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SOIL AND GROUNDWATER PRE-DESIGN INVESTIGATION COMPLETION REPORT AND FEASIBILITY STUDY ADDENDUM FOR LOWER SUBASE OPERABLE UNIT 4 (OU4)
VOLUME 2 OF 3 NSB NEW LONDON CT
1/1/2012
TETRA TECH

Lower Subase (Operable Unit 4) Soil and Groundwater Pre-Design Investigation Completion Report and Feasibility Study Addendum

Volume II of III – Appendices A through E

Naval Submarine Base New London

Groton, Connecticut

Naval Facilities Engineering Command Mid-Atlantic

Contract Number N62470-08-D-1001

Contract Task Orders WE57 and WE67

January 2012

121017/P

LOWER SUBASE (OPERABLE UNIT 4)
SOIL AND GROUNDWATER PRE-DESIGN INVESTIGATION COMPLETION REPORT AND FEASIBILITY STUDY ADDENDUM

VOLUME II - APPENDICES A THROUGH E

NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Mid-Atlantic
9742 Maryland Avenue
Norfolk, Virginia 23511-3095

Submitted by:
Tetra Tech
234 Mall Boulevard, Suite 260
King of Prussia, Pennsylvania 19406

CONTRACT NO. N62470-08-D-1001
CONTRACT TASK ORDERS WE57 AND WE67

JANUARY 2012

PREPARED UNDER THE DIRECTION OF:

COREY A. RICH, P.E.
PROJECT MANAGER
TETRA TECH
PITTSBURGH, PENNSYLVANIA

APPROVED FOR SUBMISSION BY:

JOHN J. TREPANOWSKI, P.E.
PROGRAM MANAGER
TETRA TECH
KING OF PRUSSIA, PENNSYLVANIA

APPENDIX A

SOIL PDI FIELD INFORMATION

A.1 FIELD TASK MODIFICATION REQUEST FORM

A.2 SOIL SAMPLING BORING LOGS

A.3 CHAIN OF CUSTODIES

A.4 EQUIPMENT CALIBRATION LOG

A.5 IDW INFORMATION

A.6 COPIES OF FIELD LOGBOOK

A.7 CATCH BASIN AND MANHOLE SURVEY LOG SHEETS

A.8 SURVEY INFORMATION

APPENDIX A.1

FIELD TASK MODIFICATION REQUEST FORM

TETRA TECH NUS
FIELD TASK MODIFICATION REQUEST FORM

NSB NLON	112G02630 CTO WE24 & WE57	090210-01
Project/Installation Name	CTO & Project Number	Task Mod. Number
SAP	ZONES 1 & 3	9.2.2010
Modification To (e.g. Work Plan)	Site/Sample Location	Date

Activity Description: UTILITY CLEARANCE FOR DPT SUB-SURFACE SOIL SAMPLING AT 3 LOCATIONS – 21.PDI.008, 23.PDI.003 AND 23.PDI.004

Reason for Change: UNDERGROUND UTILITIES WERE TOO NUMEROUS AND CLOSE TOGETHER TO ALLOW FOR SAFE CLEARANCE, THEREFORE A DIG PERMIT FOR THE 3 LOCATIONS WAS NOT ISSUED

Recommended Disposition: EITHER ELIMINATE THE SAMPLE LOCATIONS FROM THE SAP OR "OFF-SET" THE LOCATIONS TO A SUITABLE LOCATION WITH LESS UNDERGROUND UTILITIES WHERE THE UTILITIES CAN BE CLEARED AND A DIG PERMIT ISSUED

Field Operations Leader (Signature) — Date: 9.2.10

Approved Disposition:
SEE ATTACHED EMAILS ① C. RICH TO K. KECKLER (9/2/10) AND ② M. SCHULTZ TO K. KECKLER (9/2/10). NEW LOCATIONS WILL ATTEMPT TO BE FOUND FOR THE 3 SOIL BORINGS DURING THE SECOND MOBILIZATION. A SECOND MOBILIZATION BY THE UTILITY CLEARANCE CONTRACTOR WILL BE REQUIRED. ALL WORK WILL BE COORDINATED WITH NSB-NLON PUBLIC WORKS/FEAD.

Project/Task Order Manager (Signature) — Date: 9/3/10

Distribution:

Program/Project File – CTO WE57
Project/Task Order Manager – C. RICH
Field Operations Leader – K. SIMPSON
NAVY – J. GRAVETTE, D. CONANT
NSB-NLON – M. SCHULTZ, K. BRANIFF
EPA – K. KECKLER
CTDEP – M. LEWIS

Other:

A.1 Attach to FTMR CAR email

From: Rich, Corey
Sent: Thursday, September 02, 2010 4:08 PM
To: Keckler.Kymberlee@epamail.epa.gov
Cc: Warino, Charles; Gravette, James CIV NAVFAC; Simpson, Keith; Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Lewis, Mark; Schultz, Mark CIV NAVFAC MIDLANT, NWLN; Balsamo, Nina; Conant, Richard CIV NAVFAC MIDLANT; Johnston, Tom
Subject: RE: CTO WE57 - Lower Subase Soil Pre-Design Investigation - Clearance of Proposed Locations

Kymberlee,

My responses to your questions are provided below. Let me know if the team needs to discuss these issues further.

Regards,

Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040
Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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-----Original Message-----
From: Keckler.Kymberlee@epamail.epa.gov
[mailto:Keckler.Kymberlee@epamail.epa.gov]
Sent: Thursday, September 02, 2010 1:55 PM
To: Rich, Corey
Cc: Warino, Charles; Gravette, James CIV NAVFAC; Simpson, Keith; Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Lewis, Mark; Schultz, Mark CIV NAVFAC MIDLANT, NWLN; Balsamo, Nina; Conant, Richard CIV NAVFAC MIDLANT; Johnston, Tom
Subject: Re: CTO WE57 - Lower Subase Soil Pre-Design Investigation - Clearance of Proposed Locations

It makes sense to postpone additional utility clearance until we know more about the status of the locations that have been cleared (i.e., whether the borings can be completed at those cleared locations).
Z1-008 is in a tight location so it is understandable that there would be some difficulty clearing that specific location. However, Z1-008 is important because it is downgradient of the storage tanks, so it would be unfortunate if that general location would have to be given up. An alternate location, if necessary should be selected with that in mind.

Response: Additional efforts will be made to find an alternate location for Z1-PDI-008. Utility clearance issues will be considered during the selection process.

At Zone 3 the inability to locate borings in the areas proximate to those selected is not clear to me because the density of utilities per the plans does not seem to be that great. However, if it doesn't work we will have to do the best we can to find alternative locations.
Please try to keep both borings. It's not clear why two alternate locations

cannot be found. Please explain.

Response: The latest electronic mapping for utilities, provided by the Navy, was used to develop the figures in the final Work Plan. It was Tetra Tech's understanding that these were accurate; however, it was determined during the utility clearance process that these maps are not accurate because they are not kept current by the Navy. Additional hard copy maps are available at the facility that were used during the utility clearance process which showed numerous additional utilities. The additional utilities are associated with the recently constructed Pier 6. Tetra Tech will attempt to relocate both borings, but it is possible that two locations may not be able to be found.

Regarding the moving of borings should refusal be encountered, I presume that at each boring location an acceptable area has been delineated where borings could be made. Could you please clarify whether Tetra Tech has that flexibility or if they are limited to the exact point where the initial boring will be made?

Response: The utility clearance contractor marked known/found utilities within a 10-foot radius of the proposed location. The New London Public Works Department subsequently conducted an inspection of the area and moved the location to an appropriate spot that is clear of utilities. The approved location was then submitted for a second level review by others at Public Works. After passing the second level of review/approval, the location was cleared for digging. Tetra Tech is required to dig at the approved location. If we need to move, we will probably need to go through the process again. In some cases, there may only be a few approvable locations within the area covered by the 10-foot radius. If a new approval location cannot be found in that area, a new 10-foot radius area will need to be cleared.

Kymberlee Keckler, Chemical Engineer
Federal Facilities Superfund Section
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Mail Code: OSRR07-3
Boston, MA 02109-3912

Telephone: 617.918.1385
Facsimile: 617.918.0385
E-mail: keckler.kymberlee@epa.gov

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| From:      |
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  >-------------------------------------------------------------------------
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  |"Rich, Corey" <Corey.Rich@tetratech.com>

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| To:        |
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  >-------------------------------------------------------------------------
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  |Kymberlee Keckler/R1/USEPA/US@EPA, "Lewis, Mark" <Mark.Lewis@ct.gov>,
"Conant, Richard CIV NAVFAC MIDLANT" <richard.conant@navy.mil>,    |
  |"Gravette, James CIV NAVFAC" <james.gravette@navy.mil>

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| Cc:        |
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  |"Balsamo, Nina" <Nina.Balsamo@tetratech.com>, "Simpson, Keith"
<Keith.Simpson@tetratech.com>, "Warino, Charles"                          |
  |<Charles.Warino@tetratech.com>, "Schultz, Mark CIV NAVFAC MIDLANT, NWLN"
<mark.schultz1@navy.mil>, "Braniff, Kevin P CIV NAVFAC, NAVFAC  |
  |MIDLANT" <kevin.braniff@navy.mil>, "Johnston, Tom"
<Tom.Johnston@tetratech.com>

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  |09/02/2010 09:43 AM

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| Subject:   |
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  |CTO WE57 - Lower Subase Soil Pre-Design Investigation - Clearance of
Proposed Locations                                                        |
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Team,

Tetra Tech, with the help of the Navy and a utility clearance contractor, were able locate, clear utilities, and get Navy approval for Dig Permits at 56 of the 59 proposed soil borings in the Lower Subase.
This effort wrapped up yesterday (9/1/10) and required a 2-man utility clearance crew approximately 6 days (10 hrs per day) to complete.

The three locations that were unable to be cleared included Z1-PDI-008 in Zone 1 (Figure 10-4 in Work Plan) and Z3-PDI-003 and Z3-PDI-004 in Zone 3 (Figure 10-10 in Work Plan). Significant utility interferences prohibited Navy approval of these locations. For Zone 1, it is possible that location Z1-PDI-008 can be moved to the northeast (approx. 70 feet) to get a clearable location. For Zone 3, we may be able to get one location cleared approximately 30-40 feet south of proposed location Z3-PDI-004.

To get these locations moved/cleared will require another mobilization by the utility clearance contractor. It is also possible that during direct push sampling at the already cleared locations that we encounter refusal and not reach the desired depths. Typical procedure is to move several feet from the approved location and try again; however, at the Lower Subase if you move several feet you may encounter utility issues.
Therefore, we may need to complete the utility clearance process again for the

locations we encounter refusal. Tetra Tech will begin the soil boring efforts on 09/07/10. During this second phase of the field work, Tetra Tech will work with the Navy and utility clearance contractor to mark out two new locations (one each at Zone 1 and Zone 3) and conduct additional mark outs/utility clearance for locations where we encounter
refusal prior to reaching desired depths. Is this approach acceptable to the team? Do we need a conference call to discuss? Tetra Tech will issue a Field Task Modification Request (FTMR) to document any changes from the Work Plan.

Also, are the regulators and/or their contractors planning to be onsite during the soil boring activities?

Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040
Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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From: Schultz, Mark CIV NAVFAC MIDLANT, NWLN [mark.schultz1@navy.mil]
Sent: Thursday, September 02, 2010 4:07 PM
To: Keckler.Kymberlee@epamail.epa.gov
Cc: Warino, Charles; Gravette, James CIV NAVFAC; Rich, Corey; Simpson, Keith; Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Lewis, Mark; Balsamo, Nina; Conant, Richard CIV NAVFAC MIDLANT; Johnston, Tom
Subject: RE: CTO WE57 - Lower Subase Soil Pre-Design Investigation - Clearance of Proposed Locations

Hi Kymberlee: Here is my view on your questions:

Z1-008: is a tough area to clear. A lot of deep trenches & utilities that don't show up on GPR screens. If we need to explore here suggest test pits rather than augers or probes.
Zone 3: probe sites 003 & 004. I disapproved both of these sites because the utilities are too close together & the GPR evidence did not catch all the utilities we know are in this zone at the head of new Pier 6. The project managers for the Pier 6 work tell us that when they had this area open during construction, you couldn't step on a piece of this area without stepping on a utility line. Also the As-built drawings submitted for this work are terrible. We did get the 2 bores on the north side & the 1 on the south side of P-6. Moving the sites for 3 & 4 put us close aboard these probes so we were thinking we may want to consider going east across the street if you need more probes.

