keith S. Simpson	10.22.99	1810	1. RECEIVED BY: FED EX	10.22.99	1810
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) 3/99

APPENDIX J

J-1 GROUNDWATER DATA VALIDATION LETTERS AND LABORATORY DATA SHEETS

J-2 UNVALIDATED SOIL RESULTS

APPENDIX J-1

DATA VALIDATION LETTERS AND LABORATORY DATA SHEETS

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MARK MENGEL** **DATE: JANUARY 18, 2000**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION: VOA/PEST/PCB**
CTO 203, NEW LONDON
SDG E57721

SAMPLES: 13/Aqueous/

2LGW20S-01	2WGW21S-01	2WGW38DS-01
2WGW40DS-01	2WGW45DS-01	2WGW46DS-01
2WGW47DS-01	3MSP01-01	RB-102299
SWFD-102499-01	SWSG21-01	TB-102299
TB-102599		

Overview

The sample set for the CTO 203, New London, SDG E57721 consists of ten (10) aqueous environmental samples, two (2) trip blanks (TB), and one (1) rinsate blank (RB). All samples were analyzed for volatile organic compounds. The environmental samples and the rinsate blank were also analyzed for pesticides/PCBs. One field duplicate pair was included in the SDG: SWFD-102499-01 and SWSG21-01.

The samples were collected by TetraTech NUS on October 22-26, 1999 and were analyzed by Accutest. Analyses were conducted using CLP SOW OLC02.1 analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning
- Calibration
- Blanks
- * Surrogate Spike Recoveries
- * Field Duplicate Precision
- * Internal Standards Performance
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Detection Limits

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 I summarizes the validation qualifications which were based on the following information:

CALIBRATIONS

The following tables summarize calibration noncompliances and corresponding actions:

Compound	IC 11/01/99	CC 11/01/99
Bromomethane		X

Associated Samples: 2WGW38DS-01
2WGW45DS-01
2WGW47DS-01
TB-102599

Calibration Actions:
X - Percent Difference > 25%; Estimate (J) positive and (UJ) nondetected results.

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blank analyses (designated *) are summarized below:

Compound	Maximum Concentration	Blank Action Level
Methylene chloride*	1 µg/L	10 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 used for analysis were taken into consideration prior to the application of all action levels. No qualifiers were assigned on this basis.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike and matrix spike recoveries of cis-1,2-dichloropropene and bromoform fell below the lower quality control limit. The compounds were not detected in the unspiked sample, 2WGW21S-01. No qualifiers were assigned on this basis.

COMPOUND QUANTITATION

The compound 4,4'-DDD exceeded the instrument's linear calibration range in sample 2WGW21S-01. The sample was re-analyzed at a 25X dilution factor. The result from the dilution was transposed over the undiluted sample result and used for validation purposes. No qualifiers were assigned on this basis.

ADDITIONAL COMMENTS

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

The volatile fraction of sample RB-102299 was re-analyzed. However, no explanation was given for the re-analysis. Surrogate and internal standard recoveries were acceptable in both analyses. Only the original sample results were used as the basis for data validation.

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

OVERALL ASSESSMENT

Laboratory Performance: Methylene chloride was detected in the field quality control blank analyses. Bromomethane exceeded the continuing calibration %D criteria.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile 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)."

TetraTech NUS

Linda Karsonovich
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

FIELD DUPLICATES

COMPOUND	SWFD-102499-01	SWSG21-01	%RPD
Toluene	0.9 J	5.0 U	NC
4,4'-DDD	0.02 U	4.6	200%

ND – Not Detected
NC – Not Calculated, positive result less than the reporting limit.

NEW LONDON NSB

SDG E57721

TABLE II. Summary of Tentatively Identified Volatile Compounds

TIC	SWFD-102499-01	SWSG21-01
Methane, Chlorofluoro-	X	X

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW38DS-01			2WGW40DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/26/99			10/25/99		
LABORATORY ID:	E57721-5			E57721-13			E57721-19			E57721-15		
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		5	U		1	U		5	U	
1,1,2,2-TETRACHLOROETHANE	1	U		5	U		1	U		5	U	
1,1,2-TRICHLOROETHANE	1	U		5	U		1	U		5	U	
1,1-DICHLOROETHANE	1	U		5	U		1	U		5	U	
1,1-DICHLOROETHENE	1	U		5	U		1	U		5	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		5	U		1	U		5	U	
1,2-DIBROMOETHANE	1	U		5	U		1	U		5	U	
1,2-DICHLOROBENZENE	1	U		5	U		1	U		5	U	
1,2-DICHLOROETHANE	1	U		5	U		1	U		5	U	
1,2-DICHLOROPROPANE	1	U		5	U		1	U		5	U	
1,3-DICHLOROBENZENE	1	U		5	U		1	U		5	U	
1,4-DICHLOROBENZENE	1	U		5	U		1	U		5	U	
2-BUTANONE	5	U		25	U		5	U		25	U	
2-HEXANONE	5	U		25	U		5	U		25	U	
4-METHYL-2-PENTANONE	5	U		25	U		5	U		25	U	
ACETONE	5	U		25	U		5	U		25	U	
BENZENE	1	U		5	U		1	U		5	U	
BROMOCHLOROMETHANE	1	U		5	U		1	U		5	U	
BROMODICHLOROMETHANE	1	U		5	U		1	U		5	U	
BROMOFORM	1	U		5	U		1	U		5	U	
BROMOMETHANE	1	U		5	U		1	UJ	C	5	U	
CARBON DISULFIDE	1	U		5	U		1	U		5	U	
CARBON TETRACHLORIDE	1	U		5	U		1	U		5	U	
CHLOROBENZENE	1	U		5	U		1	U		5	U	
CHLOROETHANE	1	U		5	U		1	U		5	U	
CHLOROFORM	1	U		5	U		1	U		5	U	
CHLOROMETHANE	1	U		5	U		1	U		5	U	
CIS-1,2-DICHLOROETHENE	1	U		5	U		1	U		5	U	
CIS-1,3-DICHLOROPROPENE	1	U		5	U		1	U		5	U	
DIBROMOCHLOROMETHANE	1	U		5	U		1	U		5	U	
ETHYLBENZENE	1	U		5	U		1	U		5	U	
METHYLENE CHLORIDE	2	U		10	U		2	U		10	U	
STYRENE				[illegible]	[illegible]		1	U		5	U	
				[illegible]	[illegible]		1	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW38DS-01			2WGW40DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/26/99			10/25/99		
LABORATORY ID:	E57721-5			E57721-13			E57721-19			E57721-15		
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												
TOLUENE	1	U		5	U		1	U		5	U	
TRANS-1,2-DICHLOROETHENE	1	U		5	U		1	U		5	U	
TRANS-1,3-DICHLOROPROPENE	1	U		5	U		1	U		5	U	
TRICHLOROETHENE	1	U		5	U		1	U		5	U	
VINYL CHLORIDE	1	U		5	U		1	U		5	U	
XYLENES, TOTAL	1	U		5	U		1	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2WGW45DS-01			2WGW46DS-01			2WGW47DS-01			3MSP01-01		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/24/99		
LABORATORY ID:	E57721-17			E57721-18			E57721-14			E57721-7		
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		5	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	1	U		5	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	1	U		5	U		1	U		1	U	
1,1-DICHLOROETHANE	1	U		5	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		5	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		5	U		1	U		1	U	
1,2-DIBROMOETHANE	1	U		5	U		1	U		1	U	
1,2-DICHLOROBENZENE	1	U		5	U		1	U		1	U	
1,2-DICHLOROETHANE	1	U		5	U		1	U		1	U	
1,2-DICHLOROPROPANE	1	U		5	U		1	U		1	U	
1,3-DICHLOROBENZENE	1	U		5	U		1	U		1	U	
1,4-DICHLOROBENZENE	1	U		5	U		1	U		1	U	
2-BUTANONE	2	J	P	25	U		5	U		5	U	
2-HEXANONE	5	U		25	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		25	U		5	U		5	U	
ACETONE	9			25	U		5	U		5	U	
BENZENE	1	U		5	U		1	U		1	U	
BROMOCHLOROMETHANE	1	U		5	U		1	U		1	U	
BROMODICHLOROMETHANE	1	U		5	U		1	U		1	U	
BROMOFORM	1	U		5	U		1	U		1	U	
BROMOMETHANE	1	UJ	C	5	U		1	UJ	C	1	U	
CARBON DISULFIDE	4			5	U		1	U		1	U	
CARBON TETRACHLORIDE	1	U		5	U		1	U		1	U	
CHLOROBENZENE	1	U		5	U		1	U		1	U	
CHLOROETHANE	1	U		5	U		1	U		1	U	
CHLOROFORM	1	U		5	U		1	U		1	U	
CHLOROMETHANE	1	U		5	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	1	U		5	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		5	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		5	U		1	U		1	U	
ETHYLBENZENE	1	U		5	U		1	U		1	U	
METH[illegible] CH[illegible]	2	U		10	U		2	U		2	U	
				5	I		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2WGW45DS-01			2WGW46DS-01			2WGW47DS-01			3MSP01-01		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/24/99		
LABORATORY ID:	E57721-17			E57721-18			E57721-14			E57721-7		
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												
TOLUENE	2			5	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	1	U		5	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	1	U		5	U		1	U		1	U	
TRICHLOROETHENE	1	U		5	U		1	U		1	U	
VINYL CHLORIDE	1	U		5	U		1	U		1	U	
XYLENES, TOTAL	1	U		5	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	RB-102299			SWFD-102499-01			SWSG21-01			TB-102299		
SAMPLE DATE:	10/22/99			10/24/99			10/24/99			10/22/99		
LABORATORY ID:	E57721-2			E57721-6			E57721-4			E57721-1		
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		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
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	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
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	
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	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	1	U		1	U		1	U		1	U	
ETHYLBENZENE	1	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	1	J	P	2	U		2	U		2	U	
TOLUENE				1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	RB-102299			SWFD-102499-01			SWSG21-01			TB-102299		
SAMPLE DATE:	10/22/99			10/24/99			10/24/99			10/22/99		
LABORATORY ID:	E57721-2			E57721-6			E57721-4			E57721-1		
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												
TOLUENE	1	U		0.9	J	P	0.9	J	P	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		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	TB-102599			/ /			/ /			/ /		
SAMPLE DATE:	10/24/99											
LABORATORY ID:	E57721-12											
QC_TYPE:	NORMAL			100.0 %			100.0 %			100.0 %		
% SOLIDS:	0.0 %											
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	U										
1,1,2-TRICHLOROETHANE	1	U										
1,1-DICHLOROETHANE	1	U										
1,1-DICHLOROETHENE	1	U										
1,2-DIBROMO-3-CHLOROPROPANE	1	U										
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	U										
2-HEXANONE	5	U										
4-METHYL-2-PENTANONE	5	U										
ACETONE	5	U										
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										
CHLOROETHANE	1	U										
CHLOROFORM	1	U										
CHLOROMETHANE	1	U										
CIS-1,2-DICHLOROETHENE	1	U										
CIS-1,3-DICHLOROPROPENE	1	U										
DIBROMOCHLOROMETHANE	1	U										
ETHYLBENZENE	1	U										
METHYLENE CHLORIDE	2	U										

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	TB-102599											
SAMPLE DATE:	10/24/99			/ /			/ /			/ /		
LABORATORY ID:	E57721-12											
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												
TOLUENE	1	U										
TRANS-1,2-DICHLOROETHENE	1	U										
TRANS-1,3-DICHLOROPROPENE	1	U										
TRICHLOROETHENE	1	U										
VINYL CHLORIDE	1	U										
XYLENES, TOTAL	1	U										

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW38DS-01			2WGW40DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/26/99			10/25/99		
LABORATORY ID:	E57721-5			E57721-13			E57721-19			E57721-15		
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	0.02	U		4.6			0.02	U		0.02	U	
4,4'-DDE	0.02	U		0.045			0.02	U		0.02	U	
4,4'-DDT	0.02	U		0.02	U		0.02	U		0.02	U	
ALDRIN	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
AROCLOR-1016	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1221	0.4	U		0.4	U		0.4	U		0.4	U	
AROCLOR-1232	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1242	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1248	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1254	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1260	0.2	U		0.2	U		0.2	U		0.2	U	
BETA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DELTA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DIELDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN I	0.01	U		0.01	U		0.01	U		0.01	U	
ENDOSULFAN II	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN SULFATE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN ALDEHYDE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN KETONE	0.02	U		0.02	U		0.02	U		0.02	U	
GAMMA-BHC (LINDANE)	0.01	U		0.01	U		0.01	U		0.01	U	
GAMMA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR EPOXIDE	0.01	U		0.01	U		0.01	U		0.01	U	
METHOXYCHLOR	0.1	U		0.1	U		0.1	U		0.1	U	
TOXAPHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2WGW45DS-01			2WGW46DS-01			2WGW47DS-01			3MSP01-01		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/24/99		
LABORATORY ID:	E57721-17			E57721-18			E57721-14			E57721-7		
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	0.02	U		0.02	U		0.033			0.02	U	
4,4'-DDE	0.02	U		0.02	U		0.02	U		0.02	U	
4,4'-DDT	0.02	U		0.02	U		0.02	U		0.02	U	
ALDRIN	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
ALPHA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
AROCLOR-1016	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1221	0.41	U		0.4	U		0.4	U		0.4	U	
AROCLOR-1232	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1242	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1248	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1254	0.2	U		0.2	U		0.2	U		0.2	U	
AROCLOR-1260	0.2	U		0.2	U		0.2	U		0.2	U	
BETA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DELTA-BHC	0.01	U		0.01	U		0.01	U		0.01	U	
DIELDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN I	0.01	U		0.01	U		0.01	U		0.01	U	
ENDOSULFAN II	0.02	U		0.02	U		0.02	U		0.02	U	
ENDOSULFAN SULFATE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN ALDEHYDE	0.02	U		0.02	U		0.02	U		0.02	U	
ENDRIN KETONE	0.02	U		0.02	U		0.02	U		0.02	U	
GAMMA-BHC (LINDANE)	0.01	U		0.01	U		0.01	U		0.01	U	
GAMMA-CHLORDANE	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR	0.01	U		0.01	U		0.01	U		0.01	U	
HEPTACHLOR EPOXIDE	0.01	U		0.01	U		0.01	U		0.01	U	
METHOXYCHLOR	0.1	U		0.1	U		0.1	U		0.1	U	
TOXAPHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	RB-102299			SWFD-102499-01			SWSG21-01			/ /		
SAMPLE DATE:	10/22/99			10/24/99			10/24/99					
LABORATORY ID:	E57721-2			E57721-6			E57721-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	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	0.021	U		0.02	U		0.02	U				
4,4'-DDE	0.021	U		0.02	U		0.02	U				
4,4'-DDT	0.021	U		0.02	U		0.02	U				
ALDRIN	0.01	U		0.01	U		0.01	U				
ALPHA-BHC	0.01	U		0.01	U		0.01	U				
ALPHA-CHLORDANE	0.01	U		0.01	U		0.01	U				
AROCLOR-1016	0.21	U		0.2	U		0.2	U				
AROCLOR-1221	0.42	U		0.4	U		0.4	U				
AROCLOR-1232	0.21	U		0.2	U		0.2	U				
AROCLOR-1242	0.21	U		0.2	U		0.2	U				
AROCLOR-1248	0.21	U		0.2	U		0.2	U				
AROCLOR-1254	0.21	U		0.2	U		0.2	U				
AROCLOR-1260	0.21	U		0.2	U		0.2	U				
BETA-BHC	0.01	U		0.01	U		0.01	U				
DELTA-BHC	0.01	U		0.01	U		0.01	U				
DIELDRIN	0.021	U		0.02	U		0.02	U				
ENDOSULFAN I	0.01	U		0.01	U		0.01	U				
ENDOSULFAN II	0.021	U		0.02	U		0.02	U				
ENDOSULFAN SULFATE	0.021	U		0.02	U		0.02	U				
ENDRIN	0.021	U		0.02	U		0.02	U				
ENDRIN ALDEHYDE	0.021	U		0.02	U		0.02	U				
ENDRIN KETONE	0.021	U		0.02	U		0.02	U				
GAMMA-BHC (LINDANE)	0.01	U		0.01	U		0.01	U				
GAMMA-CHLORDANE	0.01	U		0.01	U		0.01	U				
HEPTACHLOR	0.01	U		0.01	U		0.01	U				
HEPTACHLOR EPOXIDE	0.01	U		0.01	U		0.01	U				
METHOXYCHLOR	0.1	U		0.1	U		0.1	U				
TOXAPHENE	1	U		1	U		1	U				

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: **MARK MENGEL** **DATE: JANUARY 26, 1999**

FROM: **LINDA KARSONOVICH** **COPIES: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION: SVOA**
CTO 203, NEW LONDON
SDG E57721A

SAMPLES: 11/Aqueous/

2LGW20S-01	2WGW21S-01	2WGW38DS-01
2WGW40DS-01	2WGW45DS-01	2WGW46DS-01
2WGW47DS-01	3MSP01-01	RB-102299
SWFD-102499-01	SWSG21-01	

Overview

The sample set for the CTO 203, New London, SDG E57721A consists of eleven (11) aqueous environmental samples. All samples were analyzed for semivolatile organic compounds. One field duplicate pair was included in the SDG: SWFD-102499-01 and SWSG21-01.

The samples were collected by TetraTech NUS on October 22-26, 1999 and were analyzed by Accutest. Analyses were conducted using SW-846 Method 8270C analytical and reporting protocols.

The data were evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Tuning
- * Calibration
- Blanks
- * Surrogate Spike Recoveries
- * Field Duplicate Precision
- * Internal Standards Performance
- * Instrument Performance
- * Compound Identification
- * Compound Quantitation
- * Detection Limits

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 I summarizes the validation qualifications which were based on the following information:

BLANKS

The maximum concentration of contaminants found in associated laboratory method blank and/or field quality control blank analyses (designated *) are summarized below:

Compound	Maximum Concentration	Blank Action Level
Di-n-butyl phthalate*	183 µg/L	915 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 used for analysis were taken into consideration prior to the application of all action levels. No qualifiers were assigned on this basis.

ADDITIONAL COMMENTS

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

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

OVERALL ASSESSMENT

Laboratory Performance: Di-n-butyl phthalate was detected in the field quality control blank analyses.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile 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)."