Refusals: Discussed w/ Keith & Kevin Braniff. I ask that they only drill at the "x". If we hit refusal, the project manager on site should contact me & we'll clear a new "x" if needed. Many sites will be easy to relocate, others may take some time on scene to find a 2nd clear dot.

If you or Corey have any suggestions on alternative sites for the 3 conflicted sites, please let me know & we'll check to see if we can clear them for utilities. If this new work requires GPR service I guess we'll need to discuss w/ James Gravette because I have no authority to modify the contract w/ TretraTech. Vr mark Schultz

-----Original Message-----
From: Keckler.Kymberlee@epamail.epa.gov
[mailto:Keckler.Kymberlee@epamail.epa.gov]
Sent: Thursday, September 02, 2010 1:55 PM
To: Rich, Corey
Cc: Warino, Charles; Gravette, James CIV NAVFAC; Simpson, Keith; Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Lewis, Mark; Schultz, Mark CIV NAVFAC MIDLANT, NWLN; Balsamo, Nina; Conant, Richard CIV NAVFAC MIDLANT; Johnston, Tom
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Kymberlee Keckler, Chemical Engineer
Federal Facilities Superfund Section
U.S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
Mail Code: OSRR07-3
Boston, MA 02109-3912

Telephone: 617.918.1385
Facsimile: 617.918.0385
E-mail: keckler.kymberlee@epa.gov

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| From: |
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|"Rich, Corey" <Corey.Rich@tetratech.com>

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| To: |
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|Kymberlee Keckler/R1/USEPA/US@EPA, "Lewis, Mark" <Mark.Lewis@ct.gov>,
"Conant, Richard CIV NAVFAC MIDLANT" <richard.conant@navy.mil>, |
|"Gravette, James CIV NAVFAC" <james.gravette@navy.mil>

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|"Balsamo, Nina" <Nina.Balsamo@tetratech.com>, "Simpson, Keith"
<Keith.Simpson@tetratech.com>, "Warino, Charles" |
|<Charles.Warino@tetratech.com>, "Schultz, Mark CIV NAVFAC MIDLANT, NWLN"
<mark.schultz1@navy.mil>, "Braniff, Kevin P CIV NAVFAC, NAVFAC |
|MIDLANT" <kevin.braniff@navy.mil>, "Johnston, Tom"
<Tom.Johnston@tetratech.com>

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|09/02/2010 09:43 AM

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|CTO WE57 - Lower Subase Soil Pre-Design Investigation - Clearance of
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Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040
Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

A.1 Attach to FTMR MS email

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APPENDIX A.2

SOIL SAMPLING BORING LOGS

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-001-0002
Sample Location: ZIPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1435 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN	SILTY F-C SAND, SUBROUNDED, WITH FINE GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-001-0204
Sample Location: ZIPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1440 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-L SAND, SUBROUNDED, WITH SOME ASH AND F GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-001-0810
Sample Location: ZIPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1445 Method: DPT Monitor Reading (ppm): 0.0	8.0-9.0	BROWN	F-C SAND SUBROUNDED, F. GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 OZ	X	

OBSERVATIONS / NOTES:

REFUSAL @ 9.0'
SAMPLE 8.0'-9.0'

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZIPDI - 001
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-0	0.25'					BROWN	GRASS SILTY LOAM		MOIST	0.0			
0.25-	1.00		3.5/5.0			DK BROWN	SILTY FINE SAND. SOME FINE GRAVEL		MOIST	0.0			
1.0 -	3.0					BROWN	F-C SAND, SUBROUNDED, FINE GRAVEL		MOIST	0.0	0.0	0.0	0.0
3.0-	3.5		3.0/4.0			BLACK	ASH LAYER. - F-M SAND SIZED GRAINS, NO ODOR		MOIST	0.0			
3.5-	9.0					BROWN	F-C SAND, SUBROUNDED, F GRAVEL		MOIST	0.0			
							REFUSAL @ 9.0'		4 ATTEMPTS				
							12 OLD CONCRETE TANK LINING.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1 PDI-SO-002-0002
Sample Location: Z1PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10	0.0-2.0	BROWN	SILTY F-C SAND, SOME ROCK FRAGS. MOIST
Time: 0925			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	1 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-002-0204
Sample Location: ZI PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 0930 Method: DPT Monitor Reading (ppm): 0.0	2.0'-4.0'	BROWN	F-C SAND, SOME GRAVEL & ROCK FRAGS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	1x8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
-	-

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZIPDI-002
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'	0.25'					BROWN	GRASS SILTY, SANDY, LOAM.			0.0	0.0	0.0	0.0
0.25'	- 3.0'		3.75/5.0'			BROWN	F-L SILTY SAND, SOME ROCK FRAGS		MOIST	0.0	↓	↓	↓
3.0'	- 6.0'		0.75/1.0'			BROWN	F-L SAND, SOME GRAVEL.			0.0	↓	↓	↓
							REFUSAL @ 6.0'		3 ATTEMPTS				
							METAL @ LAST ATTEMPT.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1 PDI-SO-003-002
Sample Location: Z1 PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1115 Method: DPT Monitor Reading (ppm): 0.0	0.5' - 2.0	BROWN	F-C SAND, SUBROUNDED, SOME F GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1PDI-SO-003-0406
Sample Location: Z1PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1118 Method: DPT Monitor Reading (ppm): 0.0	4.0-6.0	BROWN	F-C SAND, SUBROUNDED, SOME FINE GRAVEL & ROCK FRAGS, MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
-	-

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 21PDI-SO-003-0809
Sample Location: 21PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1120 Method: DPT Monitor Reading (ppm): 0.0	8.0 - 9.5	BROWN	F-C SAND, SUBROUNDED, SOME FINE GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 21PDI-SO-003-0910
Sample Location: 21PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1125 Method: DPT Monitor Reading (ppm): 0.0	9.5'-10.0'	BLACK	F-C SAND, SUBROUNDED WITH FINE GRAVEL. WET, PRODUCT PRESENT.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-003-1012
Sample Location: ZIPDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1130 Method: DPT Monitor Reading (ppm): 0.0	10.0 - 12.0'	BROWN	COARSE SAND AND GRAVEL. ROUNDED. WET.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 OZ	X	

OBSERVATIONS / NOTES:

DUPLICATE COLLECTED @ 0000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZIPDI-SO-003-1012-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-003-1214
Sample Location: ZIPDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1137 Method: DPT Monitor Reading (ppm): 0.0	12.0'-14.0'	BROWN	COARSE SAND AND GRAVEL. ROUNDED. WET.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZIPDI - 003
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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-	0.5						ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5-	2.0					BROWN	F-L SAND, SOME FINE GRAVEL		MOIST	0.0			
2.0-	3.0		3.5/5.0			DK BROWN	CLAYEY, SILTY, V. FINE SAND		MOIST	0.0			
3.0-	9.5					BROWN	F-L SAND, SOME FINE GRAVEL & ROCK FRAGS.		MOIST	0.0			
			3.0/5.0										
9.5-	10.0					BLACK	F-L SAND WITH GRAVEL. BLACK STAINING, PRODUCT.		WET @ 9.5'	0.0			
									PETRO ODOR PRODUCT ISTHICK & BLACK				
10.0-	15.0		4.0/5.0			BROWN	COARSE SAND AND GRAVEL.		SATURATED. PETRO ODOR	0.0			
							E.O.B 15.0'						

* When rock coring, enter rock brokeness.

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

Remarks: PRODUCT PRESENT @ WATER TABLE, NO PID READINGS ABOVE 0.0.

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-004-0002
Sample Location: ZIPDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1145 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN	SILTY, CLAYEY, F-L SAND. SOME FINE GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	8 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-004-0406
Sample Location: ZIPDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1150 Method: DPT Monitor Reading (ppm): 0.0	4.0-6.0	BROWN	F-C SAND, SUBROUNDED, WITH FEW GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-004-0809
Sample Location: ZIPDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1200 Method: DPT Monitor Reading (ppm):	8.0-9.0	BROWN	F-C SAND, SUBROUNDED, WITH F-M GRAVEL, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-004-0910
Sample Location: ZIPDI-004
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1206 Method: DPT Monitor Reading (ppm): 0.0	9.0-10.0	BROWN	F-C SAND, SUBROUNDED, WITH F-M GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 OZ	X	

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZIPDI-SO-004-0910-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZI PDI - 004
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-1.0							ASPHALT		DRY		0.0	0.0	0.0
1.0-1.5			3.5/5.0			BROWN	F-M SAND, SUBROUNDED, SOME F-M GRAVEL		DRY	0.0			
1.5-2.0						BROWN	SILTY, CLAYEY, F, FINE SAND		MOIST	0.0			
2.0-10.0			3.0/5.0			BROWN	F-L SAND, SUBROUNDED, WITH F-M GRAVEL.		MOIST	0.0			
							WET @ 9.75' - SHEEN		PETRO ODOR @ 9.5'	0.0			
							E.O.B. 10.0'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-005-0002
Sample Location: ZIPDI-005
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 1048 Method: DPT Monitor Reading (ppm): 0.0	1.0-2.0	BROWN	F-C SILTY SAND WITH GRAVEL, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-005-0305
Sample Location: ZIPDI-005
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 1055 Method: DPT Monitor Reading (ppm): 0.0	3.0-5.0	BROWN	F-C SILTY SAND WITH GRAVEL MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-005-0507
Sample Location: ZIPDI-005
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 1100 Method: DPT Monitor Reading (ppm): 0.1	5.0-6.5	DK BROWN	F-C SILTY SAND WITH GRAVEL. STRONG PETRO ODOR. LNAPL.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZIPDI-005
DATE: 9/14/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.25						DK GRAY	ASPHALT		DRY		0.0	0.0	0.0
0.25-1.0			4.0/5.0			GRAY	CONCRETE		DRY	0.0			
1.0'-5.0'						BROWN	F-C SILTY SAND WITH GRAVEL.		MOIST	0.0			
5.0'-6.5'			1.0/1.5			DK BROWN	F-C SILTY SAND WITH GRAVEL. PETRO ODOR		WATER @ 5.0'	0.1			
							LNAPL PRESENT						
							REFUSAL @ 6.5'						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1PDI-SO-006-0002
Sample Location: Z1PDI-006
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1355 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN WITH BLACK STAINING	F-C SAND, F GRAVEL, MOIST, BLACK STAINING. PETRO ODOR

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1PDI-SO-006-0204
Sample Location: Z1PDI-006
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1357 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-L SAND SUBROUNDED, F. GRAVEL & ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-006-0810
Sample Location: ZIPDI-006
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1402 Method: DPT Monitor Reading (ppm): 0.0	8.0-9.5	BROWN	FINE SAND, SUBROUNDED, FINE GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech·NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZIPDI - 006
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.25			3.0/5.0			BROWN	GRASS, SILTY LOAM		MOIST	0.0	0.0	0.0	0.0
0.25-1.5						BLACK BROWN	FINE SAND, WITH SOME F GRAVEL. BLACK STAINING		PETRO ODOR, MOIST	0.0			
1.5-5.5						BROWN	F-C SAND, SUBROUNDED, F. GRAVEL & ROCK FRAGS.		MOIST	0.0			
5.5-9.5			3.0/4.5			BROWN	F-C SAND, SUBROUNDED, F. GRAVEL.		MOIST	0.0			
							GRANITIC BEDROCK @						
							9.5' BGS E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1PDI-SO-007-0405
Sample Location: Z1PDI-007
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/2/10 Time: 0815 Method: DPT Monitor Reading (ppm): 0.0	4.0-5.0	BLACK/BROWN	F-C SAND SUBROUNDED, SOME GLASS, F GRAVEL, & ASH MATERIAL. MOIST WET @ 5.0'

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZAPDI - 007
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOYLE

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**
0.0-0.5							ASPHALT				0.0	0.0	0.0
0.5-1.0			3.5/5.0'				CONCRETE			0.0	↓	↓	↓
1.0-2.0							WOOD			0.0	↓	↓	↓
2.0-5.0							F-C SAND, SUBROUNDED SORTED GLASS, F GRAVEL, BLACK			0.0	↓	↓	↓
							STAINING, ASH MATERIAL		WET @ 5.0'				
							REFUSAL @ 5.0'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-008-0002
Sample Location: ZIPDI-008
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 0920 Method: DPT Monitor Reading (ppm): 0.0	0.25 – 2.0	BROWN	F-C SILTY SAND WITH GRAVEL AND ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-008-0405
Sample Location: ZIPDI - 008
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 0925 Method: DPT Monitor Reading (ppm): 0.0	4.0-5.0	BROWN	F-C SAND WITH SOME GRAVEL TRACE GRASS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, PAH	8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-008-0910
Sample Location: ZIPDI-008
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 0930 Method: DPT Monitor Reading (ppm): 0.0	9.0-10.0	GRAY	F-C SAND WITH SOME GRAVEL. PETRO ODOR, WET.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZI PDI-008
DATE: 9/14/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.25							ASPHALT				0.0	0.0	0.0
0.25-1.5			4.0/5.0			BROWN	F-C SILTY SAND WITH ROCK FRAGS		MOIST	0.0			
1.5-5.0						BROWN	F-C SAND WITH SOME GRAVEL, TRACE GLASS		MOIST	0.0			
							WET @ 5.0'						
5.0-9.0						BROWN	F-C SAND WITH SOME GRAVEL		WET	0.0			
9.0-10.0			3.75/5.0			GRAY	F-C SAND WITH SOME GRAVEL		WET	0.0			
							PETRO ODOR						
							10.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-009-0002
Sample Location: ZIPDI-009
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1304 Method: DPT Monitor Reading (ppm): 0.0	0.5 - 2.0	LT BROWN	F-C SAND, SUBROUNDED, WITH F-M GRAVEL & ROCK FRAGS

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: EIPDI-SO-009-0406
Sample Location: EIPDI-009
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1308 Method: DPT Monitor Reading (ppm): 0.0	4.0-6.0	LT BROWN	F-C SAND, SUBROUNDED, WITH F-M GRAVEL AND ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, PAH	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-009-0809
Sample Location: ZIPDI-009
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1312 Method: DPT Monitor Reading (ppm): 0.0	8.0 - 9.0	LT BROWN	F-C SAND, SUBROUNDED, WITH F-M GRAVEL & ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: E1PDI-009
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Joyce

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'	0.5'		3.5/5.0'				ASPHALT			0.1	0.0	0.0	0.0
0.5-	10.0					LT BROWN	F-C SAND, SUBROUNDED, WITH F-M GRAVEL & ROCK FRAGS		DRY	0.0			
			2.5/4.0'				WATER @ 9.0'		PETRO ODOR @ 9.0'	0.0			
							E.O.B 9.0'						

* 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): 0.0

Remarks:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-010-0002
Sample Location: ZIPDI-010
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10	0.25'-2.0'	BROWN	F-C SAND (SUBROUNDED, WITH F-M GRAVEL & ROCK FRAGS. MOIST
Time: 1322			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-010-0405
Sample Location: ZIPDI-010
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1326 Method: DPT Monitor Reading (ppm): 28.0	4.0-4.75	BROWN/BLACK	F-C SAND, SUBROUNDED, WITH F-M GRAVEL. PRODUCT/WATER @ 4.75'

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z1 PDI-010
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOYCE

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'-	0.25'					GRAY	ASPHALT		DRY	0.1	0.0	0.0	0.0
0.25-	4.50'					BROWN	F-C SAND, WITH F-M GRAVEL & ROCK FRAGS.		MOIST	0.0			
			3.5/5.0										
4.50'-	4.75'					GRAY	CONCRETE			0.0			
4.75-	5.00'					BLACK	F-C SAND, WITH F-M GRAVEL. BLACK STAINING						
							PRODUCT PRESENT		WATER/PRODUCT @ 4.75'	22.5			
							E.O.B 5.0'						

* When rock coring, enter rock brokeness.

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

Remarks: PRODUCT PRESENT @ WATER TABLE.

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 21PDI-SO-011-0002
Sample Location: 21 PDI 011
Sampled By: C. WARING
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 0840 Method: DPT Monitor Reading (ppm): 0.0	1.0'-2.0'	LT BROWN 1.0'-1.5' DK BROWN 1.5-2.0	F-M SAND, SOME ANGULAR ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs	PAH - 4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDE-SO-017-0405
Sample Location: ZIPDI-011
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 0845 Method: DPT Monitor Reading (ppm): 0.0	4.0'-5.0'	DK BROWN	F-L SAND, SUBROUNDED, WITH FINE GRAVEL & ROCK FRAGS - MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZI- PDI 011
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
	0-1.0					DK GRAY	ASPHALT				0.0	0.0	0.0
	1.0-2.0		3.0/5.0			LT BROWN	F-M SAND WITH ROCK FRAGMENTS.		DARKER DISCOLORATION AT 1.5'.	6.0			
							REFUSAL ON						
							CONCRETE @ 2.0' BGS		1ST ATTEMPT	0.0			
	2.0-6.0		1.0/1.0			BROWN	F-C SAND, SUBROUNDED WITH F GRAVEL & ROCK FRAGS		REFUSAL @ 4.0' 2ND ATTEMPT	0.0			
							WATER @ 5.0' PETRO ODOR		BLACK STAINING	4.5			
							E.O.B 6.0'		3RD ATTEMPT				

* When rock coring, enter rock brokeness.

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

Remarks: 3 ATTEMPTS REFUSAL @ 2.0' 1ST, 4.0' 2nd

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z1-PDI-SO-012-0002
Sample Location: Z1-PDI-012
Sampled By: C. WARLIND
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0802 Method: DPT Monitor Reading (ppm): 0.0	1.5'-2.0'	LT BROWN	F-C SAND, SOME FINE GRAVEL SUB ROUNDED.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 21-PDI-SO-012-0204
Sample Location: 21-PDI-012
Sampled By: C. WARNO
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0806 Method: DPT Monitor Reading (ppm): 0.0	2.0'-4.0'	LT BROWN	F-C SAND, SOME F GRAVEL, SUBROUNDED.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZI-PDI 012
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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"-1.0'					GRAY	ASPHALT		DRY		0.0	0.0	0.0
	1.0-1.5'		3.0/4.0			LT GRAY	GRAVEL SUB BASE		DRY	0.0			
	1.5-4.0					LT BROWN	F-C SAND, SOME FINE GRAVELS - SUB ROUNDED		MOIST	0.0			
							E.O.B @ 4.0						

* When rock coring, enter rock brokeness.

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

Remarks: 0.4 DOWNHOLE PID.

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-013-0002
Sample Location: ZIPDI-013
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1420 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	DK BROWN	SILTY FINE SAND WITH SOME FINE GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-013-0204
Sample Location: ZIPDI-013
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1425 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN/BLACK	FINE SAND, SUBROUNDED, SOME BLACK ASH TYPE MATERIAL, SOME F GRAVEL.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	2 x 4oz	X	

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZIPDI-SO-013-0204-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: EIPDI-013
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE DOYLE

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-	0.25					BROWN	GRASS SILTY LOAM		DRY	0.0	0.0	0.0	0.0
0.25-	2.0		3.0/4.0			DK BROWN	SILTY FINE SAND. SOME FINE GRAVEL		MOIST	0.0	↓	↓	↓
2.0-	2.5					BLACK	ASH? LAYER. F-M SAND SIZE PARTICLES. NO ODOR.		MOIST	0.0	↓	↓	↓
2.5-	4.0					BROWN	F-C SAND, SUBROUNDED, SOME F. GRAVEL		MOIST	0.0	↓	↓	↓
							4.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-60-014-0002
Sample Location: ZIPDI-014
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0720 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN	SILTY, F-C SAND WITH GRAVEL & ROCK FRAGS. SOME ASH/CINDERS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SD-014-0204
Sample Location: ZIPDI-014
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0725 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN/BLACK	F-L SAND WITH GRAVEL, ROCK FRAGS, AND ASH/CINDERS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-014-0608
Sample Location: ZIPDI-014
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0730 Method: DPT Monitor Reading (ppm): 0.0	6.0-8.0	BROWN	F-L SAND WITH ROCK FRAGMENTS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZIPDI-SO-014-0810
Sample Location: ZIPDI-014
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0777 Method: DPT Monitor Reading (ppm): 0.0	8.0-9.5	BROWN	F-L SAND WITH ROCK FRAGS AND GRAVEL, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZIPDI-014
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-	0.5'					DK Brown	GRASS SILTY SANDY LOAM		MOIST	0.0	0.0	0.0	0.0
0.5-	5.0'		3.75/5.0			Brown	F-C SAND, WITH GRAVEL, AND ROCK FRAGS.		MOIST	0.0	↓	↓	↓
							ASH/CINDERS FROM 2.0'-2.25'			0.0			
5.0-	9.5		3.0/5.0			Brown	F-C SAND WITH ROCK FRAGS.		MOIST	0.0			
9.5-	10.0					Brown	COARSE SAND WITH [redacted] GRAVEL.		WET @ 9.5	0.0			
							10.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-90-001-002
Sample Location: ZZPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/00 Time: 0954 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN	SILTY F-C SAND WITH ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z2PDI-SO-001-0204
Sample Location: Z2 PDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 0956 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	SILTY F-L SAND WITH ROOT FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-SO-001-0506
Sample Location: ZZPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 1000 Method: DPT Monitor Reading (ppm): 0.0	5.0-6.5	BROWN	M-C SAND WITH F. GRAVEL SUBANGULAR. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZZPDI-001
DATE: 9/12/10
GEOLOGIST: Charlie Warino
DRILLER: Mike

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-	1.0					Brown	GRASS SILTY, SANDY LOAM		MOIST		0.0	0.0	0.0
1.0-	3.0		3.75/5.0			Brown	SILTY F-C SAND WITH ROCK FRAGS		MOIST	0.0			
3.0-	7.0		1.75/2.0			Brown	M-C SAND WITH FINE GRAVEL, SUBANGULAR		MOIST	0.0			
							WET @ 6.5'						
							7.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-SO-002-0204
Sample Location: ZZPDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 0938 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-L SILTY SAND WITH GRAVEL & ROCK FRAGS, TRACE BRICK.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD	2 x 8oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZZPDI - 002
DATE: 9/12/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Soyle

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**
0.0-0.5						GRAY	ASPHALT			0.3	0.0	0.0	0.0
0.5-4.0			2.75/4.0			BROWN	F-C SILTY SAND, WITH GRAVEL, ROCK FRAGS + TRACE TERRIGE		MOIST	0.0			
							4.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z3PDI-SO-001-0002
Sample Location: Z3PDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 11:18 Method: DPT Monitor Reading (ppm): 0.0	1.0-2.0	BROWN	F-C SAND WITH GRAVEL FILL. BRICK FRAGS, DRY

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 x 8 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z3PDI-SO-001-0204
Sample Location: Z3PDI-001
Sampled By: K Simpson
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 1124 Method: DPT Monitor Reading (ppm): 0.0	2.0 - 4.0	BROWN	F-C SAND WITH GRAVEL FILL. BLACK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZSPDI-001
DATE: 9/14/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOTLO

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**
0.0-0.5						DK GRY	ASPHALT				0.0	0.0	0.0
0.5-1.0						GRY	CONCRETE			0.0			
1.0-2.0			3.5/4.0			BROWN	F-C SAND WITH GRAVEL FILL. BRICK.		DRY	0.0			
2.0-4.0							SAA		MOIST	0.0			
							4.0 EOB.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 23PDI-SO-002-0002
Sample Location: 23PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 0852 Method: DPT Monitor Reading (ppm): 0.0	0.75-2.0	BROWN	F-C SILTY SAND WITH GRANITE FRAGS AND CONCRETE, DRY.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 x 8 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z3PDI-SO-002-0406
Sample Location: Z3PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 0900 Method: DPT Monitor Reading (ppm) 0.0	4.0-5.5'	BROWN	F-C SILTY SAND WITH GRAVEL AND ROCK FRAGS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
(W) SPLP LEAD	2 x 8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z3PDI-002
DATE: 9/12/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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-	0.75					GRAY	ASPHALT		DRY	0.2	0.0	0.0	0.2
0.75'-	2.0'		3.5/5.0			BROWN	F-C SILTY SAND, ABUNDANT GRANITE FRAGS, CONCRETE.		DRY	0.0			
2.0-	6.0'		1.0/1.0			BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS		MOIST	0.0			
							WET @ 5.5'						
							6.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks: 0.2 PID DOWN HOLE

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSTDI-SO-003-0002
Sample Location: ZSTDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 1020 Method: DPT Monitor Reading (ppm): 0.0	1.0 or 2.0	BROWN	F-C SILTY SAND WITH GRAVEL, ROCK FRAGS, AND BRICK DEBRIS. DRY

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 X 8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z3PDI-SO-003-0204
Sample Location: Z3PDI-003
Sampled By: K. Simpson
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 1027 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	Brown	FC SILTY SAND WITH GRAVEL, ROCK FRAGS, AND BRICK DEBRIS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z3PDI-003
DATE: 9/14/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOYLE

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-	1.0					GRY	ASPHALT			0.0	0.0	0.0	0.0
1.0-	4.0		3.0/4.0			BROWN	F-L SILTY SAND WITH GRAVEL, ROCK FRAGS, AND BRICK DEBRIS			0.0	↓	↓	↓
							4.0 E10.B				↓	↓	↓

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z37DI-SO-005-0002
Sample Location: Z37DI-005
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/12/10 Time: 0840 Method: DPT Monitor Reading (ppm): 0.0	0.75'-2.0'	BROWN GRAY	F-C SAND WITH GRAVEL & ROCK FRAGS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z3PDI- 005
DATE: 9/12/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Joyce

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**
0.0-0.75						GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.75-2.0			1.75/2.0			GRAY BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS.		MOIST	0.0	↓	↓	↓
							REFUSAL @ 2.0'						
							GRANITE IN END OF SAMPLER.						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI - SO-001-0002
Sample Location: Z4PDI - 001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0810 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	DK BROWN	SILTY F-C SAND WITH GRAVEL AND ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, LEAD, SPLP LEAD	2 x 8 oz	X	
	4 x 8 oz TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000
FOR LEAD & SPLP LEAD ONLY
2 x 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z4PDI-SO-001-0002-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-001-0405
Sample Location: Z4PDI-001
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0820 Method: DPT Monitor Reading (ppm): 0.0	4.0-5.5	DK BROWN / BLACK	F-C SAND WITH GRAVEL & ROCK FRAGS, BLACK STAINING. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH, LEAD, SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4PDI-001
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.25						GRAY	ASPHALT		DRY	0.0	0.0	0.1	0.0
0.25-1.5			4.25'	6.0'		DK BROWN	BLACK SILTY F-C SAND, WITH GRAVEL, BLACK STAINING		MOIST	0.0			
1.5-5.5						BROWN BLACK	F-C SAND WITH GRAVEL AND ROCK FRAGS.		MOIST	0.0			
							BLACK STAINING 5.0-5.5' WATER @ 5.5'						
							G.D E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks: DOWN HOLE PID 0.1

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-002-0002
Sample Location: Z4PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

Date: 9/10/10
Time: 1005
Method: DPT
Monitor Reading (ppm): 0.0

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
0.25'-2.0'	LT BROWN /TAN	F-L SAND, SOME FINE GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-002-0204
Sample Location: Z4PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1007 Method: DPT Monitor Reading (ppm): 0.0	2.0 - 4.0	BROWN	F-C SAND, SOME F GRAVEL MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-002-0405
Sample Location: Z4 PDI- 002
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1010 Method: DPT Monitor Reading (ppm): 0.0	4.0-5.0	BROWN	F-L SAND, SOME F GRAVEL. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4PDI-002
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Joyce

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'	0.25'					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.25'	2.0'		3.75/5.0'			TAN	F-C SAND, SOME FINE GRAVEL.		MOIST	0.0	↓	↓	↓
2.0	7.0					BROWN	F-C SAND, SUB ROUNDED. SOME FINE GRAVEL.		MOIST TO 5.0'	0.0	↓	↓	↓
							WET @ 5.0'						
							5.0 E.O.B.						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-003-0002
Sample Location: Z4PDI-003
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 0725 Method: DPT Monitor Reading (ppm): 0.0	0.25' - 2.0'	DK BROWN	FR SAND, WITH GRAVEL & ROOT FIBERS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD	2 oz RATAADIN	X	
CHROMIUM, ORP	8 oz TEFLAM.	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZHPDI - 003
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-	0.25'					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.25-	2.0		1.5/2.0			DK BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS.		MOIST	0.0			
							2.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-004-0002
Sample Location: Z4PDI-004
Sampled By: K SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9 Jul 10 Time: 0810 Method: DPT Monitor Reading (ppm): 0.0	(3) 1.0-2.0	BROWN	F-L SAND, SOME GRAVEL. DRY

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4PDI-004
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-	1.0'					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
1.0'-	2.0'		1.75/2.0			BROWN	FINE SAND, SOME GRAVEL		DRY	0.0	↓	↓	↓
							2.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-005-0002
Sample Location: Z4PDI-005
Sampled By: K. Simpson
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 0755 Method: DPT Monitor Reading (ppm): 0.0	0.5'-2.0'	Brown	Silty FL sand, some Rock Frags, moist.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZHPDI-005
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: Mike

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'-0.5'						GRAY	ASPHALT			0.0	0.0	0.0	0.0
0.5-2.0'			1.25/2.0'			BROWN	SILTY F-C SAND, SOME ROCK FRAGS.		MOIST	0.0	↓	↓	↓
							2.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4 PDI - SO-006-0002
Sample Location: Z4 PDI - 006
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0935 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	DK BROWN/BLACK	F-L SAND SOME GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 24PDI-SO-006-0406
Sample Location: 24PDI-006
Sampled By: K SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0945 Method: DPT Monitor Reading (ppm): 0.0	4.0-6.0	BROWN	F-C SAND SOME ROCK FRAG MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, CHROMIUM SPECIATION	3 x 8 oz	X	
ORP			
	4 x 8 oz - KATAHDIN		
	2 x 8 oz - TEST AM.		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000
SPLP LEAD, CHROMIUM SPECIATION & ORP
2x8 oz 1x8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	24PDI-SO-006-0406

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4 PDI - 006
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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-	0.25					GRAY	ASPHALT			0.0	0.0	0.2	0.0
0.25-	1.5		3.25/5.0'			DK BROWN/BLACK	F-C SAND, SOME GRAVEL.		MOIST	0.0			
1.5-	6.0		1.0'/1.0'			BROWN	F-C SAND, SOME ROCK FRAGS @ 3.0'-3.25'		MOIST. WET @ 6.0'	0.0			
							6.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks: 0.2 DOWNHOLE PID

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-007-0002
Sample Location: Z4PDI-007
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0831 Method: DPT Monitor Reading (ppm): 0.0	0.5'-2.0'	BROWN	F-L SILTY SAND WITH GRAVEL, ROCK FRAGS, AND BRICK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD & SPLP LEAD	2 x 8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-007-0204
Sample Location: Z4PDI-007
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 0840 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-L SILTY SAND WITH GRAVEL, ROCK FRAGS, AND BRICK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP ~~[illegible]~~ LEAD	2 x 8oz	X	
	TOTAL 4 x 8oz		

OBSERVATIONS / NOTES:

MS/MSD ON SPLP LEAD
2 x 8oz

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4PDI-007
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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-	0.5					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5-	4.0		3.0/4.0'			LT BROWN	F-C SILTY SAND WITH GRAVEL ROCK FRAGS, ? BRICK FRAGS		MOIST	0.0	↓	↓	↓
							4.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-008-0002
Sample Location: Z4PDI-008
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 0845 Method: DPT Monitor Reading (ppm): 0.0	1.0-2.0	BROWN	F-C SAND, SOME SILT, GRAVEL, AND ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-008-0204
Sample Location: Z4PDI-008
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/4/10 Time: 0855 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-C SAND WITH SILTY GRAVEL, & ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD	2 x 8oz KATAHDIN	X	
CHROMIUM, ORP	1 x 8oz TEST AM.	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4PDI-008
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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 -	1.0'		3.0/4.0			GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
1.0 -	4.0'					BROWN	F-C SAND, SOME SILT, GRAVEL, AND ROCK FRAGS		MOIST	0.0			
							4.0 E.O.B.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z4PDI-SO-009-0002
Sample Location: Z4PDI-009
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 0840 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0	BROWN/ BLACK	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z4PDI-009
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Joyce

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-	0.5'		1.50'/2.0'			Gray	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5'-	2.0'					Black/ Brown	F-C SILTY SAND, WITH GRAVEL & ROCK FRAGS		MOIST	0.0	↓	↓	↓
							2.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI 001.0002
Sample Location: ZSPDI 001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9.9.10 Time: 1055 Method: DPT Monitor Reading (ppm): 0.0	0 - 2'	BRN GRAY	SILT, SAND F-C SOME GRAVEL ≤ 1/2" DRY

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI-SO-001-0204
Sample Location: ZSPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1100 Method: DPT Monitor Reading (ppm): 4.6	2.0-4.0	BROWN	F-C SAND, GRAVEL, ROCK FRAGS, SOME SILT. PETRO ODOR

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

DUPLICATE

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZSPDI-SO-001-0204-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z5PDI001
DATE: 9.9.10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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-	0.25					BROWN	GRASS SILTY LOAM		DRY	0.0	0.0	0.4	0.0
0.25-	4.0		3.0/4.0'			BROWN	F-C SAND, SUBROUNDED, WITH GRAVEL, CONCRETE & ROCK FRAG		MOIST	4.6	↓	↓	↓
							SOME SILT.		PETRO ODOR				
							E10.B 4.0'						

* When rock coring, enter rock brokeness.