TetraTech NUS

Linda Karsonovich
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

FIELD DUPLICATES

COMPOUND	SWFD-102499-01	SWSG21-01	%RPD
	ND	ND	

ND – Not Detected

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW38DS-01			2WGW40DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/26/99			10/25/99		
LABORATORY ID:	E57721-5A			E57721-13A			E57721-19A			E57721-15A		
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	2	U		2	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2,4,6-TRICHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2,4-DICHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2,4-DIMETHYLPHENOL	5.1	U		5	U		5	U		5	U	
2,4-DINITROPHENOL	20	U		20	U		20	U		20	U	
2,4-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2-CHLORONAPHTHALENE	5.1	U		5	U		5	U		5	U	
2-CHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2-METHYLPHENOL	5.1	U		5	U		5	U		5	U	
2-NITROANILINE	5.1	U		5	U		5	U		5	U	
2-NITROPHENOL	5.1	U		5	U		5	U		5	U	
3&4-METHYLPHENOL	5.1	U		5	U		5	U		1.5	J	P
3,3'-DICHLOROBENZIDINE	5.1	U		5	U		5	U		5	U	
3-NITROANILINE	5.1	U		5	U		5	U		5	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		20	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5.1	U		5	U		5	U		5	U	
4-CHLOROANILINE	5.1	U		5	U		5	U		5	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-NITROANILINE	5.1	U		5	U		5	U		5	U	
4-NITROPHENOL	20	U		20	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	0.87	J	P	1.3	J	P	0.75	J	P	1.1	J	P
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U		2	U	
CARBAZOLE	2	U		2	U		2	U		2	U	
DI-N L PHT E				2	U		2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW38DS-01			2WGW40DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/26/99			10/25/99		
LABORATORY ID:	E57721-5A			E57721-13A			E57721-19A			E57721-15A		
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	5.1	U		5	U		5	U		5	U	
DIETHYL PHTHALATE	2	U		2	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2	U		2	U		2	U	
HEXACHLOROBUTADIENE	5.1	U		5	U		5	U		5	U	
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U		20	U	
HEXACHLOROETHANE	5.1	U		5	U		5	U		5	U	
ISOPHORONE	2	U		2	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	5.1	U		5	U		5	U		5	U	
N-NITROSODIPHENYLAMINE	5.1	U		5	U		5	U		5	U	
NITROBENZENE	2	U		2	U		2	U		2	U	
PENTACHLOROPHENOL	20	U		20	U		20	U		20	U	
PHENOL	5.1	U		5	U		5	U		5.6		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	2WGW45DS-01			2WGW46DS-01			2WGW47DS-01			3MSP01-01		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/24/99		
LABORATORY ID:	E57721-17A			E57721-18A			E57721-14A			E57721-7A		
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	2	U		2	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5	U		5	U		5	U		5.1	U	
2,4,6-TRICHLOROPHENOL	5	U		5	U		5	U		5.1	U	
2,4-DICHLOROPHENOL	5	U		5	U		5	U		5.1	U	
2,4-DIMETHYLPHENOL	5	U		5	U		5	U		5.1	U	
2,4-DINITROPHENOL	20	U		20	U		20	U		20	U	
2,4-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2-CHLORONAPHTHALENE	5	U		5	U		5	U		5.1	U	
2-CHLOROPHENOL	5	U		5	U		5	U		5.1	U	
2-METHYLPHENOL	5	U		5	U		5	U		5.1	U	
2-NITROANILINE	5	U		5	U		5	U		5.1	U	
2-NITROPHENOL	5	U		5	U		5	U		5.1	U	
3&4-METHYLPHENOL	2.6	J	P	65.7			5	U		5.1	U	
3,3'-DICHLOROBENZIDINE	5	U		5	U		5	U		5.1	U	
3-NITROANILINE	5	U		5	U		5	U		5.1	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		20	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5	U		5	U		5	U		5.1	U	
4-CHLOROANILINE	5	U		5	U		5	U		5.1	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-NITROANILINE	5	U		5	U		5	U		5.1	U	
4-NITROPHENOL	20	U		20	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	0.79	J	P	1.2	J	P	1	J	P	2	U	
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U		2	U	
CARBAZOLE	2	U		2	U		2	U		2	U	
DI-N-BUTYL PHTHALATE				2			2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	2WGW45DS-01			2WGW46DS-01			2WGW47DS-01			3MSP01-01		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/24/99		
LABORATORY ID:	E57721-17A			E57721-18A			E57721-14A			E57721-7A		
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	5	U		5	U		5	U		5.1	U	
DIETHYL PHTHALATE	2	U		2	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2	U		2	U		2	U	
HEXACHLOROBUTADIENE	5	U		5	U		5	U		5.1	U	
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U		20	U	
HEXACHLOROETHANE	5	U		5	U		5	U		5.1	U	
ISOPHORONE	2	U		2	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	5	U		5	U		5	U		5.1	U	
N-NITROSODIPHENYLAMINE	5	U		5	U		5	U		5.1	U	
NITROBENZENE	2	U		2	U		2	U		2	U	
PENTACHLOROPHENOL	20	U		20	U		20	U		20	U	
PHENOL	5	U		35.8			5	U		5.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	RB-102299			SWFD-102499-01			SWSG21-01			/ /		
SAMPLE DATE:	10/22/99			10/24/99			10/24/99					
LABORATORY ID:	E57721-2A			E57721-6A			E57721-4A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	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	2	U		2	U		2	U				
1,2-DICHLOROBENZENE	2	U		2	U		2	U				
1,3-DICHLOROBENZENE	2	U		2	U		2	U				
1,4-DICHLOROBENZENE	2	U		2	U		2	U				
2,4,5-TRICHLOROPHENOL	5.1	U		5	U		5	U				
2,4,6-TRICHLOROPHENOL	5.1	U		5	U		5	U				
2,4-DICHLOROPHENOL	5.1	U		5	U		5	U				
2,4-DIMETHYLPHENOL	5.1	U		5	U		5	U				
2,4-DINITROPHENOL	20	U		20	U		20	U				
2,4-DINITROTOLUENE	2	U		2	U		2	U				
2,6-DINITROTOLUENE	2	U		2	U		2	U				
2-CHLORONAPHTHALENE	5.1	U		5	U		5	U				
2-CHLOROPHENOL	5.1	U		5	U		5	U				
2-METHYLPHENOL	5.1	U		5	U		5	U				
2-NITROANILINE	5.1	U		5	U		5	U				
2-NITROPHENOL	5.1	U		5	U		5	U				
3&4-METHYLPHENOL	5.1	U		5	U		5	U				
3,3'-DICHLOROBENZIDINE	5.1	U		5	U		5	U				
3-NITROANILINE	5.1	U		5	U		5	U				
4,6-DINITRO-2-METHYLPHENOL	20	U		20	U		20	U				
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U				
4-CHLORO-3-METHYLPHENOL	5.1	U		5	U		5	U				
4-CHLOROANILINE	5.1	U		5	U		5	U				
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U				
4-NITROANILINE	5.1	U		5	U		5	U				
4-NITROPHENOL	20	U		20	U		20	U				
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U				
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U				
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2	U		2	U				
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2	U		2	U				
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U				
CARBAZOLE	2	U		2	U		2	U				

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	RB-102299			SWFD-102499-01			SWSG21-01			/ /		
SAMPLE DATE:	10/22/99			10/24/99			10/24/99					
LABORATORY ID:	E57721-2A			E57721-6A			E57721-4A					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.1	U		5	U		5	U				
DIETHYL PHTHALATE	2	U		2	U		2	U				
DIMETHYL PHTHALATE	2	U		2	U		2	U				
HEXACHLOROBENZENE	2	U		2	U		2	U				
HEXACHLOROBUTADIENE	5.1	U		5	U		5	U				
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U				
HEXACHLOROETHANE	5.1	U		5	U		5	U				
ISOPHORONE	2	U		2	U		2	U				
N-NITROSO-DI-N-PROPYLAMINE	5.1	U		5	U		5	U				
N-NITROSODIPHENYLAMINE	5.1	U		5	U		5	U				
NITROBENZENE	2	U		2	U		2	U				
PENTACHLOROPHENOL	20	U		20	U		20	U				
PHENOL	5.1	U		5	U		5	U				

Tetra Tech NUS

INTERNAL CORRESPONDENCE

PITT-01-0-070

TO: MARK MENGEL

DATE: JANUARY 27, 2000

FROM: JUSTIN ORBICH

CC: DV FILE

SUBJECT: ORGANIC DATA VALIDATION – PAH
CTO 203 – NSB NEW LONDON
SDG E57721A

SAMPLES: 10/Aqueous

2LGW20S-01	2WGW21S-01
2WGW40DS-01	2WGW45DS-01
2WGW46DS-01	2WGW47DS-01
3MSP01-01	RB-102299
SWFD-102499-01	SWSG21-01

OVERVIEW

The sample set for CTO 203, SDG E57721A, Naval Submarine Base (NSB) New London; consists of ten (10) aqueous environmental samples, which included one (1) rinsate blank (designated RB). The environmental samples were analyzed for Polynuclear Aromatic Hydrocarbon (PAH) organic compounds. One (1) field duplicate pair (SWSG21-01/SWFD-102499-01) was included within this SDG.

The samples were collected by Tetra Tech, NUS on October 24th, 1999 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW846 Method 8310 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

- * Data Completeness
- Holding Times
- Initial/continuing calibrations
- * Laboratory method/field quality control blank results
- * Surrogate Spike Recoveries
- * Matrix Spike/Matrix Spike Duplicate Results
- * Laboratory Control Sample Results
- * Detection Limits
- * Field Duplicate Precision
- * Compound Identification
- * Compound Quantitation

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

PAH FRACTION

The holding time until extraction was eight (8) days from the date of collection in samples 2WGW21S-01, 2WGW40DS-01, and 2WGW47DS-01. The nondetected results were qualified as estimated (UJ), in the aforementioned samples.

The continuing calibration Percent Differences (%D) exceeded the 25% quality control limits for naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, fluorene, and chrysene on 11/10/99 at 1006 on column one. No action was warranted since only nondetected results were reported and the %Ds were within the quality control limits on column two.

The continuing calibration Percent Differences (%D) exceeded the 25% quality control limits for naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, fluorene, and indeno(1,2,3-cd)pyrene on 11/18/99 at 0556 on column one. No action was warranted since only nondetected results were reported and the %Ds were within the quality control limits on column two.

It should be noted the laboratory did not provide the ending continuing calibration. The laboratory was notified and in return provided the ending continuing calibration.

EXECUTIVE SUMMARY

Laboratory performance: Several continuing calibration %Ds exceeded the quality control limits for several compounds on column one. The holding time until extraction exceeded the collection date by eight days in samples 2WGW21S-01, 2WGW40DS-01, and 2WGW47DS-01.

Other Factors Affecting Data Quality: None.

MEMO TO: **MARK MENGEL**
DATE: **JANUARY 27, 2000 – PAGE 3**

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (December, 1996). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"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)."

Tetra Tech NUS

Justin Orbich
Chemist/Data Validator

Tetra Tech 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 ANALYTICAL RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW40DS-01			2WGW45DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/25/99			10/26/99		
LABORATORY ID:	E57721-5A			E57721-13A			E57721-15A			E57721-17A		
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												
1-METHYLNAPHTHALENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
2-METHYLNAPHTHALENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
ACENAPHTHENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
ACENAPHTHYLENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
ANTHRACENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
BENZO(A)ANTHRACENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
BENZO(A)PYRENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
BENZO(B)FLUORANTHENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
BENZO(G,H,I)PERYLENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
BENZO(K)FLUORANTHENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
CHRYSENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
DIBENZO(A,H)ANTHRACENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
FLUORANTHENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
FLUORENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
INDENO(1,2,3-CD)PYRENE	0.17	U		0.15	UJ	H	0.16	UJ	H	0.16	U	
NAPHTHALENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
PHENANTHRENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	
PYRENE	1.1	U		1	UJ	H	1.1	UJ	H	1.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	2WGW46DS-01			2WGW47DS-01			3MSP01-01			RB-102299		
SAMPLE DATE:	10/26/99			10/25/99			10/24/99			10/22/99		
LABORATORY ID:	E57721-18A			E57721-14A			E57721-7A			E57721-2A		
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												
1-METHYLNAPHTHALENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
2-METHYLNAPHTHALENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
ACENAPHTHENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
ACENAPHTHYLENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
ANTHRACENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
BENZO(A)ANTHRACENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
BENZO(A)PYRENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
BENZO(B)FLUORANTHENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
BENZO(G,H,I)PERYLENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
BENZO(K)FLUORANTHENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
CHRYSENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
DIBENZO(A,H)ANTHRACENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
FLUORANTHENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
FLUORENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
INDENO(1,2,3-CD)PYRENE	0.16	U		0.16	UJ	H	0.16	U		0.18	U	
NAPHTHALENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
PHENANTHRENE	1.1	U		1.1	UJ	H	1	U		1.2	U	
PYRENE	1.1	U		1.1	UJ	H	1	U		1.2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721A

SAMPLE NUMBER:	SWFD-102499-01	SWSG21-01		
SAMPLE DATE:	10/24/99	10/24/99	/ /	/ /
LABORATORY ID:	E57721-6A	E57721-4A		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	0.0 %	0.0 %	100.0 %	100.0 %
UNITS:	UG/L	UG/L		
FIELD DUPLICATE OF:	SWSG21-01			

	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1.1	U		1	U							
2-METHYLNAPHTHALENE	1.1	U		1	U							
ACENAPHTHENE	1.1	U		1	U							
ACENAPHTHYLENE	1.1	U		1	U							
ANTHRACENE	1.1	U		1	U							
BENZO(A)ANTHRACENE	0.16	U		0.15	U							
BENZO(A)PYRENE	0.16	U		0.15	U							
BENZO(B)FLUORANTHENE	0.16	U		0.15	U							
BENZO(G,H,I)PERYLENE	0.16	U		0.15	U							
BENZO(K)FLUORANTHENE	0.16	U		0.15	U							
CHRYSENE	0.16	U		0.15	U							
DIBENZO(A,H)ANTHRACENE	0.16	U		0.15	U							
FLUORANTHENE	1.1	U		1	U							
FLUORENE	1.1	U		1	U							
INDENO(1,2,3-CD)PYRENE	0.16	U		0.15	U							
NAPHTHALENE	1.1	U		1	U							
PHENANTHRENE	1.1	U		1	U							
PYRENE	1.1	U		1	U							

Tetra Tech NUS

INTERNAL CORRESPONDENCE

PITT-12-9-151

TO:	**M. MENGEL**	**DATE:**	**JANUARY 27, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – TAL METALS AND MISCELLANEOUS PARAMETERS**
CTO 203 - NSB NEW LONDON
SDG – E57721

SAMPLES: 21/Aqueous/

2LGW20S-01	2LGW20S-01-F
2WGW21S-01	2WGW21S-01-F
2WGW40DS-01	2WGW40DS-01-F
2WGW45DS-01	2WGW45DS-01-F
2WGW46DS-01	2WGW46DS-01-F
2WGW47DS-01	2WGW47DS-01-F
3MSP01-01	3MSP01-01-F
RB-102299	RB-102299-F
SWFD-102499-01	SWFD-10249-01-F
SWSG21-01	SWSG21-01-F
2WGW38DS-01	

Overview

The sample set for CTO 203, NSB New London, SDG E57721, consists of nineteen (19) aqueous environmental samples and two (2) rinsate blanks (RB-102299 and RB-102299). Two (2) field duplicate pairs (SWSG21-01 / SWFD-102499-01 and SWSG21-01-F / SWFD-10249-01-F) were included within this SDG.

All samples, with exception to sample 2WGW38DS-01 and those designated –F, were analyzed for target analyte list (TAL) metals, chemical oxygen demand (COD), chloride, hardness, sulfate, total alkalinity, total dissolved solids (TDS) and total organic carbon (TOC). The samples designated –F were analyzed for dissolved TAL metals. Sample 2WGW38DS-01 was analyzed for TOC. The samples were collected by Tetra Tech NUS on October 22, 24-26, 1998 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Metals analyses were conducted in accordance with ILM04.0 methodologies. Total alkalinity analyses were conducted using EPA method 310.1. COD analyses were conducted using EPA method 410.1. Chloride and sulfate analyses were conducted using SW 846 method 9056. TDS analyses were conducted using EPA method 160.1. TOC analyses were conducted using EPA method 415.1.

All analyses, with the exception of mercury, were conducted using Inductively Couples Plasma (ICP) methodologies. Mercury analyses were conducted using cold vapor AA.

The data was evaluated based on the following parameters:

- Data Completeness
- * Holding Times
- Calibration Verifications
- Laboratory / Field Blank Analyses
- ICP Interference Check Sample Results
- Laboratory Control Sample Results
- Matrix Spike Results
- * Laboratory Duplicate Results
- Field Duplicate Results
- ICP Serial Dilution Results
- * Sample Quanitation
- * Detection Limits

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

Laboratory Blank Analyses

Affected samples: All

Analyte	Maximum Concentration	Action Level(aqueous)
Aluminum	58.9µg/L	294.5µg/L
Antimony	4.6µg/L	23.0µg/L
Beryllium	0.7µg/L	3.5µg/L
Cadmium	1.1µg/L	5.5µg/L
Calcium	105.7µg/L	528.5µg/L
Copper	2.4µg/L	12.0µg/L
Iron	34.2µg/L	171µg/L
Lead(1)	1.860µg/L	9.3µg/L
Magnesium	102.6µg/L	514.5µg/L
Manganese	0.9µg/L	4.5µg/L
Selenium	5.1µg/L	25.5µg/L
Sodium	712.770µg/L	35263.85µg/L
Thallium	5.0µg/L	25.0µg/L
Zinc(2)	9.1µg/L	45.5µg/L

(1) Maximum concentration present in an aqueous preparation blank.
(2) Maximum concentration present in a rinsate blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Dilution factors and sample aliquots were taken into consideration when evaluating for blank contamination. Positive results < the action level for aluminum, antimony, cadmium, copper, lead, selenium and zinc were qualified as, "U", as a result of blank contamination.

ICP Interference Check Sample Results

The interfering analytes calcium and magnesium were present in samples 2WGW40DS-01, 2WGW46DS-01 and 2WGW46DS-01-F at concentrations which were comparable to the levels of calcium and magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, cadmium, copper, lead, manganese, selenium, sodium, thallium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for cadmium in the affected samples. The nondetected results reported for cadmium were qualified as estimated, "UJ".

The interfering analyte magnesium was present in samples 2WFW21S-01 and 2WGW21S-01-F at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, cadmium, copper, lead, manganese, selenium, sodium, thallium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for thallium in the affected samples. The nondetected results reported for thallium were qualified as estimated, "UJ".

The interfering analyte magnesium was present in sample 2WGW40DS-01-F at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, cadmium, copper, lead, manganese, selenium, sodium, thallium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for cadmium and thallium in the affected sample. The nondetected results reported for cadmium and thallium were qualified as estimated, "UJ".

Matrix Spike Results

The Matrix Spike (MS) Percent Recovery (%R) for selenium was <75% quality control limit affecting the total metals. The nondetected results reported for selenium in the affected samples were qualified as estimated, "UJ".

The MS %R for mercury was >125% quality control limit affecting the total metals. The positive results reported for mercury in the affected samples were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision (>30%) was noted for calcium and manganese affecting the total metals. The positive result reported for calcium and manganese in the affected samples was qualified as estimated, "J".

Field duplicate imprecision (>30%) was noted for sodium affected the dissolved metals. The positive results reported for sodium in the affected samples were qualified as estimated, "J".

ICP Serial Dilution Results

The ICP Serial Dilution Percent Difference (%D) for potassium was >15% quality control limit affecting the total and dissolved metals. The positive results reported for potassium were qualified as estimated, "J".

Other Factor Affecting Data Quality

Positive results less than 2X the IDL reported for arsenic, barium, cobalt, chromium, nickel, mercury and vanadium were qualified as estimated, "J".

Notes

A comparison of field duplicate pairs (SWSG21-01 / SWFD-102499-01 and SWSG21-01-F / SWFD-10249-01-F) is included in Appendix C.

The Contract Required Detection Limit (CRDL) Percent Recoveries (%Rs) for selenium and thallium were >120% quality control limit. However, all results reported for selenium and thallium were nondetected. Therefore, no validation action was required.

Hardness was requested on the Chain of Custody for sample 2WGW40DS-01. The laboratory did not conducted hardness analyses on this sample.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks.