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

Remarks: PID DOWN HOLE 0.4

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI-SO-002-0002
Sample Location: ZSP1-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1152 Method: DPT Monitor Reading (ppm): 0.0	0.75-2.00	BROWN/ GRAY	F-C SAND, GRAVEL, ROCK FRAGS, DRY-MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4oz	X	

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZSPDI-SO-002-0002

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSDI-SO-002-0204
Sample Location: ZSDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7/9/10 Time: 1200 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN/ GRAY	FL SAND, GRAVEL, ROCK FRAGS MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZSPDI-002
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOLES

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-	0.75					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.75-	4.0'		3.25/4.0'			BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS.		DRY - MOIST	0.0			
						GRAY							
							4.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks: 0.2 DOWN HOLE PID

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI-SO-003-0002
Sample Location: ZSPDI - 003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1115 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0	BROWN/GRAY	FINE SAND WITH GRAVEL AND ROCK FRAGS, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z5PDI-SO-003-0204
Sample Location: Z5PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

Date: 9/9/10
Time: 1120
Method: DPT
Monitor Reading (ppm): 0.0

Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
2.0-4.0	BROWN GRAY	F-C SAND WITH GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZSPDI-003
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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 -	0.5					BLACK	ASPHALT		DRY	0.0	0.0	0.4	0.0
0.5 -	4.0		3.0/4.0'			BROWN GRAY	F-C SAND, SUBROUNDED, WITH GRAVEL & ROCK FRAGS.		MOIST	0.0			
							4.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks: 0.4 PID DOWN HOLE

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDE-SO-0001-0002
Sample Location: ZSPDT-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1135 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0'	BROWN	F-C SAND, GRAVEL, AND ROCK FRAGS, CONCRETE CHUNKS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz		

OBSERVATIONS / NOTES:

MS/MSD - 8 oz

MAP:

Circle if Applicable:

MS/MSD Y/N

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI-SD-004-0204
Sample Location: ZSPDI-004
Sampled By: K SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1140 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-C SAND, GRAVEL, ROCK FRAGS, CONCRETE CHUNKS. PETRO ODOR

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZSPDI-SD-004-0204

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZSPDI-004
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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-	0.5					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5-	4.0		2.75/4.0'			BROWN	F-C SAND, GRAVEL, ROCK FRAGS, CONCRETE.		MOIST PETRO ODOR	0.4			
							4.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks: 0.2 DOWN HOLE PID

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI-SD-005-0002
Sample Location: ZSPDI-005
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1252 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN	SILTY F-C SAND WITH GRAVEL, ROCK FRAGS, CONCRETE FRAGS MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MS/MSD 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZSPDI-SO-005-0204
Sample Location: ZSPDI-005
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1300 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	SILTY F-C SAND WITH GRAVEL, ROCK FRAGS, CONCRETE FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: 25PDI-005
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE BOYLE

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**
0.0-6.0						Brown	F-C SILTY SAND WITH GRAVEL ROCK FRAGS & CONCRETE FRAGS		MOIST	0.0	0.0	0.0	0.0
			3.5/5.0						WET @ 5.5'	0.0			
			1.0/1.0										
							E.O.B - 6.0'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZGPDI-SD-001-0002
Sample Location: ZGPDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 0950 Method: DPT Monitor Reading (ppm): 0.0	1.0-2.0	BROWN	FINE SAND, WITH GRAVEL, ROCK FRAGS, AND CONCRETE. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4oz	X	

OBSERVATIONS / NOTES:

MS/MSD - 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
YES	—	

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZGPDI-SO-001-0405
Sample Location: ZGPDI-B01
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 0955 Method: DPT Monitor Reading (ppm): 0.0	4.0'-5.5'	BROWN	F-C SAND, WITH GRAVEL, ROCK FRAGS, AND CONCRETE. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO ~~YES~~	ZGPDI-SO-001-0405-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZG PDF-001
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE BOYLE

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 - 0.5						GRAY	ASPHALT			0.0	0.0	0.0	0.0
0.5 - 1.0			3.5/5.0'			GRAY	GRAVEL SUB-BASE.		DRY	0.0			
1.0 - 6.0						BROWN	F-C SAND, SUBROUNDED, WITH GRAVEL, ROCK FRAGS, AND CONCRETE		MOIST	0.0			
			1.0/1.0				WET @ 5.5'						
							6.0 E.O.B						

* 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: _____

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZG7DI-SO-002-0002
Sample Location: ZG7DI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 0930 Method: DPT Monitor Reading (ppm): 0.0	1.25'- 2.0'	BROWN	F-C SAND, F-M GRAVEL & ROCK FRAGS, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

~~[illegible]~~ NO DUP

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	~~[illegible]~~ NO

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z6PDI-SO-002-0405
Sample Location: Z6PDI - 002
Sampled By: K. Simpson
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 0935 Method: DPT Monitor Reading (ppm): 0.0	4.0 - 5.5	BROWN	F-C SAND, F-M GRAVEL AND ROCK FRAGS, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MS/MSD - 8 oz

MAP:

Circle if Applicable:

MS/MSD X

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

Page 1 of 1

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZGPDI-002
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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	0.75					GRAY	ASPHALT				0.0	0.5	0.0
0.75	1.25		3.5/5.0			DK GRAY	GRAVEL / CINDER SUB BASE.		MOIST	0.0			
1.25	5.0		1			BROWN	F-C SAND, SUBROUNDED F-M GRAVEL & ROCK FRAGS		MOIST	1.2			
			0.7/1.0				WET @ 5.5'						
							E.O.B. @ 6.0'						

* When rock coring, enter rock brokeness.

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

Remarks: DOWN HOLE PID 1.5

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZG6PDI-SO-003-0002
Sample Location: ZG6PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 1255 Method: DPT Monitor Reading (ppm): 0.0	1.0-2.0	BROWN	F-C SAND WITH SOME GRAVEL, TRACE ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z6PDI-SD-003-0304
Sample Location: Z6PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/14/10 Time: 1300 Method: DPT Monitor Reading (ppm): 0.0	3.0-4.0	BROWN	F-C SAND WITH SOME GRAVEL, TRACE ROOT FRAGS, MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Z6 PDI 003

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z6PDI-003
DATE: 9/14/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.75						GRAY	ASPHALT				0.0	0.0	0.0
0.75-1.0			4.0/5.0			BLACK	GRAVEL / ASH CINDER SUB BASE.		DRY	0.0			
1.0-5.0						BROWN	F-C SAND WITH SOME GRAVEL. TRACE ROCK FRAGS.		MOIST	0.0			
							WET @ 4.0'						
							5.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZLOPDI-SD-004-0002
Sample Location: ZLPDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1230 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0'	BROWN	SILTY F-C SAND, WITH GRAVEL, ROCK FRAGS, AND BRICK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z6PDI-SD-004-0204
Sample Location: Z6PDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/9/10 Time: 1235 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	SILTY F-C SAND, GRAVEL, ROCK FRAGS, BRICK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ETPH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: 36PDI-004
DATE: 9/9/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-4.0						BROWN	SILTY F-C SAND, SOME ROCK FRAGS, BRICK FRAGS &		MOIST	0.0	0.0	0.0	0.0
			3.0'/4.0'				FINE GRAVEL.		MOIST				
							E.O.B @ 4.0'						

* 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): 0.0

Remarks:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-001-0002
Sample Location: Z7PDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1430 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	LT BROWN	F-L SILTY SAND WITH GRAVEL & ROCK FRAGS. ~~MOIST~~. DRY. (LW)

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLPLEAD, SPLP ANTIMONY, PAH	2 x 8 oz KATAHDIN	X	
CHROMIUM, ORP	1 x 8 oz TEST AM.	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z9PDI-SO-001-0204
Sample Location: Z9PDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7/11/10 Time: 1435 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY	2 x 8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-001-0607
Sample Location: Z7PDI-001
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1437 Method: DPT Monitor Reading (ppm): 0.0	6.0-7.0	BROWN	F-C SILTY SAND WITH GRAVEL AND ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY	2 x 8oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z7PDI - 001
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Joyce

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**
0.0-0.25						GRAY	ASPHALT		DRY		0.0	0.0	0.0
0.25-2.0'			0.25/5.0			LT BROWN	F-L SILTY SAND, SOME FINE GRAVEL.		DRY	0.0			
2.0-7.0			2.0/2.0			BROWN	F-L SILTY SAND WITH GRAVEL & ROCK FRAGS.		MOIST	0.0			
							WET @ 7.0'						
							7.0 E.O.B.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-002-0002
Sample Location: Z7PDI-002
Sampled By: R. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1140 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0	BROWN	F-C SILTY SAND WITH GRAVEL

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, SPLP ANTIMONY, LEAD, ANTIMONY, PAH	2 x 8 oz	X	
	(6 x 8oz TOTAL)		

OBSERVATIONS / NOTES:

MS/MSD SPLP LEAD & SPLP ANTIMONY
4 x 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-002-0607
Sample Location: Z7PDI-002
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1150 Method: DPT Monitor Reading (ppm): 0.0	6.0-6.5	BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS. SOME METAL, TERRA-COTTA DEBRIS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY, PAH	2 x 8 oz	X	
	4 x 8 oz TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000 SPLP LEAD, SPLP ANTIMONY

2 x 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-SO-002-0607-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z7PDI-002
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: Mike JOYCE

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 -	0.25					GRAY	ASPHALT			0.0	0.0	0.0	0.0
0.25-	3.0		4.0/6.5'			BROWN	F-C SILTY SAND WITH GRAVEL		MOIST	0.0			
3.0-	6.5					BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS			0.0			
							SOME METAL & TERRA COTTA/CLAY DEBRIS.						
							REFUSAL & WATER @ 6.5'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-003-0002
Sample Location: Z7PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10	0.5'-2.0'	DK BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS, MOIST.
Time: 1255			
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, PAHs	4 oz	X	
	3 x 4 oz		

OBSERVATIONS / NOTES:

MS/MSD LEAD ONLY - 4 oz
DUPLICATE @ 0000 - 4 oz
LEAD ONLY

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: Z7PDI-SO-003-0002-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI - SO-003-0204
Sample Location: Z7PDI - 003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1300 Method: DPT Monitor Reading (ppm): 0.0	2.0 - 4.0	BROWN / BLACK	F-C SAND WITH ASH / CINDERS, ROCK FRAGS, GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP ANTIMONY	2 x 8oz	X	
CHROMIUM SPECIATION, ORP	8 oz	Y	
	4 x 8oz KATAHDIN		
	1 x 8oz TEST AM.		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000
SPLP ANTIMONY 2 x 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
X	Z7PDI - SO - 003 - 0204 - D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-003-0506
Sample Location: Z7PDI-003
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1310 Method: DPT Monitor Reading (ppm): 0.0	5.0-6.0	BROWN	F-C SILTY SAND, SOME ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP ANTIMONY	2 x 8oz	X	
	6 TOTAL		

OBSERVATIONS / NOTES:

[redacted] (LW)

[redacted] (LW)

MS/MSD

SPLP ANTIMONY - 4 8oz

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z27DI-003
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.5							ASPHALT				0.0	0.0	0.0
0.5-2.0			3.25/5.0'			DK BROWN	F-C SILTY SAND, WITH GRAVEL & ROCK FRAGS		MOIST	0.0			
2.0-4.5						BROWN/ BLACK	F-C SAND WITH ASH/CINDERS, ROCK FRAGS, & GRAVEL		MOIST	0.0			
4.5-6.0			1.0/1.0			BROWN	F-C SILTY SAND, SOME ROCK FRAGS.		MOIST	0.0			
							E.O.B - 6.0'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-SD-004-0002
Sample Location: ZZPDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1413 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	BROWN	F-C SILTY SAND WITH GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY, PAH	2 x 8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-SO-004-0304
Sample Location: ZZPDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1418 Method: DPT Monitor Reading (ppm): 0.0	3.0-4.0	BROWN	F-C SAND WITH GRAVEL AND ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, SPLP ANTIMONY, ANTIMONY	2 x 8 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-004-0406
Sample Location: Z7PDI-004
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1423 Method: DPT Monitor Reading (ppm): 0.0	4.0-6.0	BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, SPLP ANTIMONY, ANTIMONY, PAHs	2 x 8oz	✓	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: (EW) Z7PDI-004 ~~Z7PDI~~-004
DATE: 9/4/00
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-	0.25'					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.25-2.0'			4.0/6.0			BROWN	F-L SILTY SAND WITH GRAVEL.		MOIST	0.0			
2.0-2.25						GRAY	GRANITE FRAGS/GRAVEL		DRY	0.0			
2.25-6.0						BROWN	F-L SAND WITH GRAVEL AND ROCK FRAGS.		MOIST	0.0			
							6.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 27PDI-SO-005-0002
Sample Location: 27PDI-005
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1020 Method: DPT Monitor Reading (ppm): 0.0	0.0-2.0	BROWN	F-C SILTY SAND, ROCK FRAGS, BRICK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, PAH	4 OZ KATAHDIN	X	
CHROMIUM, DRP	8 OZ TEST. AM.	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-SD-005-0204
Sample Location: ZZPDI-005
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1050 Method: DPT Monitor Reading (ppm): 0.0	2.0 – 3.5	LT BROWN	F-L SAND WITH SOME GRAVEL & ROCK FRAGS. TRACE BRICK. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, PAH	4 OZ	X	
CHROMIUM, ORP	8 OZ	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z2PDI- 005
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOYLE

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	0.25						GRASS SILTY, SANDY, LOAM		MOIST	0.0	0.0	0.0	0.0
0.25	3.0		2.5/3.5'			BROWN	F-C SILTY SAND, ROCK FRAGS, BRICK FRAGS.		MOIST	0.0			
3.0	3.5					LT BROWN	M-C SAND. TRACE GRAVEL		MOIST	0.0			
							REFUSAL @ 3.5'		GRANITE FRAGS @ 3.5'				
							~10 ATTEMPTS						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI - SO-006 - 0002
Sample Location: Z7PDI - 006
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1500 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD	2 OZ	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZFPDI-006
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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**
0.0-0.25						GRAY	ASPHALT			0.0	0.0	0.0	0.0
0.25-2.0			1.5/2.0			BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS		MOIST	0.0	↓	↓	↓
							2.0 B.D.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: 27PDI-SO-007-0002
Sample Location: 27PDI-007
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1500 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0	BROWN BLACK	F.-C. SILTY SAND WITH GRAVEL, SOME ASH/CINDERS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY, PAH	2 x 8 oz	X	
	6 x 8 oz TOTAL		

OBSERVATIONS / NOTES:

MS/MSD ON SPLP LEAD, SPLP ANTIMONY
4 + 8 oz

MAP:

Circle if Applicable:

MS/MSD
4 of 5

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI50-007-0506
Sample Location: Z7PDI-007
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1510 Method: DPT Monitor Reading (ppm): 0.0	5.0-6.0	BROWN/ BLACK	F-L SAND, GRAVEL, ROCK FRAGS, WOOD, ASH/CINDERS/BRICK, CERAMIC, SLAG. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY	2 x 8 OZ	X	
	4 x 8OZ TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

SPLP LEAD, SPLP ANTIMONY

2 x 8 OZ

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-50-007-0506-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZZPDI-007
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Joyce

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'-0.5'						GRY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5-2.0			3.75/5.0'			BROWN BLACK	F-C SILTY SAND WITH GRAVEL SOME ASH / CINDERS.		MOIST	0.0			
2.0'-6.0'			0.75/1.0			BROWN BLACK	F-C SAND, GRAVEL, ROCK FRAGS, WOOD, ASH/CINDERS / BRICK / CERAMIC, SLAG.		MOIST	0.0			
							6.0 E.O.B.						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-008-0002
Sample Location: Z7PDI-008
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1430 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	BROWN/BLACK	F-C SAND WITH GRAVEL, ROCK FRAGS, TRACE ASH & CINDERS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD & TPH.	4 OZ	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
-	-

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-008-0507
Sample Location: Z7PDI-008
Sampled By: K SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10			
Time: 1435	5.0' - 7.0'	LT BROWN	F-C SAND WITH SOME GRAVEL MOIST
Method: DPT			
Monitor Reading (ppm): 0.0			

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, SPLP LEAD	2 x 8 oz	X	
	6 x 8 oz TOTAL		

OBSERVATIONS / NOTES:

MS/MSD ON SPLP LEAD
4 x 8 oz

MAP:

Circle if Applicable:

MS/MSD (YES)

Duplicate ID No.: –

Signature(s): [illegible]

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZPPDI- 008
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-	0.25'					GRAY	ASPHALT			0.0	0.0	0.0	0.0
0.25'-	3.0'		3.5'/5.0'			BROWN/ BLACK	F-L SAND WITH GRAVEL, ROCK FRAGS, AND TRACE ASH/CINDERS.		MOIST	0.0			
3.0'-	7.0'		1.75'/2.0'			LT BROWN	F-L SAND, SOME GRAVEL WATER @ 7.0'		MOIST	0.0			
							7.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZZPDI-SO-009-0002
Sample Location: ZZPDI-009
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1310 Method: DPT Monitor Reading (ppm): 0.0	1.0'-2.0'	BROWN	F-C SILTY SAND WITH GRAVEL, MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP ANTIMONY, PAH	2 x 8OZ	X	
	4 x 8OZ TOTAL		

OBSERVATIONS / NOTES:

MS/MSD LEAD & ANTIMONY 1 x 8OZ
DUPLICATE @ 0000 LEAD & ANTIMONY 1 x 8OZ

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: ZZPDI-SO-009-0002-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-009-0607
Sample Location: Z7PDI-009
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1320 Method: DPT Monitor Reading (ppm): 0.0	6.0-6.5	BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP LEAD, SPLP ANTIMONY	2 x 8 oz	X	
CHROMIUM, ORP	1 x 8 oz	X	
	2 x 8 oz KATAHDIN		
	1 x 4 oz KATAHDIN		
	1 x 8 oz TCLP AM.		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000 ANTIMONY 1 x 4 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-SO-009-0607-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z7PDI-009
DATE: 9/11/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Soyle

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 -	0.5					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5 -	1.0		3.5/5.0			GRAY	GRAVEL SUB-BASE		DRY	0.0			
1.0 -	2.0		1.5/2.0			BROWN	F-C SILTY SAND WITH GRAVEL.		MOIST	0.0			
2.0 -	7.0					BROWN	F-C SAND WITH GRAVEL AND ROCK FRAGS.		MOIST	0.0			
							WET @ 6.5'						
							7.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-010-0002
Sample Location: Z7PDI-010
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1400 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	BROWN	F-C SAND WITH ROCK FRAGS. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
LEAD, ANTIMONY, SPLP ANTIMONY, PAHs	2 x 8 oz	X	
	TOTAL 3 x 8 oz		

OBSERVATIONS / NOTES:

DUPLICATE @ 0002
LEAD & ANTIMONY 1x8oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-SO-010-0002-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-010-0204
Sample Location: Z7PDI-010
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1410 Method: DPT Monitor Reading (ppm): 0.0	2.0-4.0	BROWN/ BLACK	F-L SAND WITH ROCK FRAGS, BLACK STAINING. TRACE WOOD MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, ANTIMONY, SPLP ANTIMONY	2 x 8 oz	X	
	4 x 8 oz TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000
SPLP LEAD, SPLP ANTIMONY ONLY
2 x 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
✓	Z7PDI-SO-010-0204-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z7PDI-010
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYLE

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'-	0.25'					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.25'-	4.0'		2.75/	4.0'		BROWN	F-C SAND WITH ROCK FRAGS. TRACE WOOD.		MOIST	0.0			
							BLACK STAINING 3.0'-4.0'						
							4.0 E.O.B.						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-011-0002
Sample Location: Z7PDI-011
Sampled By: K. Simpson
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1235 Method: DPT Monitor Reading (ppm): 0.0	0.75'-2.0'	BROWN	F-L SILTY SAND, GRAVEL, ROCK FRAGS, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH, LEAD	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-011-0204
Sample Location: Z7PDI-011
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1240 Method: DPT Monitor Reading (ppm): 0.0	2.0'-4.0'	BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
SPLP LEAD, PAHs	2 x 8oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZFPDI-011
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYLE

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 - 0.25'						GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.25' - 0.75'			3.0'/4.0'			TAN	CONCRETE		DRY	0.0	↓	↓	↓
0.75 - 4.0						BROWN	F-C SILTY SAND WITH GRAVEL & ROCK FRAGS		MOIST	0.0			
							4.0 E.O.B.						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-012-0002
Sample Location: Z7PDI-012
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1042 Method: PPT Monitor Reading (ppm): 0.0	0.25 - 2.0	BROWN	SILTY F-L SAND, SOME GRAVEL AND ROCK FRAGS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	
	2 x 4 oz TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

PAHs 4 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-SO-012-0002-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZFPDI- 012
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MARC SOYCE

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'-0.25'						GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
0.25'-2.0'			1.25/2.0'			BROWN	SILTY F-C SAND, SOME GRAVEL & ROCK FRAGS.		DRY-MOIST	0.0	↓	↓	↓
							2.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-013-0002
Sample Location: Z7PDI-013
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1058 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0	LT BROWN	F-C SILTY SAND, SOME GRAVEL MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	
	2 x 4oz TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

PAH 4 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-SO-013-0002-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-013-0406
Sample Location: Z7PDI-013
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1101 Method: DPT Monitor Reading (ppm): 0.0	4.0'-6.5'	BROWN	F-C SAND WITH ROCK FRAGS, SOME GRAVEL & ASPHALT CHUNKS, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZZPDI- 013
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MAKE JOYCE

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	0.5					GRAY	ASPHALT		DRY	0.0	0.0	0.5	0.0
0.5	2.0		3.25/5.0'			LT BROWN	F-C SILTY SAND, SOME GRAVEL		MOIST	0.0			
2.0	7.0					BROWN	F-C SAND, WITH ROCK FRAGS, SOME GRAVEL, SOME ASPHALT 5.0-5.25'		MOIST	0.0			
			1.5/2.0'						WET @ 6.5'				
							7.0 E.O.B						

* 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: 0.5 PID DOWN HOLE

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-014-0002
Sample Location: Z7PDI-014
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0955 Method: DPT Monitor Reading (ppm): 0.0	1.0'-2.0'	BROWN	F-C SAND, SUBROUNDED, SOME F GRAVEL MOIST,

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MS/MSD - 8 oz

MAP:

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-014-0204
Sample Location: Z7PDI-014
Sampled By: K SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 1000 Method: DPT Monitor Reading (ppm): 0.0	2.0'-4.0'	BROWN	F-C SAND, SUBROUNDED, F GRAVEL & ROCK FRAGS. MOIST WET @ 4.0'

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MS/MSD 8 oz

MAP:

Circle if Applicable:

MS/MSD X

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZFPDI - 014
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-1.0'						GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
1.0-5.0			3.0/5.0			BROWN	F-C SAND, SUBROUNDED, SOME FINE GRAVEL,		MOIST WET @ 4.0'	0.0			
							5.0' E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-015-0002
Sample Location: Z7PDI-015
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0930 Method: DPT Monitor Reading (ppm): 0.0	0.75'-2.0'	LT BROWN	F-C SAND, SUBROUNDED, SOME F GRAVEL, MOIST-DRY

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH & SPLP LEAD	2 x 8oz	X	

OBSERVATIONS / NOTES:

DUPLICATE SAMPLE COLLECTED @ 0000
Z7PDI-SO-015-0002-D

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	Z7PDI-SO-015-002-D

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-015-0204
Sample Location: Z7PDI-015
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0940 Method: DPT Monitor Reading (ppm): 0.0	2.0'-4.75'	BROWN	F-C SAND, SUBROUNDED, SOME FINE GRAVEL. MOIST WET @ 4.75'

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH & SPLP LEAD	2 x 8 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z7PDI-015
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Sutce

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**
	0.0-0.75					Gray	ASPHALT		DRY	0.0	0.0	0.0	0.0
	0.75-5.0'		2.75/5.0			Brown	F-C SAND, SUBROUNDED. SOME FINE GRAVEL		MOIST WET @ 4.75'	0.0			
							E.O.B - 5.0'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-~~01~~-016-0002
Sample Location: Z7PDI-016
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0918 Method: DPT Monitor Reading (ppm): 0.0	0.75'-2.0'	BROWN	F-C SAND, SUBROUNDED, SOME FINE GRAVEL. MOIST.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
–	–

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-016-0204
Sample Location: Z7PDI-016
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 7/8/10 Time: 0922 Method: DPT Monitor Reading (ppm): 0.0	~~0.75'-2.0'~~ (CW) 2.0-4.25'	BROWN	F-C SAND, SUBROUNDED, SOME F GRAVEL. MOIST WET JUST PAST 4.0' BGS

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	Y	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: (6) ZZ PDI-016 ~~ZZ PDI-010-016-0002~~
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-0.75'					GRAY	ASPHALT		DRY	0.0	0.0	0.0	0.0
	0.75-4.0		3.5/5.0'			BROWN	F-C SAND, SUBROUNDED SOME F GRAVEL & ROCK FRAGS		MOIST	0.0	↓	↓	↓
									WET @ 4.25'				
							5.0 E.O.B						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-017-0002
Sample Location: Z7PDI-017
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1107 Method: DPT Monitor Reading (ppm): 0.0	0.5-2.0	BROWN	F-C SAND, SOME GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ANTIMONY, SPLP ANTIMONY	2 x 8 oz	Y	
	6 x 8oz TOTAL		

OBSERVATIONS / NOTES:

MS/MSD
ANTIMONY ONLY ~~SPLP ANTIMONY~~
4 x 8 oz
* CHANGE LABELS *

MAP:

Circle if Applicable:

MS/MSD YES

Duplicate ID No.: —

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZFPDI-SO-017~~0406~~
Sample Location: ZFPDI - ~~017~~
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/11/10 Time: 1130 Method: DPT Monitor Reading (ppm): 0.0	4.0-6.5	BROWN	F-C SAND WITH GRAVEL, AND ROCK FRAGS.