Other Factors Affecting Data Quality: Zinc was present in a rinsate blank. The MS %Rs for selenium and mercury were outside the 75-125% quality control limits affecting the total metals. Field duplicate imprecision was noted for calcium and manganese affecting the total metals. Field duplicate imprecision was noted for sodium affecting the dissolved metals. The ICP Serial Dilution %D for potassium was >10% quality control limit affecting all metals. Positive results less than 2X the IDL reported for arsenic, barium, cobalt, chromium, nickel, mercury and vanadium were qualified as estimated, "J".

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitled "Navy Installation Restoration Laboratory Quality Assurance Guide." (NFESC 2/96).

The text of this report has been formulated to address only those problem areas affecting 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)."

Gretchen A. Phipps

Tetra Tech NUS
Gretchen A. Phipps

Tetra Tech NUS
Joseph A. Samchuck
Quality Control Officer

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Regional Worksheets
4. Appendix D - 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/PCB D% 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 = % Solid content is less than 30%

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2LGW20S-01			2LGW20S-01-F			2WGW21S-01			2WGW21S-01-F		
SAMPLE DATE:	10/24/99			10/24/99			10/25/99			10/25/99		
LABORATORY ID:	E57721-5			E57721-9			E57721-13			E57721-20		
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	472			56.6	U		82.0	U	A	63.2	U	A
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		8.8			7.2	J	P
BARIUM	40.6			82.3			44.7			42.7		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.45	U	A	1.4	U	A	0.87	U	A
CALCIUM	24400	J	G	42300			105000	J	G	115000		
CHROMIUM	2.4	U		2.4	U		7.4			8.2		
COBALT	2.1	U		3.2	J	P	2.1	U		2.1	U	
COPPER	3.0	U	A	1.6	U	A	1.2	U		2.0	U	A
IRON	6420			6300			43700			14400		
LEAD	2.1	U	A	1.7	U		1.7	U		1.7	U	
MAGNESIUM	4640			7030			316000			356000		
MANGANESE	445	J	G	874			278	J	G	277		
MERCURY	0.27	J	D	0.10	U		0.10	U		0.1	U	
NICKEL	2.6	U		9.1			2.6	U		2.6	U	
POTASSIUM	5230	J	I	6270	J	I	137000	J	I	154000	J	I
SELENIUM	4.3	UJ	D	4.3	U		4.3	UJ	D	4.3	U	
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	79900			60600	J	G	2970000			3320000	J	G
THALLIUM	4.3	U		4.3	U		4.3	J	K	4.3	J	K
VANADIUM	1.7	J	P	1.1	U		7.8			6.8		
ZINC	42.8	U	A	24.4	U	A	3.7	U	A	3.8	U	A

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2WGW40DS-01			2WGW40DS-01-F			2WGW45DS-01			2WGW45DS-01-F		
SAMPLE DATE:	10/26/99			10/26/99			10/26/99			10/26/99		
LABORATORY ID:	E57721-16			E57721-22			E57721-17			E57721-23		
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	167	U	A	56.6	U		160	U	A	56.6	U	
ANTIMONY	3.0	U	A	2.4	U		2.4	U		2.4	U	
ARSENIC	36.3			11.9			10.8			12.4		
BARIUM	154			104			14.9	U		19.9	J	P
BERYLLIUM	0.20	U		0.20	U		0.2	U		0.20	U	
CADMIUM	0.30	UJ	K	0.30	UJ	K	0.85	U	A	0.92	U	A
CALCIUM	251000	J	G	226000			34500	J	G	41500		
CHROMIUM	3.7	J	P	2.4	U		2.4	U		2.5	J	P
COBALT	2.1	U		2.1	U		2.1	U		2.1	U	
COPPER	1.6	U	A	2.3	U	A	1.8	U	A	1.8	U	A
IRON	380			538			28800			25800		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	837000			748000			67000			88300		
MANGANESE	1330	J	G	1370			645	J	G	762		
MERCURY	0.1	U		0.10	U		0.10	U		0.1	U	
NICKEL	2.8	J	P	3.4	J	P	3.3	J	P	2.6	U	
POTASSIUM	429000	J	I	413000	J	I	39000	J	I	54900	J	I
SELENIUM	8.6	J	D	8.6	U		4.3	UJ	D	4.3	U	
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	8080000			7370000	J	G	744000			988000	J	G
THALLIUM	8.6	U		8.6	J	K	4.3	UJ	D	4.3	U	
VANADIUM	4.5			7.3			4.8			4.1		
ZINC	6.7	U	A	10.7	U	A	7.3	U	A	1.8	U	A

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2WGW46DS-01			2WGW46DS-01-F			2WGW47DS-01			2WGW47DS-01-F		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/25/99		
LABORATORY ID:	E57721-18			E57721-24			E57721-14			E57721-21		
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	165	U	A	56.6	U		56.6	U		56.6	U	
ANTIMONY	2.4	U		3.1	U	A	2.4	U		2.4	U	
ARSENIC	33.4			30			26.6			27.6		
BARIUM	161			134			371			377		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	UJ	K	0.30	UJ	K	2.1	U	A	3.2	U	A
CALCIUM	318000	J	G	323000			53500	J	G	57900		
CHROMIUM	4.2	J	P	11.3			5.0			2.4	U	
COBALT	2.1	U		3.0	J	P	6.0			7.4		
COPPER	1.7	U	A	2.6	U	A	1.2	U		1.2	U	
IRON	781			476			103000			109000		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	1080000			1100000			88500			97900		
MANGANESE	1180	J	G	1240			4460	J	G	4750		
MERCURY	0.1	U		0.10	U		0.10	U		0.1	U	
NICKEL	2.6	U		21.2			4.4	J	P	4.4	J	P
POTASSIUM	521000	J	I	543000	J	I	71400	J	I	76100	J	I
SELENIUM	8.6	J	D	8.6	U		4.3	UJ	D	5.2	U	A
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	10200000			9530000	J	G	1200000	J	G	1260000		
THALLIUM	8.6	U		8.6	U		4.3	U		4.3	U	
VANADIUM	11.9			12.3			1.1	U		1.1	U	
ZINC	10.9	U	A	9.3	U	A	8.0	U	A	13.9	U	A

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	3MSP01-01			3MSP01-01-F			RB-102299			RB-102299-F		
SAMPLE DATE:	10/24/99			10/24/99			10/22/99			10/22/99		
LABORATORY ID:	E57721-7			E57721-11			E57721-2			E57721-3		
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	795			56.6	U		56.6	U		56.6	U	
ANTIMONY	2.8	U	A	2.8	U	A	2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		3.8	U		3.8	U	
BARIUM	42.7			41.4			14.9	U		14.9	U	
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.45	U	A	0.30	U		0.30	U		0.30	U	
CALCIUM	53200	J	G	52500			63.3	U		63.3	U	
CHROMIUM	2.4	U		2.4	U		2.4	U		2.4	U	
COBALT	2.1	U		2.1	U		2.1	U		2.1	U	
COPPER	8.1	U	A	4.5	U	A	1.2	U		1.2		
IRON	2400			881			28.8	U		28.8	U	
LEAD	8.8	U	A	1.7	U		1.7	U		1.7	U	
MAGNESIUM	5910			5890			49.1	U		49.1	U	
MANGANESE	295	J	G	302			0.30	U		0.30	U	
MERCURY	0.11	J	DP	0.10	U		0.10	U		0.10	U	
NICKEL	2.6	U		2.6	U		2.6	U		2.6	U	
POTASSIUM	4550	J	I	4670	J	I	63.8	U		63.8	U	
SELENIUM	4.3	UJ	D	4.3	U		4.3	UJ	D	4.3	U	
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	21300			22300	J	G	427			277	U	
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	1.2	J	P	1.1	U		1.1	U		1.1	U	
ZINC	45.3	U	A	37.2	U	A	9.1			5.3		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	SWFD-102499-01			SWFD-102499-01-F			SWSG21-01			SWSG21-01-F		
SAMPLE DATE:	10/24/99			10/24/99			10/24/99			10/24/99		
LABORATORY ID:	E57721-6			E57721-10			E57721-4			E57721-8		
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:				SWSG21-01-F								
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	170			56.6	U		56.6	U		56.6	U	
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		3.8	U		3.8	U	
BARIUM	41.8			43.4			78.5			40.8		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.31			0.30	U		0.42			0.30	U	
CALCIUM	27600	J	G	29400			41400	J	G	27900		
CHROMIUM	2.4	U		2.4	U		2.4	U		2.4	U	
COBALT	2.1	U		2.1	U		2.2	J	P	2.1	U	
COPPER	2.3	U	A	1.8	U	A	1.2	U		1.7	U	A
IRON	7390			5980			6100			5910		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	5030			5500			6780			5110		
MANGANESE	507	J	G	536			843	J	G	518		
MERCURY	0.10	U		0.13	J	P	0.18	J	DP	0.20	J	D
NICKEL	2.6	U		2.6	U		8.1			2.6	U	
POTASSIUM	5280	J	I	5910	J	I	6110	J	I	5410	J	I
SELENIUM	4.3	UJ	D	4.3	U		4.3	UJ	D	4.3	U	
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	76100			91400	J	G	58000			77900	J	G
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	1.1	U		1.1	U		1.1	U		1.1	U	
ZINC	59.2			110			26.2	U	A	24.8	U	A

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2LGW20S-01			2WGW21S-01			2WGW38DS-01			2WGW40DS-01		
SAMPLE DATE:	10/24/99			10/25/99			10/26/99			10/25/99		
LABORATORY ID:	E57721-5			E57721-13			E57721-19			E57721-15		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHEMICAL OXYGEN DEMAND	20	U		584						944		
CHLORIDE	109			4290						10500		
HARDNESS as CaCO3	78.8			1380								
SULFATE	14			48.8						534		
TOTAL ALKALINITY	98.3			787						1620		
TOTAL DISSOLVED SOLIDS	315			7030						17500		
TOTAL ORGANIC CARBON	2.6			40.1			17.1			25.7		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	2WGW45DS-01			2WGW46DS-01			2WGW47DS-01			3MSP01-01		
SAMPLE DATE:	10/26/99			10/26/99			10/25/99			10/24/99		
LABORATORY ID:	E57721-17			E57721-18			E57721-14			E57721-7		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHEMICAL OXYGEN DEMAND	225			1800			180			34.3		
CHLORIDE	1490			16800			1950			10.1		
HARDNESS as CaCO3	375			5130			635			142		
SULFATE	15.8			149			10	U		18.6		
TOTAL ALKALINITY	379			2220			422			161		
TOTAL DISSOLVED SOLIDS	2590			26300			2300			252		
TOTAL ORGANIC CARBON	14.7			36.5			12.2			9.7		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E57721

SAMPLE NUMBER:	RB-102299			SWFD-102499-01			SWSG21-01			/ /		
SAMPLE DATE:	10/22/99			10/24/99			10/24/99					
LABORATORY ID:	E57721-2			E57721-6			E57721-4					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	MG/L			MG/L			MG/L					
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHEMICAL OXYGEN DEMAND	20	U		20	U		21.1					
CHLORIDE	10	U		129			116					
HARDNESS as CaCO3	4	U		86.5			125					
SULFATE	10	U		12.5			12.1					
TOTAL ALKALINITY	5	U		70.4			80.2					
TOTAL DISSOLVED SOLIDS	10	U		326			315					
TOTAL ORGANIC CARBON	1	U		5.6			5.4					

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

PITT-01-0-066

TO: **MARK MENGEL** **DATE: JANUARY 28, 2000**

FROM: **JUSTIN ORBICH** **CC: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION –VOA/PEST/PCB**
CTO 203 – NSB NEW LONDON
SDG E58072

SAMPLES: 18/Aqueous

2W-GW39DS-01	2WGW41DS-01
2WGW42DS-01	2WGW43DS-01
2WGW44DS-01	3GW12D-01
3GW12S-01	3GW37S-01
4GW01S-01	GWFD102799
GWFD102899	SWSG18-01
SWSG19-01	SWSG20-01
SWSG22-01	SWSG23-01
SWSG24-01	TB102799

OVERVIEW

The sample set for CTO 203, SDG E58072, Naval Submarine Base (NSB) New London; consists of eighteen (18) aqueous environmental samples, which included one (1) trip blank (designated TB). The environmental samples were analyzed for Target Compound List (TCL) volatile and pesticide/PCB organic compounds. The trip blank was analyzed for TCL volatile organic compounds only. Two (2) field duplicate pairs (4GW01S-01/GWFD102799 and 3GW12D-01/GWFD102899) were included within this SDG.

The samples were collected by Tetra Tech, NUS on October 27th and 28th, 1999 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to CLP SOW OLC02.1 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning
• Initial/continuing calibrations
* • Laboratory method/field quality control blank results
* • Surrogate Spike Recoveries
* • Matrix Spike/Matrix Spike Duplicate Results
* • Laboratory Control Sample Results
* • Internal Standard Performance
* • Detection Limits
* • Field Duplicate Precision

- * Compound Identification
- * Compound Quantitation
- * Tentatively Identified Compounds

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

VOLATILE FRACTION

The continuing calibration Percent Difference (%D) exceeded the 25% quality control limit for bromomethane. The nondetected results were qualified estimated (UJ) in the samples:

2W-GW39DS-01	3GW12D-01
3GW12S-01	3GW37S-01
4GW01S-01	GWFD102799
GWFD102899	SWSG18-01
SWSG19-01	SWSG20-01
SWSG22-01	SWSG23-01
SWSG24-01	TB102799

The Matrix Spike/Matrix Spike Duplicate (MS/MSD) Percent Recovery (%R) and Relative Percent Difference (RPD) were outside the quality control limits for cis-1,3-dichloropropene. The nondetected results were qualified as estimated, (UJ).

Samples 2WGW41DS-01, 2WGW42DS-01, 2WGW43DS-01, and 2WGW44DS-01 were analyzed at a 5X dilution. Therefor, causing elevated reporting limits.

PESTICIDE/PCB FRACTION

All quality control parameters were met for this fraction.

ADDITIONAL COMMENTS

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

It should be noted that sample 4GW01S-01 was incorrectly labeled on electronic data as 4GW015-01. The reviewer amended the electronic data to correctly read 4GW01S-01.

EXECUTIVE SUMMARY

Laboratory performance: The continuing calibration %D exceeded the quality control limit for bromomethane. Sample 4GW01S-01 was incorrectly labeled on the electronic data in both fractions.

Other Factors Affecting Data Quality: Several samples reported elevated detection limits due to dilutions in the volatile fraction. The MS/MSD %R and RPD were outside the quality control limits for cis-1,3-dichloropropene.

MEMO TO: MARK MENGEL
DATE: JANUARY 28, 2000 – PAGE 3

TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

Fraction	TIC
Volatiles	Methane, chlorofluoro-

MEMO TO: MARK MENGEL
DATE: JANUARY 28, 2000 – PAGE 4

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (December, 1996). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"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)."

Tetra Tech NUS

Justin Orbich
Chemist/Data Validator

Tetra Tech 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

DATA QUALIFIER DEFINITIONS:

U	-	Value is a nondetected result as reported by the laboratory and should not be considered present.
J	-	Positive result is estimated as a result of a value below the CRQL or a technical noncompliance.
UJ	-	Nondetected result is considered to be estimated as a result of technical noncompliances.

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/PCB D% 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 = % Solid content is less than 30%

APPENDIX A

QUALIFIED LABORATORY RESULTS

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2			E58072-14			E58072-15			E58072-11		
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		5	U		5	U		5	U	
1,1,2,2-TETRACHLOROETHANE	1	U		5	U		5	U		5	U	
1,1,2-TRICHLOROETHANE	1	U		5	U		5	U		5	U	
1,1-DICHLOROETHANE	1	U		5	U		5	U		5	U	
1,1-DICHLOROETHENE	1	U		5	U		5	U		5	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		5	U		5	U		5	U	
1,2-DIBROMOETHANE	1	U		5	U		5	U		5	U	
1,2-DICHLOROBENZENE	1	U		5	U		5	U		5	U	
1,2-DICHLOROETHANE	1	U		5	U		5	U		5	U	
1,2-DICHLOROPROPANE	1	U		5	U		5	U		5	U	
1,3-DICHLOROBENZENE	1	U		5	U		5	U		5	U	
1,4-DICHLOROBENZENE	1	U		5	U		5	U		5	U	
2-BUTANONE	2	J	P	25	U		25	U		25	U	
2-HEXANONE	5	U		25	U		25	U		25	U	
4-METHYL-2-PENTANONE	5	U		25	U		25	U		25	U	
ACETONE	8			25	U		25	U		25	U	
BENZENE	1	U		5	U		5	U		5	U	
BROMOCHLOROMETHANE	1	U		5	U		5	U		5	U	
BROMODICHLOROMETHANE	1	U		5	U		5	U		5	U	
BROMOFORM	1	U		5	U		5	U		5	U	
BROMOMETHANE	1	UJ	C	5	U		5	U		5	U	
CARBON DISULFIDE	0.7	J	P	5	U		5	U		5	U	
CARBON TETRACHLORIDE	1	U		5	U		5	U		5	U	
CHLOROBENZENE	1	U		5	U		5	U		5	U	
CHLOROETHANE	1	U		5	U		5	U		5	U	
CHLOROFORM	1	U		5	U		5	U		5	U	
CHLOROMETHANE	1	U		5	U		5	U		5	U	
CIS-1,2-DICHLOROETHENE	1	U		5	U		5	U		5	U	
CIS-1,3-DICHLOROPROPENE	1	U		5	U		5	U		5	U	
DIBROMOCHLOROMETHANE	1	U		5	U		5	U		5	U	
ETHYLBENZENE	1	U		5	U		5	U		5	U	
METHYLENE CHLORIDE	2	U		10	U		10	U		10	U	
STYRENE	1	U		5	U		5	U		5	U	
				5	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2			E58072-14			E58072-15			E58072-11		
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												
TOLUENE	1			5	U		5	U		5	U	
TRANS-1,2-DICHLOROETHENE	1	U		5	U		5	U		5	U	
TRANS-1,3-DICHLOROPROPENE	1	U		5	U		5	U		5	U	
TRICHLOROETHENE	1	U		5	U		5	U		5	U	
VINYL CHLORIDE	1	U		5	U		5	U		5	U	
XYLENES, TOTAL	1	U		5	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13			E58072-16			E58072-17			E58072-18		
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	5	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	5	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	5	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	5	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	5	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	5	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	5	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	5	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	5	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	5	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	5	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	5	U		1	U		1	U		1	U	
2-BUTANONE	25	U		5	U		5	U		5	U	
2-HEXANONE	25	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	25	U		5	U		5	U		5	U	
ACETONE	25	U		5	U		5	U		5	U	
BENZENE	5	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	5	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	5	U		1	U		1	U		1	U	
BROMOFORM	5	U		1	U		1	U		1	U	
BROMOMETHANE	5	U		1	UJ	C	1	UJ	C	1	UJ	C
CARBON DISULFIDE	5	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	5	U		1	U		1	U		1	U	
CHLOROBENZENE	5	U		1	U		1	U		1	U	
CHLOROETHANE	5	U		1	U		1	U		1	U	
CHLOROFORM	5	U		1	U		1	U		1	U	
CHLOROMETHANE	5	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	5	U		1	U		1	U		0.2	J	P
CIS-1,3-DICHLOROPROPENE	5	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	5	U		1	U		1	U		1	U	
ETHYLBENZENE	5	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	10	U		2	U		2	U		2	U	
[illegible]	[illegible]	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13			E58072-16			E58072-17			E58072-18		
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												
TOLUENE	5	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	5	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	5	U		1	U		1	U		1	U	
TRICHLOROETHENE	5	U		1	U		1	U		0.7	J	P
VINYL CHLORIDE	5	U		1	U		1	U		1	U	
XYLENES, TOTAL	5	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4			E58072-3			E58072-19			E58072-5		
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:				4GW01S-01			3GW12D-01					
	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	U		1	U		1	U		1	U	
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	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
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	UJ	C	1	UJ	C
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	
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	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	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	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4			E58072-3			E58072-19			E58072-5		
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:				4GW01S-01			3GW12D-01					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	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		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6			E58072-7			E58072-8			E58072-9		
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		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
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	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
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	UJ	C	1	UJ	C
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	
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	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	UJ	D	1	U	
DIBROMOCHLOROMETHANE	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	
	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6			E58072-7			E58072-8			E58072-9		
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												
TOLUENE	1	U		1	U		1	U		4		
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		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG24-01			TB102799								
SAMPLE DATE:	10/27/99			10/27/99			/ /			/ /		
LABORATORY ID:	E58072-10			E58072-1								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	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							
1,1,2,2-TETRACHLOROETHANE	1	U		1	U							
1,1,2-TRICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHENE	1	U		1	U							
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U							
1,2-DIBROMOETHANE	1	U		1	U							
1,2-DICHLOROBENZENE	1	U		1	U							
1,2-DICHLOROETHANE	1	U		1	U							
1,2-DICHLOROPROPANE	1	U		1	U							
1,3-DICHLOROBENZENE	1	U		1	U							
1,4-DICHLOROBENZENE	1	U		1	U							
2-BUTANONE	5	U		5	U							
2-HEXANONE	5	U		5	U							
4-METHYL-2-PENTANONE	5	U		5	U							
ACETONE	5	U		5	U							
BENZENE	1	U		1	U							
BROMOCHLOROMETHANE	1	U		1	U							
BROMODICHLOROMETHANE	1	U		1	U							
BROMOFORM	1	U		1	U							
BROMOMETHANE	1	UJ	C	1	UJ	C						
CARBON DISULFIDE	1	U		1	U							
CARBON TETRACHLORIDE	1	U		1	U							
CHLOROBENZENE	1	U		1	U							
CHLOROETHANE	1	U		1	U							
CHLOROFORM	1	U		1	U							
CHLOROMETHANE	1	U		1	U							
CIS-1,2-DICHLOROETHENE	1	U		1	U							
CIS-1,3-DICHLOROPROPENE	1	U		1	U							
DIBROMOCHLOROMETHANE	1	U		1	U							
ETHYLBENZENE	1	U		1	U							
METHYLENE CHLORIDE	2	U		2	U							
	1	U		1	U							

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG24-01			TB102799			/ /			/ /		
SAMPLE DATE:	10/27/99			10/27/99								
LABORATORY ID:	E58072-10			E58072-1								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	0.2	J	P	1	U							
TRANS-1,2-DICHLOROETHENE	1	U		1	U							
TRANS-1,3-DICHLOROPROPENE	1	U		1	U							
TRICHLOROETHENE	1	U		1	U							
VINYL CHLORIDE	1	U		1	U							
XYLENES, TOTAL	1	U		1	U							

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2W-GW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2			E58072-14			E58072-15			E58072-11		
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	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13			E58072-16			E58072-17			E58072-18		
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	0.41	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	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4			E58072-3			E58072-19			E58072-5		
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:				4GW01S-01			3GW12D-01					
	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	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6			E58072-7			E58072-8			E58072-9		
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		0.066			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		0.41	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	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG24-01											
SAMPLE DATE:	10/27/99			/ /			/ /			/ /		
LABORATORY ID:	E58072-10											
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
PESTICIDES/PCBs												
4,4'-DDD	0.020	U										
4,4'-DDE	0.020	U										
4,4'-DDT	0.020	U										
ALDRIN	0.010	U										
ALPHA-BHC	0.010	U										
ALPHA-CHLORDANE	0.010	U										
AROCLOR-1016	0.20	U										
AROCLOR-1221	0.40	U										
AROCLOR-1232	0.20	U										
AROCLOR-1242	0.20	U										
AROCLOR-1248	0.20	U										
AROCLOR-1254	0.20	U										
AROCLOR-1260	0.20	U										
BETA-BHC	0.010	U										
DELTA-BHC	0.010	U										
DIELDRIN	0.020	U										
ENDOSULFAN I	0.010	U										
ENDOSULFAN II	0.020	U										
ENDOSULFAN SULFATE	0.020	U										
ENDRIN	0.020	U										
ENDRIN ALDEHYDE	0.020	U										
ENDRIN KETONE	0.020	U										
GAMMA-BHC (LINDANE)	0.010	U										
GAMMA-CHLORDANE	0.010	U										
HEPTACHLOR	0.010	U										
HEPTACHLOR EPOXIDE	0.010	U										
METHOXYCHLOR	0.10	U										
TOXAPHENE	1.0	U										

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

			PITT 12-9-215
TO:	**MARK MENGEL**	**DATE:**	**JANUARY 27, 2000**
FROM:	**JENNIFER MALLE**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION - TCL SVOAS**
CTO 203 – NSB NEW LONDON
SDG – E58072A

SAMPLES: 17/Aqueous

2WGW39DS-01	2WGW41DS-01	2WGW42DS-01
2WGW43DS-01	2WGW44DS-01	3GW12D-01
3GW12S-01	3GW37S-01	4GW015-01
GWFD-102799	GWFD-102899	SWSG18-01
SWSG19-01	SWSG20-01	SWSG22-01
SWSG23-01	SWSG24-01	

The sample set for CTO 203 (NSB) New London, SDG E58072A, consists of seventeen (17) aqueous environmental samples. All samples were analyzed for Target Compound List (TCL) semivolatile organics. Two (2) field duplicate pairs (4GW015-01/GWFD-102799 and 3GW12D-01/GWFD-102899) were included within this SDG.

The samples were collected by Tetra Tech NUS on October 27 and 28, 1999 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. All analyses were conducted under SW846 method 8270C.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning and Performance Check
* • Calibration
* • Laboratory Blank Analyses
* • Surrogate Spike Recoveries
• Matrix Spike Results
• Laboratory Control Samples
* • Internal Standard Performance
* • Compound Identification
* • Compound Quantitation
* • Detection Limits

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

Matrix Spike Results

The Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis of sample SWSG22-01 yielded Percent Recoveries (%Rs) below the quality control limits for 4-chloro-3-methylphenol, 2,4-dinitrophenol, 2-nitrophenol, pentachlorophenol, 2,4,5-trichlorophenol, bis(2-ethylhexyl) phthalate, 3-nitroaniline and 4,6-dinitro-2-methylphenol. Relative Percent Differences (RPDs) were below the quality control limits for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol. The nondetected results reported for the aforementioned analytes were qualified as estimated, "UJ", in the unspiked sample, SWSG22-01.

Notes

The blank spike recoveries, affecting all samples within this SDG, were less than the quality control limits for 4,6-dinitro-2-methylphenol, 2-nitrophenol, pentachlorophenol and 2,4,5-trichlorophenol. However, validation action was not taken since the results reported were all greater than 10%.

Polynuclear Aromatic Hydrocarbons (PAHs) were not summarized and validated since the PAHs were analyzed and reported via method 8310.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Several analytes were qualified for MS/MSD and %RPD noncompliance.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Organic Review", February 1994, "EPA Region I Semivolatile Data Validation Functional Guidelines", December 1996 and the NFESC document entitled "Navy Installation Restoration Laboratory Quality Assurance Guide " (NFESC 2/96).

The text of this report has been formulated to address only those problem areas affecting 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)."

Tetra Tech NUS
Jennifer M. Malle
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Control 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 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/PCB D% 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 = % Solid content is less than 30%

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2			E58072-14			E58072-15			E58072-11		
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		5	U		5	U		5	U	
1,1,2,2-TETRACHLOROETHANE	1	U		5	U		5	U		5	U	
1,1,2-TRICHLOROETHANE	1	U		5	U		5	U		5	U	
1,1-DICHLOROETHANE	1	U		5	U		5	U		5	U	
1,1-DICHLOROETHENE	1	U		5	U		5	U		5	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		5	U		5	U		5	U	
1,2-DIBROMOETHANE	1	U		5	U		5	U		5	U	
1,2-DICHLOROBENZENE	1	U		5	U		5	U		5	U	
1,2-DICHLOROETHANE	1	U		5	U		5	U		5	U	
1,2-DICHLOROPROPANE	1	U		5	U		5	U		5	U	
1,3-DICHLOROBENZENE	1	U		5	U		5	U		5	U	
1,4-DICHLOROBENZENE	1	U		5	U		5	U		5	U	
2-BUTANONE	2	J	P	25	U		25	U		25	U	
2-HEXANONE	5	U		25	U		25	U		25	U	
4-METHYL-2-PENTANONE	5	U		25	U		25	U		25	U	
ACETONE	8			25	U		25	U		25	U	
BENZENE	1	U		5	U		5	U		5	U	
BROMOCHLOROMETHANE	1	U		5	U		5	U		5	U	
BROMODICHLOROMETHANE	1	U		5	U		5	U		5	U	
BROMOFORM	1	U		5	U		5	U		5	U	
BROMOMETHANE	1	UJ	C	5	U		5	U		5	U	
CARBON DISULFIDE	0.7	J	P	5	U		5	U		5	U	
CARBON TETRACHLORIDE	1	U		5	U		5	U		5	U	
CHLOROBENZENE	1	U		5	U		5	U		5	U	
CHLOROETHANE	1	U		5	U		5	U		5	U	
CHLOROFORM	1	U		5	U		5	U		5	U	
CHLOROMETHANE	1	U		5	U		5	U		5	U	
CIS-1,2-DICHLOROETHENE	1	U		5	U		5	U		5	U	
CIS-1,3-DICHLOROPROPENE	1	U		5	U		5	U		5	U	
DIBROMOCHLOROMETHANE	1	U		5	U		5	U		5	U	
ETHYLBENZENE	1	U		5	U		5	U		5	U	
METHYLENE CHLORIDE	2	U		10	U		10	U		10	U	
STYRENE	1	U		5	U		5	U		5	U	
TETRACHLOROETHENE	1	U		5	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2			E58072-14			E58072-15			E58072-11		
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												
TOLUENE	1			5	U		5	U		5	U	
TRANS-1,2-DICHLOROETHENE	1	U		5	U		5	U		5	U	
TRANS-1,3-DICHLOROPROPENE	1	U		5	U		5	U		5	U	
TRICHLOROETHENE	1	U		5	U		5	U		5	U	
VINYL CHLORIDE	1	U		5	U		5	U		5	U	
XYLENES, TOTAL	1	U		5	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13			E58072-16			E58072-17			E58072-18		
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	5	U		1	U		1	U		1	U	
1,1,2,2-TETRACHLOROETHANE	5	U		1	U		1	U		1	U	
1,1,2-TRICHLOROETHANE	5	U		1	U		1	U		1	U	
1,1-DICHLOROETHANE	5	U		1	U		1	U		1	U	
1,1-DICHLOROETHENE	5	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	5	U		1	U		1	U		1	U	
1,2-DIBROMOETHANE	5	U		1	U		1	U		1	U	
1,2-DICHLOROBENZENE	5	U		1	U		1	U		1	U	
1,2-DICHLOROETHANE	5	U		1	U		1	U		1	U	
1,2-DICHLOROPROPANE	5	U		1	U		1	U		1	U	
1,3-DICHLOROBENZENE	5	U		1	U		1	U		1	U	
1,4-DICHLOROBENZENE	5	U		1	U		1	U		1	U	
2-BUTANONE	25	U		5	U		5	U		5	U	
2-HEXANONE	25	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	25	U		5	U		5	U		5	U	
ACETONE	25	U		5	U		5	U		5	U	
BENZENE	5	U		1	U		1	U		1	U	
BROMOCHLOROMETHANE	5	U		1	U		1	U		1	U	
BROMODICHLOROMETHANE	5	U		1	U		1	U		1	U	
BROMOFORM	5	U		1	U		1	U		1	U	
BROMOMETHANE	5	U		1	UJ	C	1	UJ	C	1	UJ	C
CARBON DISULFIDE	5	U		1	U		1	U		1	U	
CARBON TETRACHLORIDE	5	U		1	U		1	U		1	U	
CHLOROBENZENE	5	U		1	U		1	U		1	U	
CHLOROETHANE	5	U		1	U		1	U		1	U	
CHLOROFORM	5	U		1	U		1	U		1	U	
CHLOROMETHANE	5	U		1	U		1	U		1	U	
CIS-1,2-DICHLOROETHENE	5	U		1	U		1	U		0.2	J	P
CIS-1,3-DICHLOROPROPENE	5	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	5	U		1	U		1	U		1	U	
ETHYLBENZENE	5	U		1	U		1	U		1	U	
METHYLENE CHLORIDE	10	U		2	U		2	U		2	U	
STYRENE	5	U		1	U		1	U		1	U	
TETRACHLOROETHENE	5	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13			E58072-16			E58072-17			E58072-18		
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												
TOLUENE	5	U		1	U		1	U		1	U	
TRANS-1,2-DICHLOROETHENE	5	U		1	U		1	U		1	U	
TRANS-1,3-DICHLOROPROPENE	5	U		1	U		1	U		1	U	
TRICHLOROETHENE	5	U		1	U		1	U		0.7	J	P
VINYL CHLORIDE	5	U		1	U		1	U		1	U	
XYLENES, TOTAL	5	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4			E58072-3			E58072-19			E58072-5		
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:				4GW01S-01			3GW12D-01					
	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	U		1	U		1	U		1	U	
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	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
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	UJ	C	1	UJ	C
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	
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	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	U		1	U	
DIBROMOCHLOROMETHANE	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	
STYRENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4			E58072-3			E58072-19			E58072-5		
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:				4GW01S-01			3GW12D-01					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	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		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6			E58072-7			E58072-8			E58072-9		
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		1	U		1	U		1	U	
1,1-DICHLOROETHENE	1	U		1	U		1	U		1	U	
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U		1	U		1	U	
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	U		5	U		5	U		5	U	
4-METHYL-2-PENTANONE	5	U		5	U		5	U		5	U	
ACETONE	5	U		5	U		5	U		5	U	
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	UJ	C	1	UJ	C
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	
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	U		1	U		1	U		1	U	
CIS-1,3-DICHLOROPROPENE	1	U		1	U		1	UJ	D	1	U	
DIBROMOCHLOROMETHANE	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	
STYRENE	1	U		1	U		1	U		1	U	
TETRACHLOROETHENE	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6			E58072-7			E58072-8			E58072-9		
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												
TOLUENE	1	U		1	U		1	U		4		
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		1	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	1	U		1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG24-01	TB102799		
SAMPLE DATE:	10/27/99	10/27/99	/ /	/ /
LABORATORY ID:	E58072-10	E58072-1		
QC_TYPE:	NORMAL	NORMAL		
% SOLIDS:	0.0 %	0.0 %	100.0 %	100.0 %
UNITS:	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							
1,1,2,2-TETRACHLOROETHANE	1	U		1	U							
1,1,2-TRICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHANE	1	U		1	U							
1,1-DICHLOROETHENE	1	U		1	U							
1,2-DIBROMO-3-CHLOROPROPANE	1	U		1	U							
1,2-DIBROMOETHANE	1	U		1	U							
1,2-DICHLOROBENZENE	1	U		1	U							
1,2-DICHLOROETHANE	1	U		1	U							
1,2-DICHLOROPROPANE	1	U		1	U							
1,3-DICHLOROBENZENE	1	U		1	U							
1,4-DICHLOROBENZENE	1	U		1	U							
2-BUTANONE	5	U		5	U							
2-HEXANONE	5	U		5	U							
4-METHYL-2-PENTANONE	5	U		5	U							
ACETONE	5	U		5	U							
BENZENE	1	U		1	U							
BROMOCHLOROMETHANE	1	U		1	U							
BROMODICHLOROMETHANE	1	U		1	U							
BROMOFORM	1	U		1	U							
BROMOMETHANE	1	UJ	C	1	UJ	C						
CARBON DISULFIDE	1	U		1	U							
CARBON TETRACHLORIDE	1	U		1	U							
CHLOROBENZENE	1	U		1	U							
CHLOROETHANE	1	U		1	U							
CHLOROFORM	1	U		1	U							
CHLOROMETHANE	1	U		1	U							
CIS-1,2-DICHLOROETHENE	1	U		1	U							
CIS-1,3-DICHLOROPROPENE	1	U		1	U							
DIBROMOCHLOROMETHANE	1	U		1	U							
ETHYLBENZENE	1	U		1	U							
METHYLENE CHLORIDE	2	U		2	U							
STYRENE	1	U		1	U							

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG24-01			TB102799								
SAMPLE DATE:	10/27/99			10/27/99			/ /			/ /		
LABORATORY ID:	E58072-10			E58072-1								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
TOLUENE	0.2	J	P	1	U							
TRANS-1,2-DICHLOROETHENE	1	U		1	U							
TRANS-1,3-DICHLOROPROPENE	1	U		1	U							
TRICHLOROETHENE	1	U		1	U							
VINYL CHLORIDE	1	U		1	U							
XYLENES, TOTAL	1	U		1	U							