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
ANTIMONY, LEAD, SPLP ANTIMONY, SPLP LEAD	2 x 8 oz KATAHDIN	X	
CHROMIUM, ORP	1 x 8 oz TEST AM	X	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: 27PDE-017
DATE: 7/11/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-	0.5'						ASPHALT		DRY	0.0	0.0	0.0	0.0
0.5-	3.0		3.25/5.0			BROWN	F-C SAND, SOME GRAVEL & ROCK FRAGS.		MOIST	0.0			
3.0-	7.0		1.5/2.0			BROWN	F-C SAND, WITH GRAVEL & ROCK FRAGS.		MOIST	0.0			
							WET @ 6.5'						
							7.0 E.O.B						

* 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:

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-018-0002
Sample Location: Z7PDI-018
Sampled By: G. WARND, K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0905 Method: DPT Monitor Reading (ppm): 0.0	1.0-2.0	BROWN	F-C SAND, SUBROUNDED, SOME F GRAVEL - MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
~~TOTAL, SPLP ANTIMONY, LEAD~~	~~2 x 8 oz~~	~~X~~	
~~CHROMIUM SPECI~~	~~1 x 8 oz~~	~~X~~	
PAH	4 oz	X	

OBSERVATIONS / NOTES:

DUPLICATE @ 0000
MS/MSD

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
X	Z7PDI-SO-018-0002-D

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: E7-PDI-018
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: Mike Soyle

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**
	0.0-1.0					DK GRAY	ASPHALT		DRY	0.1	0.0	0.0	0.0
	1.0-2.0		1.25'/2.0'			BROW	F-C SAND, SOME F GRAVEL, SUBROUNDED		MOIST	0.0	↓	↓	↓
							E.O.B. @ 2.0'						

* 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): ____

Remarks: ____

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-019-0002
Sample Location: Z7PDI-019
Sampled By: G. WARWD
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/8/10 Time: 0843 Method: DPT Monitor Reading (ppm): 0.0	0.5 - 2.0	BROWN	F-C SAND, SOME FINE GRAVEL SUBROUNDED, MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	✓	

OBSERVATIONS / NOTES:

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: Z7 - PDI 019
DATE: 9/8/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE JOYCE

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'-0.5'					DK GRAY	ASPHALT				0.0	0.0	0.0
	0.5-2.0		2.0/2.0'			BROWN	F-C SAND, SOME FINE GRAVEL, SUBROUNDED		MOIST	0.0	↓	↓	↓
							E.O.B @ 2.0'						

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm): 0.0

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

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: ZFPDI-SO-020-0002
Sample Location: ZFPDI-020
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1114 Method: DPT Monitor Reading (ppm): 0.0	0.25'-2.0'	BROWN/ BLACK	F-C SILTY SAND WITH SOME GRAVEL. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAHs	4 oz	X	
	2 x 4 oz TOTAL		

OBSERVATIONS / NOTES:

DUPLICATE @ 0000

PAH - 4 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	ZFPDI-SO-020-0002

Signature(s):

Tetra Tech NUS, Inc.

SOIL & SEDIMENT SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: Z7PDI-SO-020-0406
Sample Location: Z7PDI-020
Sampled By: K. SIMPSON
C.O.C. No.:

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

GRAB SAMPLE DATA:

	Depth Interval	Color	Description (Sand, Silt, Clay, Moisture, etc.)
Date: 9/10/10 Time: 1119 Method: DPT Monitor Reading (ppm): 0-0	4.0'-6.5'	BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS. MOIST

COMPOSITE SAMPLE DATA:

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

SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
PAH	4 oz	X	
CHROMIUM, ORP	8 oz	X	
	1 x 4 oz KATAHDIN		
	3 x 8 oz TEST AM.		

OBSERVATIONS / NOTES:

MS/MSD ON CHROMIUM & ORP

2 x 8 oz

MAP:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	—

Signature(s):

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Drilex
DRILLING RIG: DPT

BORING No.: ZAPDI-020
DATE: 9/10/10
GEOLOGIST: Charlie Warino
DRILLER: MIKE SOPLE

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'-0.25'						GRAY	ASPHALT		DRY	0.0	0.0	0.2	0.0
0.25'-2.0'			3.75'/5.0'			BROWN BLACK	F-C SILTY SAND WITH SOME GRAVEL		MOIST	0.0			
2.0'-7.0'			1.5'/2.0'			BROWN	F-C SAND WITH GRAVEL & ROCK FRAGS.		MOIST	0.0			
									WET @ 6.5'	0.0			
							7.0 E.O.B						

* 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: 0.2 DOWNHOLE PID

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

APPENDIX A.3

CHAIN OF CUSTODIES

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3880 | PAGE 1 OF 6

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112602630	NSB NLON	CORY RICH	412 921 8984	NATALIE L. PERKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8631 2526 2224		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G
PRESERVATIVE USED: 4°C 4°C

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT. 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: ETPH	ETPH, PAH								COMMENTS
9/8	1435	Z1PDI·SO.001·0002	Z1	0	2	SO	G	1	1	—								
	1440	Z1PDI·SO.001·0204	Z1	2	4			1	1	—								
	1445	Z1PDI·SO.001·0910	Z1	8	10			1	1	—								
	1115	Z1PDI·SO.003·0002	Z1	0	2			1	1	—								
	1118	Z1PDI·SO.003·0406	Z1	4	6			1	1	—								
	1120	Z1PDI·SO.003·0809	Z1	8	9			1	1	—								
	1125	Z1PDI·SO.003·0910	Z1	9	10			1	1	—								
	1130	Z1PDI·SO.003·1012	Z1	10	12			1	1	—								
	0000	Z1PDI·SO.003·1012·D	Z1	10	12			1	1	—								DUP
	1132	Z1PDI·SO.003·1214	Z1	12	14			1	1	—								
	1145	Z1PDI·SO.004·0002	Z1	0	2			1	—	1								
	1150	Z1PDI·SO.004·0406	Z1	4	6			1	—	1								
	1200	Z1PDI·SO.004·0809	Z1	8	9			1	—	1								

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9.9.10	1625	1. RECEIVED BY FEDEX	9.9.10	1625
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 5860 | PAGE 2 OF 6

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
1126-02630	NSR - NLON	CARLY RICH	412 921 8984	KATAHDIN & TEKNIKI
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8031 2526 2224		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G
PRESERVATIVE USED: 4°C 4°C 4°C 4°C

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: ETPH	ETPH PAH	PAH	SPLP LEAD PAH					COMMENTS
9/8	1200	Z1PDI-SO-004-0910	Z1	9	10	SO	G	1	1	—	—	—					
	0000	Z1PDI-SO-004-0910-D		9	10			1	1	—	—	—					dup
	1355	Z1PDI-SO-006-0002		0	2			1	1	—	—	—					
	1357	Z1PDI-SO-006-0204		2	4			1	1	—	—	—					
	1402	Z1PDI-SO-006-0910		8	10			1	1	—	—	—					
	1304	Z1PDI-SO-009-0002		0	2			1	—	—	1	—					
	1308	Z1PDI-SO-009-0406		4	6			2	—	—	—	2					
	1312	Z1PDI-SO-009-0809		8	9			1	—	—	1	—					
	1322	Z1PDI-SO-010-0002		0	2			1	—	—	1	—					
	1326	Z1PDI-SO-010-0405		4	5			1	—	—	1	—					
	~~0740~~	~~Z1PDI-SO-011-0002~~		~~0~~	~~2~~			~~1~~			~~1~~		NO	SAMPLE	REQ		
	0902	Z1PDI-SO-012-0002		0	2			1	—	—	1	—					
↓	0906	Z1PDI-SO-012-0204	↓	2	4	↓	↓	1	—	—	1	—					

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9-9-10	1625	1. RECEIVED BY FEDEX	9-9-10	1625
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3861 | PAGE 3 OF 6

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02230	NSB NLON	COREY RICH	412 921 8454	KATAHDIN, R. ROBINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		KEITH SIMPSON	412 352 2264	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FEDEX 8631 2520 2224		

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G
PRESERVATIVE USED: 4°C 4°C 4°C

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT. 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: ETPH	PAH	STLP LEAD, PAH						COMMENTS
9/9	1420	Z1PDI-SO-013-0002	Z1	0	2	SO	G	1	1	—	—						
	1425	Z1PDI-SO-013-0204		2	4			1	1	—	—						
	0000	Z1PDI-SO-013-0204-D		2	4			1	1	—	—						DUP
	0955	Z7PDI-SO-014-0002	Z7	0	2			2	—	2	—						RUN ALSO MS/MSD
	1000	Z7PDI-SO-014-0204		2	4			2	—	2	—						RUN ALSO MS/MSD
	0930	Z7PDI-SO-015-0002		0	2			22	—	—	22						(2 CONTAINERS)
	0000	Z7PDI-SO-015-0002-D		0	2			2	—	—	2						DUP
	0940	Z7PDI-SO-015-0204		2	4			2	—	—	2						
	0918	Z7PDI-SO-016-0002		0	2			1	—	1	—						
	0922	Z7PDI-SO-016-0204		2	4			1	—	1	—						
	0905	Z7PDI-SO-018-0002		0	2			2	—	2	—						RUN ALSO MS/MSD
	0000	Z7PDI-SO-018-0002-D		0	2			1	—	1	—						DUP
	0843	Z7PDI-SO-019-0002		0	2			1	—	1	—						

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	9.9.10	1025	1. RECEIVED BY FEDEX	9.9.10	1025
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3864 | PAGE 4 OF 6

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	CURTIS KEIM	412 921 8994	KATAHDIN, K. MORRISON
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		KEITH SIMPSON	412 352 2264	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FEDEX 8631 2526 2224		

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

PDI SOIL SAMPLING SEPT 2010

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: ETPH	TYPE OF ANALYSIS: PAH								COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G								
PRESERVATIVE USED									4°C	4°C								
9/9	0915	Z1PDI-SO-007-0405	Z1	4	5	SO	G	1	1	—								
	0840	Z1PDI-SO-011-0002		0	2			1	—	1								
	0845	Z1PDI-SO-011-0405		4	5			1	—	1								
	1055	Z5PDI-SO-001-0002	Z5	0	2			1	1	—								
	1100	Z5PDI-SO-001-0204		2	4			1	1	—								
	0000	Z5PDI-SO-001-0204-D		2	4			1	1	—								DUP
	1152	Z5PDI-SO-002-0002		0	2			1	1	—								
	0000	Z5PDI-SO-002-0002-D		0	2			1	1	—								DUP
	1200	Z5PDI-SO-002-0204		2	4			1	1	—								
	1115	Z5PDI-SO-003-0002		0	2			1	1	—								
	1120	Z5PDI-SO-003-0204		2	4			1	1	—								
	1125	Z5PDI-SO-004-0002		0	2			2	2	—								MS/MSD
	1140	Z5PDI-SO-004-0204		2	4			1	1	—								