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	2WGW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2A			E58072-14A			E58072-15A			E58072-11A		
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	2	U		2	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5	U		5.1	U		5	U		5	U	
2,4,6-TRICHLOROPHENOL	5	U		5.1	U		5	U		5	U	
2,4-DICHLOROPHENOL	5	U		5.1	U		5	U		5	U	
2,4-DIMETHYLPHENOL	5	U		5.1	U		5	U		5	U	
2,4-DINITROPHENOL	20	U		20	U		20	U		20	U	
2,4-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2-CHLORONAPHTHALENE	5	U		5.1	U		5	U		5	U	
2-CHLOROPHENOL	5	U		5.1	U		5	U		5	U	
2-METHYLPHENOL	5	U		5.1	U		5	U		5	U	
2-NITROANILINE	5	U		5.1	U		5	U		5	U	
2-NITROPHENOL	5	U		5.1	U		5	U		5	U	
3&4-METHYLPHENOL	5	U		11			5	U		25		
3,3'-DICHLOROBENZIDINE	5	U		5.1	U		5	U		5	U	
3-NITROANILINE	5	U		5.1	U		5	U		5	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		20	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5	U		5.1	U		5	U		5	U	
4-CHLOROANILINE	5	U		5.1	U		5	U		5	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-NITROANILINE	5	U		5.1	U		5	U		5	U	
4-NITROPHENOL	20	U		20	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2	U		2	U		2	U	
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U		2	U	
CARBAZOLE	2	U		2	U		2	U		2	U	
DI-N-BUTYL PHTHALATE	2	U		2	U		2	U		2	U	
	2	U		2	U		2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	2WGW39DS-01			2WGW41DS-01			2WGW42DS-01			2WGW43DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-2A			E58072-14A			E58072-15A			E58072-11A		
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	5	U		5.1	U		5	U		5	U	
DIETHYL PHTHALATE	2	U		2	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2	U		2	U		2	U	
HEXACHLOROBUTADIENE	5	U		5.1	U		5	U		5	U	
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U		20	U	
HEXACHLOROETHANE	5	U		5.1	U		5	U		5	U	
ISOPHORONE	2	U		2	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	5	U		5.1	U		5	U		5	U	
N-NITROSODIPHENYLAMINE	5	U		5.1	U		5	U		5	U	
NITROBENZENE	2	U		2	U		2	U		2	U	
PENTACHLOROPHENOL	20	U		20	U		20	U		20	U	
PHENOL	5	U		1.4	J	P	5	U		28		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13A			E58072-16A			E58072-17A			E58072-18A		
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	2	U		2.1	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2.1	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5.1	U		5.2	U		5	U		5	U	
2,4,6-TRICHLOROPHENOL	5.1	U		5.2	U		5	U		5	U	
2,4-DICHLOROPHENOL	5.1	U		5.2	U		5	U		5	U	
2,4-DIMETHYLPHENOL	5.1	U		5.2	U		5	U		5	U	
2,4-DINITROPHENOL	20	U		21	U		20	U		20	U	
2,4-DINITROTOLUENE	2	U		2.1	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2.1	U		2	U		2	U	
2-CHLORONAPHTHALENE	5.1	U		5.2	U		5	U		5	U	
2-CHLOROPHENOL	5.1	U		5.2	U		5	U		5	U	
2-METHYLPHENOL	5.1	U		5.2	U		5	U		5	U	
2-NITROANILINE	5.1	U		5.2	U		5	U		5	U	
2-NITROPHENOL	5.1	U		5.2	U		5	U		5	U	
3&4-METHYLPHENOL	4	J	P	5.2	U		5	U		5	U	
3,3'-DICHLOROBENZIDINE	5.1	U		5.2	U		5	U		5	U	
3-NITROANILINE	5.1	U		5.2	U		5	U		5	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		21	U		20	U		20	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2.1	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5.1	U		5.2	U		5	U		5	U	
4-CHLOROANILINE	5.1	U		5.2	U		5	U		5	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2.1	U		2	U		2	U	
4-NITROANILINE	5.1	U		5.2	U		5	U		5	U	
4-NITROPHENOL	20	U		21	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2.1	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2.1	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2.1	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2.1	U		2	U		2	U	
BUTYLBENZYL PHTHALATE	2	U		2.1	U		2	U		2	U	
CARBAZOLE	2	U		2.1	U		2	U		2	U	
DI-N-BUTYL PHTHALATE	2	U		2.1	U		2	U		2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	2WGW44DS-01			3GW12D-01			3GW12S-01			3GW37S-01		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-13A			E58072-16A			E58072-17A			E58072-18A		
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	5.1	U		5.2	U		5	U		5	U	
DIETHYL PHTHALATE	2	U		2.1	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2.1	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2.1	U		2	U		2	U	
HEXACHLOROBUTADIENE	5.1	U		5.2	U		5	U		5	U	
HEXACHLOROCYCLOPENTADIENE	20	U		21	U		20	U		20	U	
HEXACHLOROETHANE	5.1	U		5.2	U		5	U		5	U	
ISOPHORONE	2	U		2.1	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	5.1	U		5.2	U		5	U		5	U	
N-NITROSODIPHENYLAMINE	5.1	U		5.2	U		5	U		5	U	
NITROBENZENE	2	U		2.1	U		2	U		2	U	
PENTACHLOROPHENOL	20	U		21	U		20	U		20	U	
PHENOL	1.1	J	P	5.2	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4A			E58072-3A			E58072-19A			E58072-5A		
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:				4GW01S-01			3GW12D-01					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2	U		2.1	U		2	U		2.1	U	
1,2-DICHLOROBENZENE	2	U		2.1	U		2	U		2.1	U	
1,3-DICHLOROBENZENE	2	U		2.1	U		2	U		2.1	U	
1,4-DICHLOROBENZENE	2	U		2.1	U		2	U		2.1	U	
2,4,5-TRICHLOROPHENOL	5.1	U		5.2	U		5	U		5.2	U	
2,4,6-TRICHLOROPHENOL	5.1	U		5.2	U		5	U		5.2	U	
2,4-DICHLOROPHENOL	5.1	U		5.2	U		5	U		5.2	U	
2,4-DIMETHYLPHENOL	5.1	U		5.2	U		5	U		5.2	U	
2,4-DINITROPHENOL	20	U		21	U		20	U		21	U	
2,4-DINITROTOLUENE	2	U		2.1	U		2	U		2.1	U	
2,6-DINITROTOLUENE	2	U		2.1	U		2	U		2.1	U	
2-CHLORONAPHTHALENE	5.1	U		5.2	U		5	U		5.2	U	
2-CHLOROPHENOL	5.1	U		5.2	U		5	U		5.2	U	
2-METHYLPHENOL	5.1	U		5.2	U		5	U		5.2	U	
2-NITROANILINE	5.1	U		5.2	U		5	U		5.2	U	
2-NITROPHENOL	5.1	U		5.2	U		5	U		5.2	U	
3&4-METHYLPHENOL	5.1	U		5.2	U		5	U		5.2	U	
3,3'-DICHLOROBENZIDINE	5.1	U		5.2	U		5	U		5.2	U	
3-NITROANILINE	5.1	U		5.2	U		5	U		5.2	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		21	U		20	U		21	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2.1	U		2	U		2.1	U	
4-CHLORO-3-METHYLPHENOL	5.1	U		5.2	U		5	U		5.2	U	
4-CHLOROANILINE	5.1	U		5.2	U		5	U		5.2	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2.1	U		2	U		2.1	U	
4-NITROANILINE	5.1	U		5.2	U		5	U		5.2	U	
4-NITROPHENOL	20	U		21	U		20	U		21	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2.1	U		2	U		2.1	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2.1	U		2	U		2.1	U	
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2.1	U		2	U		2.1	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2.1	U		2	U		2.1	U	
BUTYLBENZYL PHTHALATE	2	U		2.1	U		2	U		2.1	U	
CARBAZOLE	2	U		2.1	U		2	U		2.1	U	
DI-N-BUTYL PHTHALATE	2	U		2.1	U		2	U		2.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	4GW01S-01			GWFD102799			GWFD102899			SWSG18-01		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/27/99		
LABORATORY ID:	E58072-4A			E58072-3A			E58072-19A			E58072-5A		
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:				4GW01S-01			3GW12D-01					
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
DIBENZOFURAN	5.1	U		5.2	U		5	U		5.2	U	
DIETHYL PHTHALATE	2	U		2.1	U		2	U		2.1	U	
DIMETHYL PHTHALATE	2	U		2.1	U		2	U		2.1	U	
HEXACHLOROBENZENE	2	U		2.1	U		2	U		2.1	U	
HEXACHLOROBUTADIENE	5.1	U		5.2	U		5	U		5.2	U	
HEXACHLOROCYCLOPENTADIENE	20	U		21	U		20	U		21	U	
HEXACHLOROETHANE	5.1	U		5.2	U		5	U		5.2	U	
ISOPHORONE	2	U		2.1	U		2	U		2.1	U	
N-NITROSO-DI-N-PROPYLAMINE	5.1	U		5.2	U		5	U		5.2	U	
N-NITROSODIPHENYLAMINE	5.1	U		5.2	U		5	U		5.2	U	
NITROBENZENE	2	U		2.1	U		2	U		2.1	U	
PENTACHLOROPHENOL	20	U		21	U		20	U		21	U	
PHENOL	5.1	U		5.2	U		5	U		5.2	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6A			E58072-7A			E58072-8A			E58072-9A		
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	2	U		2	U		2	U		2	U	
1,2-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,3-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
1,4-DICHLOROBENZENE	2	U		2	U		2	U		2	U	
2,4,5-TRICHLOROPHENOL	5.1	U		5	U		5	UJ	D	5	U	
2,4,6-TRICHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2,4-DICHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2,4-DIMETHYLPHENOL	5.1	U		5	U		5	U		5	U	
2,4-DINITROPHENOL	20	U		20	U		20	UJ	D	20	U	
2,4-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2,6-DINITROTOLUENE	2	U		2	U		2	U		2	U	
2-CHLORONAPHTHALENE	5.1	U		5	U		5	U		5	U	
2-CHLOROPHENOL	5.1	U		5	U		5	U		5	U	
2-METHYLPHENOL	5.1	U		5	U		5	U		5	U	
2-NITROANILINE	5.1	U		5	U		5	U		5	U	
2-NITROPHENOL	5.1	U		5	U		5	UJ	D	5	U	
3&4-METHYLPHENOL	5.1	U		5	U		5	U		5	U	
3,3'-DICHLOROBENZIDINE	5.1	U		5	U		5	U		5	U	
3-NITROANILINE	5.1	U		5	U		5	UJ	D	5	U	
4,6-DINITRO-2-METHYLPHENOL	20	U		20	U		20	UJ	D	20	U	
4-BROMOPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-CHLORO-3-METHYLPHENOL	5.1	U		5	U		5	UJ	D	5	U	
4-CHLOROANILINE	5.1	U		5	U		5	U		5	U	
4-CHLOROPHENYL PHENYL ETHER	2	U		2	U		2	U		2	U	
4-NITROANILINE	5.1	U		5	U		5	U		5	U	
4-NITROPHENOL	20	U		20	U		20	U		20	U	
BIS(2-CHLOROETHOXY)METHANE	2	U		2	U		2	U		2	U	
BIS(2-CHLOROETHYL)ETHER	2	U		2	U		2	U		2	U	
BIS(2-CHLOROISOPROPYL) ETHER	2	U		2	U		2	U		2	U	
BIS(2-ETHYLHEXYL)PHTHALATE	2	U		2	U		2	UJ	D	2	U	
BUTYLBENZYL PHTHALATE	2	U		2	U		2	U		2	U	
CARBAZOLE	2	U		2	U		2	U		2	U	
DI-N-BUTYL PHTHALATE	2	U		2	U		2	U		2	U	
[illegible]	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	SWSG19-01			SWSG20-01			SWSG22-01			SWSG23-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-6A			E58072-7A			E58072-8A			E58072-9A		
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	5.1	U		5	U		5	U		5	U	
DIETHYL PHTHALATE	2	U		2	U		2	U		2	U	
DIMETHYL PHTHALATE	2	U		2	U		2	U		2	U	
HEXACHLOROBENZENE	2	U		2	U		2	U		2	U	
HEXACHLOROBUTADIENE	5.1	U		5	U		5	U		5	U	
HEXACHLOROCYCLOPENTADIENE	20	U		20	U		20	U		20	U	
HEXACHLOROETHANE	5.1	U		5	U		5	U		5	U	
ISOPHORONE	2	U		2	U		2	U		2	U	
N-NITROSO-DI-N-PROPYLAMINE	5.1	U		5	U		5	U		5	U	
N-NITROSODIPHENYLAMINE	5.1	U		5	U		5	U		5	U	
NITROBENZENE	2	U		2	U		2	U		2	U	
PENTACHLOROPHENOL	20	U		20	U		20	UJ	D	20	U	
PHENOL	5.1	U		5	U		5	U		5	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	SWSG24-01											
SAMPLE DATE:	10/27/99			/ /			/ /			/ /		
LABORATORY ID:	E58072-10A											
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
SEMIVOLATILES												
1,2,4-TRICHLOROBENZENE	2	U										
1,2-DICHLOROBENZENE	2	U										
1,3-DICHLOROBENZENE	2	U										
1,4-DICHLOROBENZENE	2	U										
2,4,5-TRICHLOROPHENOL	5	U										
2,4,6-TRICHLOROPHENOL	5	U										
2,4-DICHLOROPHENOL	5	U										
2,4-DIMETHYLPHENOL	5	U										
2,4-DINITROPHENOL	20	U										
2,4-DINITROTOLUENE	2	U										
2,6-DINITROTOLUENE	2	U										
2-CHLORONAPHTHALENE	5	U										
2-CHLOROPHENOL	5	U										
2-METHYLPHENOL	5	U										
2-NITROANILINE	5	U										
2-NITROPHENOL	5	U										
3&4-METHYLPHENOL	5	U										
3,3'-DICHLOROBENZIDINE	5	U										
3-NITROANILINE	5	U										
4,6-DINITRO-2-METHYLPHENOL	20	U										
4-BROMOPHENYL PHENYL ETHER	2	U										
4-CHLORO-3-METHYLPHENOL	5	U										
4-CHLOROANILINE	5	U										
4-CHLOROPHENYL PHENYL ETHER	2	U										
4-NITROANILINE	5	U										
4-NITROPHENOL	20	U										
BIS(2-CHLOROETHOXY)METHANE	2	U										
BIS(2-CHLOROETHYL)ETHER	2	U										
BIS(2-CHLOROISOPROPYL) ETHER	2	U										
BIS(2-ETHYLHEXYL)PHTHALATE	2	U										
BUTYLBENZYL PHTHALATE	2	U										
CARBAZOLE	2	U										
DI-N-BUTYL PHTHALATE	2	U										

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	SWSG24-01			/ /			/ /			/ /		
SAMPLE DATE:	10/27/99											
LABORATORY ID:	E58072-10A											
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
SEMIVOLATILES												
DIBENZOFURAN	5	U										
DIETHYL PHTHALATE	2	U										
DIMETHYL PHTHALATE	2	U										
HEXACHLOROBENZENE	2	U										
HEXACHLOROBUTADIENE	5	U										
HEXACHLOROCYCLOPENTADIENE	20	U										
HEXACHLOROETHANE	5	U										
ISOPHORONE	2	U										
N-NITROSO-DI-N-PROPYLAMINE	5	U										
N-NITROSODIPHENYLAMINE	5	U										
NITROBENZENE	2	U										
PENTACHLOROPHENOL	20	U										
PHENOL	5	U										

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

PITT-01-0-071

TO: **MARK MENGEL** **DATE: JANUARY 28, 2000**

FROM: **JUSTIN ORBICH** **CC: DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PAH**
CTO 203 – NSB NEW LONDON
SDG E58072A

SAMPLES: 18/Aqueous

2WGW38DS-01	2W-GW39DS-01
2WGW41DS-01	2WGW42DS-01
2WGW43DS-01	2WGW44DS-01
3GW12D-01	3GW12S-01
3GW37S-01	4GW01S-01
GWFD102799	GWFD102899
SWSG18-01	SWSG19-01
SWSG20-01	SWSG22-01
SWSG23-01	SWSG24-01

OVERVIEW

The sample set for CTO 203, SDG E58072A, Naval Submarine Base (NSB) New London; consists of eighteen (18) aqueous environmental samples. The environmental samples were analyzed for Polynuclear Aromatic Hydrocarbon (PAH) organic compounds. Two (2) field duplicate pairs (4GW01S-01/GWFD102799 and 3GW12D-01/GWFD102899) were included within this SDG.

The samples were collected by Tetra Tech, NUS on October 27th and 28th, 1999 and analyzed by Accutest Laboratories. All analyses were performed in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria and analyzed according to SW 846 Method 8310 analytical and reporting protocols. The data in this SDG was validated with regard to the following parameters:

- Data Completeness
- Holding Times
- Initial/continuing calibrations
- Laboratory method/field quality control blank results
- Surrogate Spike Recoveries
- Matrix Spike/Matrix Spike Duplicate Results
- Laboratory Control Sample Results
- Detection Limits
- Field Duplicate Precision
- Compound Identification
- Compound Quantitation

The symbol (*) indicates that all quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified analytical results are presented in Appendix A.

PAH FRACTION

The continuing calibration Percent Differences (%D) exceeded the 25% quality control limits for naphthalene, 1-methylnaphthalene, fluorene, and indeno(1,2,3-cd)pyrene on 12/01/99 at 0932 on the fluorescence detector. No action was warranted since only nondetected results were reported and the %Ds were within the quality control limits on the UV/VIS detector.

The continuing calibration Percent Differences (%D) exceeded the 25% quality control limits for naphthalene, 1-methylnaphthalene, fluorene, and indeno(1,2,3-cd)pyrene on 12/01/99 at 1117 on the fluorescence detector. No action was warranted since only nondetected results were reported and the %Ds were within the quality control limits on the UV/VIS detector.

ADDITIONAL COMMENTS

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

It should be noted that sample 4GW01S-01 was incorrectly labeled on electronic data as 4GW015-01. The reviewer amended the electronic data to correctly read 4GW01S-01.

EXECUTIVE SUMMARY

Laboratory performance: Several continuing calibration %Ds exceeded the quality control limits for several compounds on the fluorescence detector. Sample 4GW01S-01 was incorrectly labeled on the electronic data in both fractions.

Other Factors Affecting Data Quality: None.

MEMO TO: MARK MENGEL
DATE: JANUARY 28, 2000 – PAGE 3

The data for these analyses were reviewed with reference to the Region I EPA "Volatile and Semivolatile Data Validation Functional Guidelines - Part II" (December, 1996). Quality requirements outlined in the NFESC interim guidance document " Navy Installation Restoration Laboratory Quality Assurance Guide," were also referenced.

"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)."

Tetra Tech NUS

Justin Orbich
Chemist/Data Validator

Tetra Tech 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

DATA QUALIFIER DEFINITIONS:

U - Value is a nondetected result as reported by the laboratory and should not be considered present.

J - Positive result is estimated as a result of a value below the CRQL or a technical noncompliance.

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/PCB D% 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 = % Solid content is less than 30%

APPENDIX A

Qualified Analytical Results

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	2WGW38DS-01			2WGW39DS-01			2WGW41DS-01			2WGW42DS-01		
SAMPLE DATE:	10/28/99			10/27/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-12A			E58072-2A			E58072-14A			E58072-15A		
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												
1-METHYLNAPHTHALENE	1.1	U		1	U		1.1	U		6.1	U	
2-METHYLNAPHTHALENE	1.1	U		1	U		1.1	U		6.1	U	
ACENAPHTHENE	1.1	U		1	U		1.1	U		6.1	U	
ACENAPHTHYLENE	1.1	U		1	U		1.1	U		6.1	U	
ANTHRACENE	1.1	U		1	U		1.1	U		6.1	U	
BENZO(A)ANTHRACENE	0.17	U		0.16	U		0.17	U		0.91	U	
BENZO(A)PYRENE	0.17	U		0.16	U		0.17	U		0.91	U	
BENZO(B)FLUORANTHENE	0.17	U		0.16	U		0.17	U		0.91	U	
BENZO(G,H,I)PERYLENE	0.17	U		0.16	U		0.17	U		0.91	U	
BENZO(K)FLUORANTHENE	0.17	U		0.16	U		0.17	U		0.91	U	
CHRYSENE	0.17	U		0.16	U		0.17	U		0.91	U	
DIBENZO(A,H)ANTHRACENE	0.17	U		0.16	U		0.17	U		0.91	U	
FLUORANTHENE	1.1	U		1	U		1.1	U		6.1	U	
FLUORENE	1.1	U		1	U		1.1	U		6.1	U	
INDENO(1,2,3-CD)PYRENE	0.17	U		0.16	U		0.17	U		0.91	U	
NAPHTHALENE	1.1	U		1	U		1.1	U		6.1	U	
PHENANTHRENE	1.1	U		1	U		1.1	U		6.1	U	
PYRENE	1.1	U		1	U		1.1	U		6.1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	2WGW43DS-01			2WGW44DS-01			3GW12D-01			3GW12S-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-11A			E58072-13A			E58072-16A			E58072-17A		
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												
1-METHYLNAPHTHALENE	1	U		1.1	U		1	U		1	U	
2-METHYLNAPHTHALENE	1	U		1.1	U		1	U		1.	U	
ACENAPHTHENE	1	U		1.1	U		1	U		1	U	
ACENAPHTHYLENE	1	U		1.1	U		1	U		1	U	
ANTHRACENE	1	U		1.1	U		1	U		1	U	
BENZO(A)ANTHRACENE	0.16	U		0.17	U		0.16	U		0.15	U	
BENZO(A)PYRENE	0.16	U		0.17	U		0.16	U		0.15	U	
BENZO(B)FLUORANTHENE	0.16	U		0.17	U		0.16	U		0.15	U	
BENZO(G,H,I)PERYLENE	0.16	U		0.17	U		0.16	U		0.15	U	
BENZO(K)FLUORANTHENE	0.16	U		0.17	U		0.16	U		0.15	U	
CHRYSENE	0.16	U		0.17	U		0.16	U		0.15	U	
DIBENZO(A,H)ANTHRACENE	0.16	U		0.17	U		0.16	U		0.15	U	
FLUORANTHENE	1	U		1.1	U		1	U		1	U	
FLUORENE	1	U		1.1	U		1	U		1	U	
INDENO(1,2,3-CD)PYRENE	0.16	U		0.75			0.16	U		0.15	U	
NAPHTHALENE	1	U		1.1	U		1	U		1	U	
PHENANTHRENE	1	U		1.1	U		1	U		1	U	
PYRENE	1	U		1.1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	3GW37S-01			4GW01S-01			GWFD102799			GWFD102899		
SAMPLE DATE:	10/28/99			10/27/99			10/27/99			10/28/99		
LABORATORY ID:	E58072-18A			E58072-4A			E58072-3A			E58072-19A		
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:							4GW01S-01			3GW12D-01		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1.1	U		1.1	U		1.1	U		1	U	
2-METHYLNAPHTHALENE	1.1	U		1.1	U		1.1	U		1	U	
ACENAPHTHENE	1.1	U		1.1	U		1.1	U		1	U	
ACENAPHTHYLENE	1.1	U		1.1	U		1.1	U		1	U	
ANTHRACENE	1.1	U		1.1	U		1.1	U		1	U	
BENZO(A)ANTHRACENE	0.16	U		0.16	U		0.16	U		0.16	U	
BENZO(A)PYRENE	0.16	U		0.16	U		0.16	U		0.16	U	
BENZO(B)FLUORANTHENE	0.16	U		0.16	U		0.16	U		0.16	U	
BENZO(G,H,I)PERYLENE	0.16	U		0.16	U		0.16	U		0.16	U	
BENZO(K)FLUORANTHENE	0.16	U		0.16	U		0.16	U		0.16	U	
CHRYSENE	0.16	U		0.16	U		0.16	U		0.16	U	
DIBENZO(A,H)ANTHRACENE	0.16	U		0.16	U		0.16	U		0.16	U	
FLUORANTHENE	1.1	U		1.1	U		1.1	U		1	U	
FLUORENE	1.1	U		1.1	U		1.1	U		1	U	
INDENO(1,2,3-CD)PYRENE	0.16	U		0.16	U		0.16	U		0.16	U	
NAPHTHALENE	1.1	U		1.1	U		1.1	U		1	U	
PHENANTHRENE	1.1	U		1.1	U		1.1	U		1	U	
PYRENE	1.1	U		1.1	U		1.1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	SWSG18-01			SWSG19-01			SWSG20-01			SWSG22-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-5A			E58072-6A			E58072-7A			E58072-8A		
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												
1-METHYLNAPHTHALENE	1.1	U		1.1	U		1	U		1	U	
2-METHYLNAPHTHALENE	1.1	U		1.1	U		1	U		1	U	
ACENAPHTHENE	1.1	U		1.1	U		1	U		1	U	
ACENAPHTHYLENE	1.1	U		1.1	U		1	U		1	U	
ANTHRACENE	1.1	U		1.1	U		1	U		1	U	
BENZO(A)ANTHRACENE	0.17	U		0.16	U		0.15	U		0.15	U	
BENZO(A)PYRENE	0.17	U		0.16	U		0.15	U		0.15	U	
BENZO(B)FLUORANTHENE	0.17	U		0.16	U		0.15	U		0.15	U	
BENZO(G,H,I)PERYLENE	0.17	U		0.16	U		0.15	U		0.15	U	
BENZO(K)FLUORANTHENE	0.17	U		0.16	U		0.15	U		0.15	U	
CHRYSENE	0.17	U		0.16	U		0.15	U		0.15	U	
DIBENZO(A,H)ANTHRACENE	0.17	U		0.16	U		0.15	U		0.15	U	
FLUORANTHENE	1.1	U		1.1	U		1	U		1	U	
FLUORENE	1.1	U		1.1	U		1	U		1	U	
INDENO(1,2,3-CD)PYRENE	0.17	U		0.16	U		0.15	U		0.15	U	
NAPHTHALENE	1.1	U		1.1	U		1	U		1	U	
PHENANTHRENE	1.1	U		1.1	U		1	U		1	U	
PYRENE	1.1	U		1.1	U		1	U		1	U	

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072A

SAMPLE NUMBER:	SWSG23-01			SWSG24-01								
SAMPLE DATE:	10/27/99			10/27/99			/ /			/ /		
LABORATORY ID:	E58072-9A			E58072-10A								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	1	U		1	U							
2-METHYLNAPHTHALENE	1	U		1	U							
ACENAPHTHENE	1	U		1	U							
ACENAPHTHYLENE	1	U		1	U							
ANTHRACENE	1	U		1	U							
BENZO(A)ANTHRACENE	0.16	U		0.15	U							
BENZO(A)PYRENE	0.16	U		0.15	U							
BENZO(B)FLUORANTHENE	0.16	U		0.15	U							
BENZO(G,H,I)PERYLENE	0.16	U		0.15	U							
BENZO(K)FLUORANTHENE	0.16	U		0.15	U							
CHRYSENE	0.16	U		0.15	U							
DIBENZO(A,H)ANTHRACENE	0.16	U		0.15	U							
FLUORANTHENE	1	U		1	U							
FLUORENE	1	U		1	U							
INDENO(1,2,3-CD)PYRENE	0.16	U		0.15	U							
NAPHTHALENE	1	U		1	U							
PHENANTHRENE	1	U		1	U							
PYRENE	1	U		1	U							

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**M. MENGEL**	**DATE:**	**JANUARY 27, 2000**
FROM:	**GRETCHEN PHIPPS**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – TAL METALS AND MISCELLANEOUS PARAMETERS**
CTO 203 - NSB NEW LONDON
SDG – E58072

SAMPLES: 36/Aqueous/

2W-GW39DS-01	2W-GW39DS-01-F
2WGW38DS-01	2WGW38DS-01-F
2WGW41DS-01	2WGW41DS-01-F
2WGW42DS-01	2WGW42DS-01-F
2WGW43DS-01	2WGW42DS-01-F
2WGW44DS-01	2WGW44DS-01-F
3GW12D-01	3GW12D-01-F
3GW12S-01	3GW12S-01-F
3GW37S-01	3GW37S-01-F
4GW01S-01	4GW01S-01-F
GWFD102799	GWFD102799-F
GWFD102899	GWFD102899-F
SWSG18-01	SWSG18-01-F
SWSG19-01	SWSG19-01-F
SWSG20-01	SWSG20-01-F
SWSG22-01	SWSG22-01-F
SWSG23-01	SWSG23-01-F
SWSG24-01	SWSG24-01-F

Overview

The sample set for CTO 203, NSB New London, SDG E58072, consists of thirty-six (36) aqueous environmental samples. Four (4) field duplicate pairs (4GW015-01 / GWFD102799, 4GW015-01-F / GWFD102799-F, 3GW12D-01 / GWFD102899 and 3GW12D-01-F / GWFD102899-F) were included within this SDG.

All samples, with exception to those designated –F, were analyzed for target analyte list (TAL) metals. All samples, with exception to those designated –F and sample 2WGW38DS-01, were analyzed for chemical oxygen demand (COD), chloride, hardness, sulfate, total alkalinity, total dissolved solids (TDS) and total organic carbon (TOC). The samples designated –F were analyzed for dissolved TAL metals. Sample 2WGW38DS-01 was analyzed for TAL metals, COD, chloride, hardness, sulfate, total alkalinity and TDS. The samples were collected by Tetra Tech NUS on October 27-29, 1998 and analyzed by Accutest Laboratories under Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria. Metals analyses were conducted in accordance with ILM04.0 methodologies. Total alkalinity analyses

were conducted using EPA method 310.1. COD analyses were conducted using EPA method 410.1. Chloride and sulfate analyses were conducted using SW 846 method 9056. TDS analyses were conducted using EPA method 160.1. TOC analyses were conducted using EPA method 415.1.

All analyses, with the exception of mercury, were conducted using Inductively Couples Plasma (ICP) methodologies. Mercury analyses were conducted using cold vapor AA.

The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- Calibration Verifications
- Laboratory / Field Blank Analyses
- ICP Interference Check Sample Results
- * Laboratory Control Sample Results
- * Matrix Spike Results
- Laboratory Duplicate Results
- Field Duplicate Results
- * ICP Serial Dilution Results
- * Sample Quanitation
- * Detection Limits

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

Calibration Verifications

The Contract Required Detection Limit (CRDL) Percent Recoveries (%Rs) for selenium were both above and below the 80-120% quality control limit. The nondetected results reported for selenium were qualified as estimated, "UJ".

The CRDL %R for arsenic was >120% quality control limit. The positive results <3X CRDL reported for arsenic were qualified as estimated, "J".

Laboratory Blank Analyses

Affected samples: All

Analyte	Maximum Concentration	Action Level(aqueous)
Aluminum[1]	76.360µg/L	381.8µg/L
Antimony	2.7µg/L	13.5µg/L
Beryllium	0.5µg/L	2.5µg/L
Cadmium	0.4µg/L	2.0µg/L
Copper	1.2µg/L	6.0µg/L
Iron[1]	63.120µg/L	315.6µg/L
Lead	2.3µg/L	11.5µg/L
Magnesium[1]	55.210µg/L	276.05µg/L
Manganese[1]	0.350µg/L	1.75µg/L
Potassium	250.7µg/L	1253.5µg/L
Sodium	458.4µg/L	2292µg/L
Zinc	1.0µg/L	5.0µg/L

(1) Maximum concentration present in an aqueous preparation blank.

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Dilution factors and sample aliquots were taken into consideration when evaluating for blank contamination. Positive results < the action level for aluminum, antimony, cadmium, copper, iron and lead were qualified as, "U", as a result of blank contamination.

Positive and nondetected results reported for mercury and zinc were qualified as estimated, "J" and "UJ", respectively, as a result of blank results >2X the negative Instrument Detection Limit (IDL).

ICP Interference Check Sample Results

The interfering analyte magnesium was present in samples 2WGW41DS-01, 2WGGW41DS-01-F, 2WGW42DS-01, 2WGW43DS-01 and 2WGW43DS-01-F at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, cadmium, copper, lead, manganese, selenium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for arsenic, vanadium and zinc in the affected samples. The positive results reported for arsenic, vanadium and zinc were qualified as estimated, "J".

The interfering analyte magnesium was present in sample 2WGW42DS-01-F at a concentration which was comparable to the level of magnesium in the Interference Check Sample (ICS) solution. Several analytes namely antimony, arsenic, cadmium, copper, lead, manganese, selenium, thallium, vanadium and zinc were present in the ICS solution at concentrations which exceeded the Instrument Detection Limit (IDL). Interference affects exist for arsenic, copper, vanadium and zinc in the affected sample. The positive results reported for arsenic, copper, vanadium and zinc were qualified as estimated, "J".

Laboratory Duplicate Results

Laboratory duplicate imprecision (>20%) was noted for chromium affecting the total metals. The positive results reported for chromium in the affected samples were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision (>30%) was noted for zinc affecting the filtered metals. The positive results reported for zinc in the affected samples were qualified as estimated, "J".

Other Factor Affecting Data Quality

Positive results less than 2X the IDL reported for arsenic, barium, chromium, cobalt, mercury, nickel, silver and vanadium were qualified as estimated, "J".

Notes

A comparison of field duplicate pairs (4GW015-01 / GWFD102799, 4GW015-01-F / GWFD102799-F, 3GW12D-01 / GWFD102899 and 3GW12D-01-F / GWFD102899-F) is included in Appendix C.

Executive Summary

Laboratory Performance: Several analytes were present in the laboratory method / preparation blanks. Positive and nondetected results reported for mercury and zinc were qualified as estimated, "J" and "UJ", respectively, as a result of blank results >2X the negative Instrument Detection Limit (IDL). The CRDL %Rs for arsenic and selenium were outside the 80-120% quality control limits.

Other Factors Affecting Data Quality: The interfering analyte magnesium was present in several samples. Laboratory duplicate imprecision was noted for chromium affecting the total metals. Field duplicate imprecision was noted for zinc affecting the dissolved metals. Positive results less than 2X the IDL reported for arsenic, barium, chromium, cobalt, mercury, nickel, silver and vanadium were qualified as estimated, "J".

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Inorganic Review", February 1994, "EPA Region I Functional Guidelines for Evaluating Inorganic Analyses", February 1989 and the NFESC document entitled "Navy Installation Restoration Laboratory Quality Assurance Guide." (NFESC 2/96).

The text of this report has been formulated to address only those problem areas affecting 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)."

Tetra Tech NUS
Gretchen A. Phipps

Tetra Tech NUS
Joseph A. Samchuck
Quality Control Officer

Attachments:

1. Appendix A - Qualified Analytical Data
2. Appendix B - Results as reported by the Laboratory
3. Appendix C - Regional Worksheets
4. Appendix D - 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/PCB D% 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 = % Solid content is less than 30%

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW38DS-01			2WGW38DS-01-F			2WGW39DS-01			2WGW39DS-01-F		
SAMPLE DATE:	10/29/99			10/29/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-20			E58072-38			E58072-2			E58072-21		
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	316	U	A	88.5	U	A	113	U	A	113	U	A
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	6.5	J	CP	4.6	J	CP	5.4	J	C	5.4	J	C
BARIUM	25.1	J	P	23.0	J	P	30.2			30.2		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.30	U		0.30	U	
CALCIUM	45500			49500			24200			24200		
CHROMIUM	2.4	U		2.4	U		2.4	U		2.4	U	
COBALT	2.1	U		3.3	J	P	2.8	J	P	2.8	J	P
COPPER	6.3			4.4	U	A	1.2	U		1.2	U	
IRON	279	U	A	36.5	U	A	1830			1830		
LEAD	1.7	U		1.7	U		1.8	U	A	1.8	U	A
MAGNESIUM	19400			24500			7920			7920		
MANGANESE	120			193			445			445		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.13	J	AP	0.13	J	AP
NICKEL	2.6	U		3.1			4.0			4.0		
POTASSIUM	18500			22900			11300			11300		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	193000			226000			173000			173000		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	22.7			25.8			1.7	J	P	1.7	J	P
ZINC	70.3	J	AG	152	J	AG	11.7	J	AG	11.7	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW41DS-01			2WGW41DS-01-F			2WGW42DS-01			2WGW42DS-01-F		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-14			E58072-32			E58072-15			E58072-33		
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	405			56.6	U		249	U	A	56.6	U	
ANTIMONY	3.6	U	A	2.4	U	A	4.5	U	A	2.7	U	A
ARSENIC	10.4	J	CK	12.1	J	CK	21.8	J	CK	23.3	J	CK
BARIUM	66.0			64.1			77.6			90.2		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.30	U		0.30	U	
CALCIUM	124000			129000			168000			163000		
CHROMIUM	3.2	J	FP	2.4	U		4.2	J	FP	3.7	J	P
COBALT	9.9			7.4			2.3	J	P	2.2	J	P
COPPER	1.2	U		1.2	U		1.2	U		6.5	J	K
IRON	5130			5340			3490			2400		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	410000			434000			520000			482000		
MANGANESE	1400			1430			1090			1030		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A
NICKEL	10.9			8.4			3.7	J	P	5.3		
POTASSIUM	208000			219000			282000			258000		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	3850000			4110000			5050000			4700000		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	5.6	J	K	3.7	J	K	9.7	J	K	7.7	J	K
ZINC	11.8	J	AGK	14.1	J	AGK	6.2	J	AGK	23.9	J	AGK

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW43DS-01			2WGW43DS-01-F			2WGW44DS-01			2WGW44DS-01-F		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-11			E58072-30			E58072-13			E58072-31		
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	303	U	A	56.6	U		149	U	A	56.6	U	
ANTIMONY	2.7	U	A	4.7	U	A	2.4	U		2.4	U	
ARSENIC	12.2	J	CK	11.9	J	CK	3.8	U		3.8	U	
BARIUM	111			124			65.7			62.6		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.32	U	A	0.30	U	
CALCIUM	217000			239000			96800			98000		
CHROMIUM	6.1	J	FP	2.4	J	P	2.4	U		2.4	U	
COBALT	4.7			2.1	U		2.1	U		2.1	U	
COPPER	1.2	U		1.2	U		1.2	U		1.2	U	
IRON	3180			1320			25000			14300		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	741000			800000			100000			117000		
MANGANESE	1630			1820			1260			1220		
MERCURY	0.10	UJ	A	010	UJ	A	0.10	UJ	A	0.10	UJ	A
NICKEL	8.2			6.6			3.1	J	P	2.6	U	
POTASSIUM	339000			351000			52100			59600		
SELENIUM	8.6	UJ	C	8.6	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	6350000			6650000			944000			1130000		
THALLIUM	8.6	U		8.6	U		4.3	U		4.3	U	
VANADIUM	6.9	J	K	5.1	J	K	2.8			1.8	J	P
ZINC	9.6	J	AGK	0.90	UJ	AGK	21.2	J	AG	15.5	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	3GW12D-01			3GW12D-01-F			3GW12S-01			3GW12S-01-F		
SAMPLE DATE:	10/28/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-16			E58072-34			E58072-17			E58072-35		
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	56.6	U		56.6	U		98.2	U	A	56.6	U	
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		3.8	U		3.8	U	
BARIUM	58.4			133			54.8			56.6		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.57	U	A	0.66	U	A	0.47	U	A	0.38	U	A
CALCIUM	68800			66000			62500			62800		
CHROMIUM	2.4	U		2.4	U		2.4	U		2.4	U	
COBALT	9.0			7.5			15.3			15.1		
COPPER	1.4	U	A	1.2	U		1.7	U	A	1.2	U	
IRON	37500			34200			8620			7810		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	49800			48000			53100			54000		
MANGANESE	6890			6630			5850			5970		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A	0.1	UJ	A
NICKEL	4.5	J	P	3.6	J	P	2.6	U		2.6	U	
POTASSIUM	17400			17200			19900			21300		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	527000			508000			582000			609000		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	1.1	U		1.1	U		1.1	U		1.1	U	
ZINC	20.6	J	AG	172	J	AG	15.3	J	AG	8.9	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	3GW37S-01			3GW37S-01-F			4GW01S-01			4GW01S-01-F		
SAMPLE DATE:	10/28/99			10/28/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-18			E58072-36			E58072-4			E58072-23		
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	81.8	U	A	56.6	U		59.9	U	A	56.6	U	
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		3.8	U		3.8	U	
BARIUM	49.6			53.7			38.1			39.4		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.30	U		0.30	U	
CALCIUM	26300			25600			25100			25800		
CHROMIUM	2.4	U		2.4	U		2.4	U		4.7		
COBALT	6.4			6.5			2.1	U		2.1	U	
COPPER	1.2	U		1.3	U	A	1.2	U		1.2	U	
IRON	1200			1040			28.8	U		28.8	U	
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	6600			6610			3090			3200		
MANGANESE	1410			1420			40.4			41.8		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A
NICKEL	2.6	U		2.6	U		2.6	U		2.6	U	
POTASSIUM	4310			4620			2610			2790		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.4	J	P
SODIUM	76200			79700			21800			23100		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	1.1	U		1.1	U		1.1	U		1.1	U	
ZINC	13.4	J	AG	11.6	J	AG	7.0	J	AG	5.6	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	GWFD102799			GWFD102799-F			GWFD102899			GWFD102899-F		
SAMPLE DATE:	10/27/99			10/27/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-3			E58072-22			E58072-19			E58072-37		
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:	4GW01S-01			4GW01S-01-F			3GW12D-01			3GW12D-01-F		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
ALUMINUM	64.0	U	A	56.6	U		56.6	U		56.6	U	
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		3.8	U		3.8	U	
BARIUM	36.8			39.1			57.3			68.6		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.75	U	A	0.62	U	A
CALCIUM	24100			25300			67700			68200		
CHROMIUM	2.4	U		2.4	U		2.4	U		2.4	U	
COBALT	2.1	U		2.1	U		9.5			8.1		
COPPER	1.2	U		1.2	U		1.2	U		1.2	U	
IRON	105	U	A	28.8	U		36000			33800		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	2980			3150			49200			50000		
MANGANESE	40.6			41.5			6810			6930		
MERCURY	0.23	J	A	0.10	UJ	A	0.10	UJ	A	01.0	UJ	A
NICKEL	2.6	U		2.6	U		4.8	J	P	3.5	J	P
POTASSIUM	2520			2780			17500			18400		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	21000			22800			521000			539000		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	1.1	U		1.1	U		1.1	U		1.1	U	
ZINC	9.7	J	AG	5.1	J	AG	27.0	J	AG	26.7	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG18-01			SWSG18-01-F			SWSG19-01			SWSG19-01-F		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-5			E58072-24			E58072-6			E58072-25		
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	87.4	U	A	62.3	U	A	121	U	A	56.6	U	
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		3.8	U		3.8	U	
BARIUM	31.8			31.7			26.6	J	P	33.5		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.30	U		0.30	U	
CALCIUM	14000			14200			15500			15600		
CHROMIUM	2.4	U		2.4	U		3.6	J	P	2.4	U	
COBALT	2.5	J	P	2.1	U		2.1	U		2.1	U	
COPPER	1.2	U		1.2	U		1.2	U		1.2	U	
IRON	12300			11600			4710			2440		
LEAD	1.7	U		1.7	U		1.7	U		1.7	U	
MAGNESIUM	3420			3480			3790			3860		
MANGANESE	340			346			348			351		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A
NICKEL	2.6	U		2.6	U		2.8	J	P	2.6	U	
POTASSIUM	4140			4290			4360			4550		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.3	U		1.3	U		1.3	U	
SODIUM	88700			91200			89400			92800		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	2.5			1.8	J	P	2.8			1.1	U	
ZINC	31.0	J	AG	49.4	J	AG	32.0	J	AG	118	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG20-01			SWSG20-01-F			SWSG22-01			SWSG22-01-F		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-7			E58072-26			E58072-8			E58072-27		
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	73.5	U	A	127	U	A	1310			56.6	U	
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	3.8	U		3.8	U		4.5	J	CP	3.8	U	
BARIUM	25.0	J	P	24.9	J	P	73.0			55.3		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.30	U		0.30	U		0.31	U	A	0.30	U	
CALCIUM	14700			15000			41000			39700		
CHROMIUM	2.4	U		2.4	U		38.4	J	F	2.4	U	
COBALT	2.1	U		2.1	U		3.7			2.1	U	
COPPER	1.2	U		1.2	U		10.8			1.2	U	
IRON	3240			3070			28200			17900		
LEAD	1.7	U		1.7	U		6.6	U	A	2.1	U	A
MAGNESIUM	3610			3740			5860			5390		
MANGANESE	304			317			997			940		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A
NICKEL	2.6	U		2.6	U		20.9			3.7	J	P
POTASSIUM	4240			4440			4200			3920		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		1.4	J	P	1.3	U		1.3	U	
SODIUM	87100			89500			41500			40300		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	1.1	U		1.1	U		5.0			1.1	U	
ZINC	13.1	J	AG	47.3	J	AG	90.2	J	AG	37.0	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG23-01			SWSG23-01-F			SWSG24-01			SWSG24-01-F		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-9			E58072-28			E58072-10			E58072-29		
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	198	U	A	135	U	A	385	U	A	144	U	A
ANTIMONY	2.4	U		2.4	U		2.4	U		2.4	U	
ARSENIC	8.2	J	C	5.6	J	CP	4.2	J	CP	3.8	U	
BARIUM	60.1			61.3			62.5			57.6		
BERYLLIUM	0.20	U		0.20	U		0.20	U		0.20	U	
CADMIUM	0.33	U	A	0.34	U	A	0.31	U	A	0.30	U	
CALCIUM	27500			29700			9770			9910		
CHROMIUM	2.4	U		2.4	U		4.3	J	FP	2.4	U	
COBALT	7.0			7.5			11.4			11.1		
COPPER	1.7	U	A	1.2	U		17.0			11.4		
IRON	26500			24100			9270			3100		
LEAD	3.2	U	A	4.6	U	A	3.2	U	A	2.9	U	A
MAGNESIUM	6010			6540			3940			3900		
MANGANESE	1310			1400			2730			2720		
MERCURY	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A	0.10	UJ	A
NICKEL	9.8			9.6			12.2			10.9		
POTASSIUM	3470			3720			5120			5030		
SELENIUM	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C	4.3	UJ	C
SILVER	1.3	U		3.0			1.3	U		1.3	U	
SODIUM	41600			46500			36200			36900		
THALLIUM	4.3	U		4.3	U		4.3	U		4.3	U	
VANADIUM	2.6			1.1	U		1.6	J	P	1.1	U	
ZINC	119	J	AG	96.5	J	AG	48.3	J	AG	70.7	J	AG

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2W-GW39DS-01			2WGW38DS-01			2WGW41DS-01			2WGW42DS-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-2			E58072-12			E58072-14			E58072-15		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	176			318			1810			1460		
CHEMICAL OXYGEN DEMAND	20	U		63.3			620			1100		
CHLORIDE	274			224			7790			8120		
HARDNESS as CaCO3	153			249			2210			2790		
SULFATE	10	U		94.1			86.7			165		
TOTAL DISSOLVED SOLIDS	469			716			12900			12300		
TOTAL ORGANIC CARBON	4.3						47			32.7		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	2WGW43DS-01			2WGW44DS-01			3GW12D-01			3GW12S-01		
SAMPLE DATE:	10/27/99			10/28/99			10/28/99			10/28/99		
LABORATORY ID:	E58072-11			E58072-13			E58072-16			E58072-17		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	1850			146			217			224		
CHEMICAL OXYGEN DEMAND	1580			63.4			20	U		20	U	
CHLORIDE	12900			1660			887			970		
HARDNESS as CaCO3	4120			718			536			440		
SULFATE	196			11			93.6			98.1		
TOTAL DISSOLVED SOLIDS	20900			3020			1780			1880		
TOTAL ORGANIC CARBON	35.7			32.8			3.6			4.3		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	3GW37S-01			4GW01S-01			GWFD102799			GWFD102899		
SAMPLE DATE:	10/28/99			10/27/99			10/27/99			10/28/99		
LABORATORY ID:	E58072-18			E58072-4			E58072-3			E58072-19		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:							4GW01S-01			3GW12D-01		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	188			28.5			33.1			233		
CHEMICAL OXYGEN DEMAND	92.4			20	U		20	U		26.4		
CHLORIDE	91.9			18.1			18.3			885		
HARDNESS as CaCO3	172			105			134			498		
SULFATE	19			57.7			53.9			93.7		
TOTAL DISSOLVED SOLIDS	283			186			192			1720		
TOTAL ORGANIC CARBON	4.2			2.3			2.4			4		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG18-01			SWSG19-01			SWSG20-01			SWSG22-01		
SAMPLE DATE:	10/27/99			10/27/99			10/27/99			10/27/99		
LABORATORY ID:	E58072-5			E58072-6			E58072-7			E58072-8		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	MG/L			MG/L			MG/L			MG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	46.6			48.6			49.2			134		
CHEMICAL OXYGEN DEMAND	26.4			26.4			23.8			42.2		
CHLORIDE	164			162			161			64.2		
HARDNESS as CaCO3	99.5			115			95.7			140		
SULFATE	10	U		14.5			14.5			10	U	
TOTAL DISSOLVED SOLIDS	268			32			296			268		
TOTAL ORGANIC CARBON	7.5			7.2			6.3			9		

CTO203-NSB NEW LONDON
WATER DATA
Accutest, NJ
SDG: E58072

SAMPLE NUMBER:	SWSG23-01			SWSG24-01								
SAMPLE DATE:	10/27/99			10/27/99			/ /			/ /		
LABORATORY ID:	E58072-9			E58072-10								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	MG/L			MG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
ALKALINITY	99.4			24.3								
CHEMICAL OXYGEN DEMAND	58.1			55.4								
CHLORIDE	89.1			78								
HARDNESS as CaCO3	172			115								
SULFATE	10	U		10	U							
TOTAL DISSOLVED SOLIDS	267			201								
TOTAL ORGANIC CARBON	10.3			14.2								

APPENDIX J-2

UNVALIDATED SOIL RESULTS

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW38DS	2WMW39DS	2WMW40DS	2WMW41DS	2WMW42DS	2WMW43DS
matrix	SO	SO	SO	SO	SO	SO
nsample	2W-SU-38DS-02-99	2W-SU-39DS-00-99	2W-SU-40DS-06-99	2W-SU-41DS-04-99	2W-SU-42DS-7.5-99	2W-SU-43DSA-04-99
depth (feet)	2 - 4	0 - 2	6 - 8	4 - 6	7.5 - 9.5	4 - 6
sample_date	05/19/99	05/18/99	05/18/99	05/12/99	05/14/99	05/13/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
VOCs (UG/KG)						
1,1,1-TRICHLOROETHANE	30 U	13 U	22 U	31 U	22 U	30 U
1,1,2,2-TETRACHLOROETHANE	30 U	13 U	22 U	31 U	22 U	30 U
1,1,2-TRICHLOROETHANE	30 U	13 U	22 U	31 U	22 U	30 U
1,1-DICHLOROETHANE	30 U	13 U	22 U	31 U	22 U	30 U
1,1-DICHLOROETHENE	30 U	13 U	22 U	31 U	22 U	30 U
1,2-DICHLOROETHANE	30 U	13 U	22 U	31 U	22 U	30 U
1,2-DICHLOROETHENE (TOTAL)	30 U	13 U	22 U	31 U	22 U	30 U
1,2-DICHLOROPROPANE	30 U	13 U	22 U	31 U	22 U	30 U
2-BUTANONE	30 U	13 U	22 U	31 U	22 U	30 U
2-HEXANONE	30 U	13 U	22 U	31 U	22 U	30 U
4-METHYL-2-PENTANONE	30 U	13 U	22 U	31 U	22 U	30 U
ACETONE	110	25	46	85	57	280
BENZENE	30 U	13 U	22 U	31 U	22 U	30 U
BROMODICHLOROMETHANE	30 U	13 U	22 U	31 U	22 U	30 U
BROMOFORM	30 U	13 U	22 U	31 U	22 U	30 U
BROMOMETHANE	30 U	13 U	22 U	31 U	22 U	30 U
CARBON DISULFIDE	11 J	13 U	22 U	6 J	22 U	27 J
CARBON TETRACHLORIDE	30 U	13 U	22 U	31 U	22 U	30 U
CHLOROBENZENE	30 U	13 U	22 U	31 U	22 U	30 U
CHLOROETHANE	30 U	13 U	22 U	31 U	22 U	30 U
CHLOROFORM	30 U	13 U	22 U	31 U	22 U	30 U
CHLOROMETHANE	30 U	13 U	22 U	31 U	22 U	30 U
CIS-1,3-DICHLOROPROPENE	30 U	13 U	22 U	31 U	22 U	30 U
DIBROMOCHLOROMETHANE	30 U	13 U	22 U	31 U	22 U	30 U
ETHYLBENZENE	30 U	13 U	22 U	31 U	22 U	30 U
METHYLENE CHLORIDE	9 JB	3 JB	4 JB	5 JB	9 JB	4 JB
STYRENE	30 U	13 U	22 U	31 U	22 U	30 U
TETRACHLOROETHENE	30 U	13 U	22 U	31 U	22 U	30 U
TOLUENE	30 U	13 U	22 U	31 U	22 U	30 U
TRANS-1,3-DICHLOROPROPENE	30 U	13 U	22 U	31 U	22 U	30 U
TRICHLOROETHENE	30 U	13 U	22 U	31 U	22 U	30 U
VINYL CHLORIDE	30 U	13 U	22 U	31 U	22 U	30 U
XYLENES, TOTAL	30 U	13 U	22 U	31 U	22 U	30 U
SVOCs (UG/KG)						
1,2,4-TRICHLOROBENZENE	350 U	190 U	280 U	330 U	320 U	350 U

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW38DS	2WMW39DS	2WMW40DS	2WMW41DS	2WMW42DS	2WMW43DS
matrix	SO	SO	SO	SO	SO	SO
nsample	2W-SU-38DS-02-99	2W-SU-39DS-00-99	2W-SU-40DS-06-99	2W-SU-41DS-04-99	2W-SU-42DS-7.5-99	2W-SU-43DSA-04-99
depth (feet)	2 - 4	0 - 2	6 - 8	4 - 6	7.5 - 9.5	4 - 6
sample_date	05/19/99	05/18/99	05/18/99	05/12/99	05/14/99	05/13/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
1,2-DICHLOROBENZENE	350 U	190 U	280 U	330 U	320 U	350 U
1,3-DICHLOROBENZENE	350 U	190 U	280 U	330 U	320 U	350 U
1,4-DICHLOROBENZENE	350 U	190 U	280 U	330 U	320 U	350 U
1-METHYLNAPHTHALENE	570 U	43 U	61 U	68 U	67 U	75 U
2,4,5-TRICHLOROPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
2,4,6-TRICHLOROPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
2,4-DICHLOROPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
2,4-DIMETHYLPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
2,4-DINITROPHENOL	1400 U	760 U	1100 U	1300 U	1300 U	1400 U
2,4-DINITROTOLUENE	350 U	190 U	280 U	330 U	320 U	350 U
2,6-DINITROTOLUENE	350 U	190 U	280 U	330 U	320 U	350 U
2-CHLORONAPHTHALENE	350 U	190 U	280 U	330 U	320 U	350 U
2-CHLOROPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
2-METHYLNAPHTHALENE	73 U	43 U	61 U	68 U	67 U	75 U
2-METHYLPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
2-NITROANILINE	350 U	190 U	280 U	330 U	320 U	350 U
2-NITROPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
3&4-METHYLPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
3,3'-DICHLOROBENZIDINE	350 U	190 U	280 U	330 U	320 U	350 U
3-NITROANILINE	350 U	190 U	280 U	330 U	320 U	350 U
4,6-DINITRO-2-METHYLPHENOL	1400 U	760 U	1100 U	1300 U	1300 U	1400 U
4-BROMOPHENYL PHENYL ETHER	350 U	190 U	280 U	330 U	320 U	350 U
4-CHLORO-3-METHYLPHENOL	350 U	190 U	280 U	330 U	320 U	350 U
4-CHLOROANILINE	350 U	190 U	280 U	330 U	320 U	350 U
4-CHLOROPHENYL PHENYL ETHER	350 U	190 U	280 U	330 U	320 U	350 U
4-NITROANILINE	350 U	190 U	280 U	330 U	320 U	350 U
4-NITROPHENOL	1400 U	760 U	1100 U	1300 U	1300 U	1400 U
ACENAPHTHENE	73 U	270	61 U	68 U	67 U	75 U
ACENAPHTHYLENE	150 U	88 U	120 U	140 U	140 U	150 U
ANTHRACENE	11 U	6.5 U	9.3 U	10 U	10 U	11 U
BENZO(A)ANTHRACENE	11 U	260	33	10 U	36	44
BENZO(A)PYRENE	11 U	310	48	31	67	92
BENZO(B)FLUORANTHENE	100	420	110	190	290	430
BENZO(G,H,I)PERYLENE	15 U	260	12 U	14 U	54	73
BENZO(K)FLUORANTHENE	11 U	180	9.3 U	10 U	51	110
BIS(2-CHLOROETHOXY)METHANE	350 U	190 U	280 U	330 U	320 U	350 U

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW38DS	2WMW39DS	2WMW40DS	2WMW41DS	2WMW42DS	2WMW43DS
matrix	SO	SO	SO	SO	SO	SO
nsample	2W-SU-38DS-02-99	2W-SU-39DS-00-99	2W-SU-40DS-06-99	2W-SU-41DS-04-99	2W-SU-42DS-7.5-99	2W-SU-43DSA-04-99
depth (feet)	2 - 4	0 - 2	6 - 8	4 - 6	7.5 - 9.5	4 - 6
sample_date	05/19/99	05/18/99	05/18/99	05/12/99	05/14/99	05/13/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
BIS(2-CHLOROETHYL)ETHER	350 U	190 U	280 U	330 U	320 U	350 U
BIS(2-CHLOROISOPROPYL) ETHER	350 U	190 U	280 U	330 U	320 U	350 U
BIS(2-ETHYLHEXYL)PHTHALATE	350 U	51.4 J	280 U	330 U	320 U	350 U
BUTYLBENZYL PHTHALATE	350 U	190 U	280 U	330 U	320 U	350 U
CARBAZOLE	350 U	190 U	280 U	330 U	320 U	350 U
CHRYSENE	11 U	290	28	10 U	42	48
DI-N-BUTYL PHTHALATE	350 U	190 U	280 U	330 U	320 U	350 U
DI-N-OCTYL PHTHALATE	350 U	190 U	280 U	330 U	320 U	350 U
DIBENZO(A,H)ANTHRACENE	18 U	32	15	17 U	17 U	19 U
DIBENZOFURAN	350 U	190 U	280 U	330 U	320 U	350 U
DIETHYL PHTHALATE	350 U	190 U	280 U	330 U	320 U	350 U
DIMETHYL PHTHALATE	350 U	190 U	280 U	330 U	320 U	350 U
FLUORANTHENE	15 U	890	73	110	120	150
FLUORENE	15 U	8.8 U	12 U	14 U	14 U	15 U
HEXACHLOROBENZENE	350 U	190 U	280 U	330 U	320 U	350 U
HEXACHLOROBUTADIENE	350 U	190 U	280 U	330 U	320 U	350 U
HEXACHLOROCYCLOPENTADIENE	1400 U	760 U	1100 U	1300 U	1300 U	1400 U
HEXACHLOROETHANE	350 U	190 U	280 U	330 U	320 U	350 U
INDENO(1,2,3-CD)PYRENE	11 U	140	9.3 U	29	43	38
ISOPHORONE	350 U	190 U	280 U	330 U	320 U	350 U
N-NITROSO-DI-N-PROPYLAMINE	350 U	190 U	280 U	330 U	320 U	350 U
N-NITROSODIPHENYLAMINE	350 U	190 U	280 U	330 U	320 U	350 U
NAPHTHALENE	73 U	43 U	61 U	68 U	67 U	75 U
NITROBENZENE	350 U	190 U	280 U	330 U	320 U	350 U
PENTACHLOROPHENOL	1400 U	760 U	1100 U	1300 U	1300 U	1400 U
PHENANTHRENE	11 U	300	9.3 U	10 U	10 U	11 U
PHENOL	350 U	190 U	280 U	330 U	320 U	350 U
PYRENE	39	810	110	50	130	140
Pesticides/PCBs (UG/KG)						
4,4'-DDD	7 U	40 P	5.9 U	6.4 U	6.4 U	7.2 U
4,4'-DDE	7 U	5.2	5.9 U	6.4 U	6.4 U	7.2 U
4,4'-DDT	7 U	28	5.9 U	6.4 U	6.4 U	7.2 U
ALDRIN	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
ALPHA-BHC	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
ALPHA-CHLORDANE	3.5 U	3	2.9 U	3.2 U	3.2 U	3.6 U
AROCLOR-1016	70 U	38 U	59 U	64 U	64 U	72 U

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW38DS	2WMW39DS	2WMW40DS	2WMW41DS	2WMW42DS	2WMW43DS
matrix	SO	SO	SO	SO	SO	SO
nsample	2W-SU-38DS-02-99	2W-SU-39DS-00-99	2W-SU-40DS-06-99	2W-SU-41DS-04-99	2W-SU-42DS-7.5-99	2W-SU-43DSA-04-99
depth (feet)	2 - 4	0 - 2	6 - 8	4 - 6	7.5 - 9.5	4 - 6
sample_date	05/19/99	05/18/99	05/18/99	05/12/99	05/14/99	05/13/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
AROCLOR-1221	140 U	76 U	120 U	130 U	130 U	140 U
AROCLOR-1232	70 U	38 U	59 U	64 U	64 U	72 U
AROCLOR-1242	70 U	38 U	59 U	64 U	64 U	72 U
AROCLOR-1248	70 U	38 U	59 U	64 U	64 U	72 U
AROCLOR-1254	70 U	38 U	59 U	64 U	64 U	72 U
AROCLOR-1260	70 U	110	59 U	64 U	64 U	72 U
BETA-BHC	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
DELTA-BHC	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
DIELDRIN	7 U	3.8 U	5.9 U	6.4 U	6.4 U	7.2 U
ENDOSULFAN I	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
ENDOSULFAN II	7 U	3.8 U	5.9 U	6.4 U	6.4 U	7.2 U
ENDOSULFAN SULFATE	7 U	3.8 U	5.9 U	6.4 U	6.4 U	7.2 U
ENDRIN	7 U	3.8 U	5.9 U	6.4 U	6.4 U	7.2 U
ENDRIN ALDEHYDE	7 U	3.8 U	5.9 U	6.4 U	6.4 U	7.2 U
ENDRIN KETONE	7 U	3.8 U	5.9 U	6.4 U	6.4 U	7.2 U
GAMMA-BHC (LINDANE)	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
GAMMA-CHLORDANE	3.5 U	2.2 P	2.9 U	3.2 U	3.2 U	3.6 U
HEPTACHLOR	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
HEPTACHLOR EPOXIDE	3.5 U	1.9 U	2.9 U	3.2 U	3.2 U	3.6 U
METHOXYCHLOR	35 U	19 U	29 U	32 U	32 U	36 U
TOXAPHENE	350 U	190 U	290 U	320 U	320 U	360 U
Inorganics (MG/KG)						
ALUMINUM	19600	4860	15300	13500	14800	15500
ANTIMONY	1.7 UN	0.99 UN	1.4 UN	1.6 UN	1.5 UN	1.7 UN
ARSENIC	13.3	1.2 B	8	9.5	9.5	11.2
BARIUM	56.1 B	28.3 B	46.7 B	41.7 B	45.9 B	50.7 B
BERYLLIUM	1.3 B	0.28 B	0.9 B	1.2 B	1.2 B	1.3 B
CADMIUM	0.44 B	0.16 B	0.54 B	0.2 U	0.28 B	0.26 B
CALCIUM	6160	1360	3970	4200	4430	4160
CHROMIUM	48.6	12.2	48.1	40	43.1	47.1
COBALT	12.5 B	4.8 B	10.3 B	9.4 B	10.2 B	10.3 B
COPPER	18.4 *	21.7 *	24 *	18	20.2	24.9
IRON	35000	8100	25100	25700	26300	27400
LEAD	13 *	22.4 *	23.2 *	14.2	17.9	85
MAGNESIUM	8200	2170	7000	6740	7670	7730
MANGANESE	454	99.2	295	294	308	316

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	**2WMW38DS**	**2WMW39DS**	**2WMW40DS**	**2WMW41DS**	**2WMW42DS**	**2WMW43DS**
matrix	**SO**	**SO**	**SO**	**SO**	**SO**	**SO**
nsample	**2W-SU-38DS-02-99**	**2W-SU-39DS-00-99**	**2W-SU-40DS-06-99**	**2W-SU-41DS-04-99**	**2W-SU-42DS-7.5-99**	**2W-SU-43DSA-04-99**
depth (feet)	**2 - 4**	**0 - 2**	**6 - 8**	**4 - 6**	**7.5 - 9.5**	**4 - 6**
sample_date	**05/19/99**	**05/18/99**	**05/18/99**	**05/12/99**	**05/14/99**	**05/13/99**
validated	**FALSE**	**FALSE**	**FALSE**	**FALSE**	**FALSE**	**FALSE**
MERCURY	0.09 U	0.06 U	0.08 U	0.1 U	0.05 U	0.11
NICKEL	28.3 *	16.9 *	21.5 *	20.9	21.7	23.3
POTASSIUM	4980	1000 B	3960	3960	4470	4560
SELENIUM	3	1.1 U	2.7	2.2	1.7 U	2.7
SILVER	0.34 U	0.2 U	0.28 U	0.32 U	0.31 U	0.35 U
SODIUM	1360 B	224 B	4460	4600	9240	8150
THALLIUM	1.4 U	0.84 U	1.2 U	1.3 U	1.3 U	1.5 U
VANADIUM	51.1	35.9	38.7	39.2	40.5	41.2
ZINC	76.6 *	49.7 *	68.5 *	70.7	73.3	87.6

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW44DS	2WMW44DS (DUP)	2WMW45DS	2WMW46DS	2WMW47DS	3MW37S	3MW37S (DUP)
matrix	SO	SO	SO	SO	SO	SO	SO
nsample	2W-SU-44DS-04-99	2W-SU-44DS-04-99-D	2W-SU-45DS-00-99	2W-SU-46DS-04-99	2W-SU-47DS-02-99	3-SU-37S-02-99	3-SU-37S-02-99-D
depth (feet)	4 - 6	4 - 6	0 - 2	4 - 6	2 - 4	2 - 4	2 - 4
sample_date	05/16/99	05/16/99	05/16/99	05/17/99	05/17/99	05/19/99	05/19/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
VOCs (UG/KG)							
1,1,1-TRICHLOROETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,1,2,2-TETRACHLOROETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,1,2-TRICHLOROETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,1-DICHLOROETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,1-DICHLOROETHENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,2-DICHLOROETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,2-DICHLOROETHENE (TOTAL)	27 U	27 U	23 U	29 U	10 U	14 U	12 U
1,2-DICHLOROPROPANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
2-BUTANONE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
2-HEXANONE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
4-METHYL-2-PENTANONE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
ACETONE	100	64	160	82	22	36	24
BENZENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
BROMODICHLOROMETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
BROMOFORM	27 U	27 U	23 U	29 U	10 U	14 U	12 U
BROMOMETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
CARBON DISULFIDE	8 J	27 U	23 U	8 J	10 U	14 U	12 U
CARBON TETRACHLORIDE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
CHLOROBENZENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
CHLOROETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
CHLOROFORM	27 U	27 U	23 U	29 U	10 U	14 U	12 U
CHLOROMETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
CIS-1,3-DICHLOROPROPENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
DIBROMOCHLOROMETHANE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
ETHYLBENZENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
METHYLENE CHLORIDE	5 JB	5 JB	6 JB	5 JB	2 JB	2 JB	2 JB
STYRENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
TETRACHLOROETHENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
TOLUENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
TRANS-1,3-DICHLOROPROPENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
TRICHLOROETHENE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
VINYL CHLORIDE	27 U	27 U	23 U	29 U	10 U	14 U	12 U
XYLENES, TOTAL	27 U	27 U	23 U	29 U	10 U	14 U	12 U
SVOCs (UG/KG)							
1,2,4-TRICHLOROBENZENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW44DS	2WMW44DS (DUP)	2WMW45DS	2WMW46DS	2WMW47DS	3MW37S	3MW37S (DUP)
matrix	SO	SO	SO	SO	SO	SO	SO
nsample	2W-SU-44DS-04-99	2W-SU-44DS-04-99-D	2W-SU-45DS-00-99	2W-SU-46DS-04-99	2W-SU-47DS-02-99	3-SU-37S-02-99	3-SU-37S-02-99-D
depth (feet)	4 - 6	4 - 6	0 - 2	4 - 6	2 - 4	2 - 4	2 - 4
sample_date	05/16/99	05/16/99	05/16/99	05/17/99	05/17/99	05/19/99	05/19/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
1,2-DICHLOROBENZENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
1,3-DICHLOROBENZENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
1,4-DICHLOROBENZENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
1-METHYLNAPHTHALENE	70 U	69 U	61 U	70 U	39 U	59 U	43 U
2,4,5-TRICHLOROPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2,4,6-TRICHLOROPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2,4-DICHLOROPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2,4-DIMETHYLPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2,4-DINITROPHENOL	1400 U	1300 U	1200 U	1400 U	740 U	1100 U	830 U
2,4-DINITROTOLUENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2,6-DINITROTOLUENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2-CHLORONAPHTHALENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2-CHLOROPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2-METHYLNAPHTHALENE	70 U	69 U	61 U	70 U	39 U	59 U	43 U
2-METHYLPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2-NITROANILINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
2-NITROPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
3&4-METHYLPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
3,3'-DICHLOROBENZIDINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
3-NITROANILINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
4,6-DINITRO-2-METHYLPHENOL	1400 U	1300 U	1200 U	1400 U	740 U	1100 U	830 U
4-BROMOPHENYL PHENYL ETHER	340 U	330 U	290 U	340 U	180 U	280 U	210 U
4-CHLORO-3-METHYLPHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
4-CHLOROANILINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
4-CHLOROPHENYL PHENYL ETHER	340 U	330 U	290 U	340 U	180 U	280 U	210 U
4-NITROANILINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
4-NITROPHENOL	1400 U	1300 U	1200 U	1400 U	740 U	1100 U	830 U
ACENAPHTHENE	70 U	69 U	61 U	70 U	39 U	59 U	43 U
ACENAPHTHYLENE	140 U	140 U	120 U	140 U	80 U	120 U	88 U
ANTHRACENE	11 U	11 U	9.3 U	11 U	5.9 U	9 U	6.6 U
BENZO(A)ANTHRACENE	11 U	11 U	30	32	5.9 U	9 U	6.6 U
BENZO(A)PYRENE	11 U	11 U	52	74	5.9 U	9 U	6.6 U
BENZO(B)FLUORANTHENE	85	68	120	390	5.9 U	9 U	6.6 U
BENZO(G,H,I)PERYLENE	14 U	14 U	49	14 U	7.9 U	12 U	8.8 U
BENZO(K)FLUORANTHENE	11 U	11 U	9.3 U	11 U	5.9 U	9 U	6.6 U
BIS(2-CHLOROETHOXY)METHANE	340 U	330 U	290 U	340 U	180 U	280 U	210 U

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW44DS	2WMW44DS (DUP)	2WMW45DS	2WMW46DS	2WMW47DS	3MW37S	3MW37S (DUP)
matrix	SO	SO	SO	SO	SO	SO	SO
nsample	2W-SU-44DS-04-99	2W-SU-44DS-04-99-D	2W-SU-45DS-00-99	2W-SU-46DS-04-99	2W-SU-47DS-02-99	3-SU-37S-02-99	3-SU-37S-02-99-D
depth (feet)	4 - 6	4 - 6	0 - 2	4 - 6	2 - 4	2 - 4	2 - 4
sample_date	05/16/99	05/16/99	05/16/99	05/17/99	05/17/99	05/19/99	05/19/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
BIS(2-CHLOROETHYL)ETHER	340 U	330 U	290 U	340 U	180 U	280 U	210 U
BIS(2-CHLOROISOPROPYL) ETHER	340 U	330 U	290 U	340 U	180 U	280 U	210 U
BIS(2-ETHYLHEXYL)PHTHALATE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
BUTYLBENZYL PHTHALATE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
CARBAZOLE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
CHRYSENE	11 U	11 U	9.3 U	11 U	5.9 U	9 U	6.6 U
DI-N-BUTYL PHTHALATE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
DI-N-OCTYL PHTHALATE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
DIBENZO(A,H)ANTHRACENE	17 U	17 U	15 U	18 U	9.7 U	15 U	11 U
DIBENZOFURAN	340 U	330 U	290 U	340 U	180 U	280 U	210 U
DIETHYL PHTHALATE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
DIMETHYL PHTHALATE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
FLUORANTHENE	14 U	14 U	83	80	7.9 U	12 U	8.8 U
FLUORENE	14 U	14 U	12 U	14 U	7.9 U	12 U	8.8 U
HEXACHLOROBENZENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
HEXACHLOROBUTADIENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
HEXACHLOROCYCLOPENTADIENE	1400 U	1300 U	1200 U	1400 U	740 U	1100 U	830 U
HEXACHLOROETHANE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
INDENO(1,2,3-CD)PYRENE	11 U	11 U	9.3 U	11 U	5.9 U	9 U	6.6 U
ISOPHORONE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
N-NITROSO-DI-N-PROPYLAMINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
N-NITROSODIPHENYLAMINE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
NAPHTHALENE	70 U	69 U	61 U	70 U	39 U	59 U	43 U
NITROBENZENE	340 U	330 U	290 U	340 U	180 U	280 U	210 U
PENTACHLOROPHENOL	1400 U	1300 U	1200 U	1400 U	740 U	1100 U	830 U
PHENANTHRENE	11 U	11 U	9.3 U	11 U	5.9 U	91 U	6.6 U
PHENOL	340 U	330 U	290 U	340 U	180 U	280 U	210 U
PYRENE	14 U	14 U	120	95	7.9 U	12 U	8.8 U
Pesticides/PCBs (UG/KG)							
4,4'-DDD	6.6 U	6.6 U	40	10	3.5 U	5.7 U	4.2 U
4,4'-DDE	6.6 U	6.6 U	10	6.7 U	3.5 U	5.7 U	4.2 U
4,4'-DDT	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
ALDRIN	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
ALPHA-BHC	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
ALPHA-CHLORDANE	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
AROCLOR-1016	66 U	66 U	58 U	67 U	35 U	57 U	42 U

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW44DS	2WMW44DS (DUP)	2WMW45DS	2WMW46DS	2WMW47DS	3MW37S	3MW37S (DUP)
matrix	SO	SO	SO	SO	SO	SO	SO
nsample	2W-SU-44DS-04-99	2W-SU-44DS-04-99-D	2W-SU-45DS-00-99	2W-SU-46DS-04-99	2W-SU-47DS-02-99	3-SU-37S-02-99	3-SU-37S-02-99-D
depth (feet)	4 - 6	4 - 6	0 - 2	4 - 6	2 - 4	2 - 4	2 - 4
sample_date	05/16/99	05/16/99	05/16/99	05/17/99	05/17/99	05/19/99	05/19/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
AROCLOR-1221	130 U	130 U	120 U	130 U	70 U	110 U	83 U
AROCLOR-1232	66 U	66 U	58 U	67 U	35 U	57 U	42 U
AROCLOR-1242	66 U	66 U	58 U	67 U	35 U	57 U	42 U
AROCLOR-1248	66 U	66 U	58 U	67 U	35 U	57 U	42 U
AROCLOR-1254	66 U	66 U	58 U	67 U	35 U	57 U	42 U
AROCLOR-1260	66 U	66 U	58 U	67 U	35 U	57 U	42 U
BETA-BHC	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
DELTA-BHC	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
DIELDRIN	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
ENDOSULFAN I	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
ENDOSULFAN II	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
ENDOSULFAN SULFATE	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
ENDRIN	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
ENDRIN ALDEHYDE	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
ENDRIN KETONE	6.6 U	6.6 U	5.8 U	6.7 U	3.5 U	5.7 U	4.2 U
GAMMA-BHC (LINDANE)	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
GAMMA-CHLORDANE	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
HEPTACHLOR	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
HEPTACHLOR EPOXIDE	3.3 U	3.3 U	2.9 U	3.4 U	1.8 U	2.8 U	2.1 U
METHOXYCHLOR	33 U	33 U	29 U	34 U	18 U	28 U	21 U
TOXAPHENE	330 U	330 U	290 U	340 U	180 U	280 U	210 U
Inorganics (MG/KG)							
ALUMINUM	15300	16000	17400	19700	7930	12500	9660
ANTIMONY	1.6 UN	1.6 UN	1.4 UN	1.6 UN	0.9 UN	1.4 UN	1 UN
ARSENIC	8	10.4	15.1	11.7	3.5	2.9 B	1.1 U
BARIUM	46.4 B	46.5 B	48.9 B	58.8 B	56.8	71.5	54
BERYLLIUM	0.96 B	0.98 B	0.89 B	1.2 B	0.36 B	0.65 B	0.47 B
CADMIUM	0.37 B	0.32 B	0.55 B	0.67 B	0.11 U	0.17 U	0.12 U
CALCIUM	6790	4670	2070	4860	1460	1580 B	1070 B
CHROMIUM	36	38.5	43.2	56.5	17.7	13.7	10
COBALT	10.3 B	10.4 B	11.1 B	13.2 B	7.8 B	9.3 B	7.6 B
COPPER	12.4 *	14.1 *	16.9 *	26.5 *	19.1 *	31.6 *	22.8 *
IRON	26000	27000	30400	33000	12000	14700	10800
LEAD	9.1 *	9.5 *	11.8 *	25.3 *	3.2 *	3.6 *	2.5 *
MAGNESIUM	7660	8030	6480	9580	3670	4300	3200
MANGANESE	311	322	256	379	154	255	187

UNVALIDATED SOIL RESULTS
AREA A LANDFILL
NSB - NEW LONDON, GRONTON, CONNECTICUT

location	2WMW44DS	2WMW44DS (DUP)	2WMW45DS	2WMW46DS	2WMW47DS	3MW37S	3MW37S (DUP)
matrix	SO	SO	SO	SO	SO	SO	SO
nsample	2W-SU-44DS-04-99	2W-SU-44DS-04-99-D	2W-SU-45DS-00-99	2W-SU-46DS-04-99	2W-SU-47DS-02-99	3-SU-37S-02-99	3-SU-37S-02-99-D
depth (feet)	4 - 6	4 - 6	0 - 2	4 - 6	2 - 4	2 - 4	2 - 4
sample_date	05/16/99	05/16/99	05/16/99	05/17/99	05/17/99	05/19/99	05/19/99
validated	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
MERCURY	0.09 U	0.1 U	0.09 U	0.09 U	0.05 U	0.08 U	0.06 U
NICKEL	21.6 *	22.6 *	22.9 *	26.8 *	13.2 *	9.2 B*	7.2 B*
POTASSIUM	4420	4570	4160	5400	3130	2920	2090
SELENIUM	1.7 U	2 B	2.4	1.8 B	0.97 U	1.5 U	1.1 U
SILVER	0.32 U	0.32 U	0.28 U	0.32 U	0.18 U	0.27 U	0.2 U
SODIUM	8180	8640	954 B	10700	368 B	375 B	280 B
THALLIUM	1.4 U	1.4 U	1.2 U	1.4 U	0.76 U	1.2 U	0.85 U
VANADIUM	39.1	40.7	44.1	49.6	20.7	31.9	23.3
ZINC	59.6 *	65 *	58.9 *	85 *	28.9 *	39.4 *	29.9 *