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	9.9.10	1025	1. RECEIVED BY FEDEX	9.9.10	1025
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3863 | PAGE 5 OF 6

PROJECT NO: 112G02030	FACILITY: NSB NLON	PROJECT MANAGER: CORCY NCH	PHONE NUMBER: 412 921 5994	LABORATORY NAME AND CONTACT: KATAHDIN K. JENKINS
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 382 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8631 2526 2224		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: X
TYPE OF ANALYSIS: ETPH

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	ETPH								COMMENTS
9/9	0000	25PDI-SO-009-0204-D	25	2	4	SO	G	1	1								DUP
	1252	25PDI-SO-005-0002		0	2			2	2								MS/MSD
	1300	25PDI-SO-005-0204		2	4			1	1								
	0950	26PDI-SO-001-0002	26	0	2			2	2								MS/MSD
	0955	26PDI-SO-001-0405		4	5			1	1								
	0000	26PDI-SO-001-0405-D		4	5			1	1								DUP
	0930	26PDI-SO-002-0002		0	2			1	1								
	0935	26PDI-SO-002-0405		4	5			2	2								MS/MSD
	1130	26PDI-SO-004-0002		0	2			1	1								
	1135	26PDI-SO-004-0204		2	4			1	1								

1. RELINQUISHED BY [signature]	DATE 9.9.10	TIME 1625	1. RECEIVED BY FEDEX	DATE 9.9.10	TIME 1625
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3862 | PAGE 6 OF 6

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02030	NSB NLO	CORY RICH	412 921 8956	KATAHDIN K. PARKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX 8631 2526 2224		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G P
PRESERVATIVE USED: 4°C 4°C 4°C 4°C NONE

TYPE OF ANALYSIS

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	NO. OF CONTAINERS	ETPH	PAH	SVOC METALS	TOTAL METALS				COMMENTS
9/9	1430	RB090910-01	QA	—	—	QA	G	8	2	2	3	1				NOT ENOUGH WATER
9/9	1450	RB090910-02	QA	—	—	QA	G	8	2	2	3	1				NOT ENOUGH WATER
		PDI SOIL SAMPLING SEPT 2010														

VOID

FEDEX DELAYED DELIVERY
RESAMPLED 9.14.10

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
	9.9.10	1625	CORY	9.9.10	1625
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: NEW BRAND DI: LOT 0706220 EXP 07-2011

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

4/02R
FORM NO. TtNUS-001

TEST AMERICA

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER № 027902 | PAGE 1 OF 1

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	CORY NICH	412 921 5984	TEST AMERICA
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: KG

TYPE OF ANALYSIS: CITRAT SPECIES, T CHROM., CRTC, CR3, ORP

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS									COMMENTS
9/10	0000	Z4 PDI-SO-006-0406-D	Z4	4	6	SO	G	1	1								DUP
	0945	Z4PDI-SO-006-0406	Z4	4	6			1	1								
	1300	Z7PDI-SO-003-0204	Z7	2	4			1	1								
	1119	Z7PDI-SO-020-0406	Z7	4	6			3	3								MS/MSD
9/11	0725	Z4PDI-SO-003-0002	Z4	0	2			1	1								
	0955	Z4PDI-SO-008-0204	Z4	2	4			1	1								
	1430	Z7PDI-SO-001-0002	Z7	0	2			1	1								
	1020	Z7PDI-SO-005-0002	Z7	0	2			1	1								
	1050	Z7PDI-SO-005-0204	Z7	2	4			1	1								
	1320	Z7PDI-SO-009-0007	Z7	6	7			1	1								
	1130	Z7PDI-SO-017-0406	Z7	4	6			1	1								

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9/13/10	1630	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER № 027900 | PAGE 1 OF 7

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	CORY RICH	412 921 8984	LATAIDIN K. MARKS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C

TYPE OF ANALYSIS

DATE YEAR	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	ETPH	ETPH, LEAD	LEAD, SPLP LEAD	SPLP LEAD					COMMENTS
9/10 2010	0720	Z1PDI-SO-014-0002	Z1	0	2	SO	G	1	1	—	—	—					
	0725	Z1PDI-SO-014-0204	Z1	2	4			1	1	—	—	—					
	0730	Z1PDI-SO-014-0608	Z1	6	8			1	1	—	—	—					
	0727	Z1PDI-SO-014-0810	Z1	8	10			1	1	—	—	—					
	0810	Z4PDI-SO-001-0002	Z4	0	2			2	—	2	—	—					
	0000	Z4PDI-SO-001-0002-D		0	2			2	—	—	2	—					
	0820	Z4PDI-SO-001-0405		4	5			2	—	2	—	—					
	1005	Z4PDI-SO-002-0002		0	2			1	1	—	—	—					
	1007	Z4PDI-SO-002-0204		2	4			1	1	—	—	—					
	1010	Z4PDI-SO-002-0405		4	5			1	1	—	—	—					
	0935	Z4PDI-SO-006-0002		0	2			2	—	—	2	—					
	0945	Z4PDI-SO-006-0406		4	6			2	—	—	—	2					
	0000	Z4PDI-SO-006-0406-D		4	6			2	—	—	—	2					DUP

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9/10/10	1120	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER № 027903 | PAGE 2 OF 7

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	CORLY KICH	412-921-8984	KATAHDIN - KELLY PERKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412-352-7264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C 4°C 4°C 4°C

TYPE OF ANALYSIS

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	LEAD, SPLP LEAD	SPLP LEAD	LEAD, PAHS	LEAD	SPLP ANTIMONY	LEAD, ANTIMONY, PAH	SPLP LEAD, SPLP ANTIMONY	LEAD, ANTIMONY	SPLP LEAD, SPLP ANTIMONY		COMMENTS
		PDI SOIL SAMPLING SEPT. 2010																	
9/10	0931	Z4PDI-SO-007-0002	Z4	0	2	SO	G	2	2	—	—	—	—	—	—	—			
	0840	Z4PDI-SO-007-0204	Z4	2	4			4	—	4	—	—	—	—	—	—			MS/MSD
	1255	Z7PDI-SO-003-0002	Z7	0	2			1	—	—	1	—	—	—	—	—			
	1255	Z7PDI-SO-003-0002		0	2			1	—	—	—	1	—	—	—	—			MS/MSD LEAD ONLY
	0000	Z7PDI-SO-003-0002-D		0	2			1	—	—	—	1	—	—	—	—			
	1300	Z7PDI-SO-003-0204		2	4			2	—	—	—	—	2	—	—	—			
	0000	Z7PDI-SO-003-0204-D		2	4			2	—	—	—	—	2	—	—	—			
	1310	Z7PDI-SO-003-0506		5	6			6	—	—	—	—	6	—	—	—			MS/MSD
	1500	Z7PDI-SO-007-0002		0	2			2	—	—	—	—	—	2	—	—			
	1500	Z7PDI-SO-007-0002		0	2			4	—	2	—	—	2	—	—	—			MS/MSD SPLP LEAD SPLP ANTIMONY ONLY
	1510	Z7PDI-SO-007-0506		5	6			2	—	—	—	—	—	—	—	2			
	0000	Z7PDI-SO-007-0506-D		5	6			2	—	1	—	—	1	—	—	—			

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9/13/10	11:30	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER № 027901 | PAGE 3 OF 7

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	CORY RICH	412 921 5754	KATAHDIN, K. MORRIS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: KOTTI SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS
		CARRIER/WAYBILL NUMBER: FEDEX		CITY, STATE

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G G G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C 4°C 4°C 4°C 4°C

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	LEAD & PAH	LEAD & SPLP LEAD	SPLP LEAD	LEAD, ANTIMONY, PAH, SPLP ANTIMONY	LEAD, ANTIMONY	SPLP LEAD, ANTIMONY	SPLP LEAD, SPLP ANTIMONY	SPLP LEAD, PAH	PAH	COMMENTS
9/10	1430	Z7PDI-SO-008-0002	Z7	0	2	SO	G	1	1	—	—	—	—	—	—	—	—	
	1435	Z7PDI-SO-008-0507		5	7			2	—	2	—	—	—	—	—	—	—	
	1435	Z7PDI-SO-008-0507		5	7			4	—	—	4	—	—	—	—	—	—	MS/MSD
	1400	Z7PDI-SO-010-0002		0	2			2	—	—	—	2	—	—	—	—	—	
	0000	Z7PDI-SO-010-0002-D		0	2			1	—	—	—	—	1	—	—	—	—	
	1410	Z7PDI-SO-010-0204		2	4			2	—	—	—	—	—	2	—	—	—	
	0000	Z7PDI-SO-010-0204-D		2	4			2	—	—	—	—	—	—	2	—	—	
	1235	Z7PDI-SO-011-0002		0	2			1	1	—	—	—	—	—	—	—	—	
	1240	Z7PDI-SO-011-0204		2	4			2	—	—	—	—	—	—	—	2	—	
	1042	Z7PDI-SO-012-0002		0	2			1	—	—	—	—	—	—	—	—	1	
	0000	Z7PDI-SO-012-0002-D		0	2			1	—	—	—	—	—	—	—	—	1	
	1058	Z7PDI-SO-013-0002		0	2			1	—	—	—	—	—	—	—	—	1	
	0000	Z7PDI-SO-013-0002-D		0	2			1	—	—	—	—	—	—	—	—	1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9/10/10	1130	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER № 027904 | PAGE 4 OF 7

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	Corey Rich	412-921-8984	Katahdin - Kelly Perkins
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		Keith Simpson	412-302-2264	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FED EX		

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

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	PAH	ETPH, PAH	LEAD	LEAD, SPLP LEAD	SPLP LEAD, LEAD, PAH, SPLP LEAD, ANTIMONY, SPLP ANTIMONY			COMMENTS
		PDI Soil Sampling Sept. 2010														
CONTAINER TYPE PLASTIC (P) or GLASS (G)									G	G	G	G	G	G		
PRESERVATIVE USED									4°C	4°C	4°C	4°C	4°C	4°C		
9/10	1101	Z7PDI-SO-013-0406	Z7	4	6	SO	G	1	1	—	—	—	—	—		
	1114	Z7PDI-SO-020-0002		0	2			1	1	—	—	—	—	—		
	0000	Z7PDI-SO-020-0002-D		0	2			1	1	—	—	—	—	—		
	1119	Z7PDI-SO-020-0406		4	6			1	1	—	—	—	—	—		
9/11	0925	Z1PDI-SO-002-0002	Z1	0	2			1	—	1	—	—	—	—		
	0930	Z1PDI-SO-002-0204	Z1	2	4			1	—	1	—	—	—	—		
	0725	Z4PDI-SO-003-0002	Z4	0	2			1	—	—	1	—	—	—		
	0810	Z4PDI-SO-004-0002		0	2			1	1	—	—	—	—	—		
	0755	Z4PDI-SO-005-0002		0	2			1	1	—	—	—	—	—		
	0845	Z4PDI-SO-008-0002		0	2			2	—	—	—	2	—	—		
	0855	Z4PDI-SO-008-0204		2	4			2	—	—	—	—	2	—		
	0740	Z4PDI-SO-009-0002		0	2			1	1	—	—	—	—	—		
	1430	Z7PDI-SO-001-0002	Z7	0	2			2	—	—	—	—	—	2		

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
[signature]	9/13/10	1630	FEDEX		
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER № 027905

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB NLON	CORY RICH	412 921 9994	KATAHDIN - KELLY ATKINS
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS:
		CARRIER/WAYBILL NUMBER: FEDEX		CITY, STATE:

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C 4°C 4°C 4°C

TYPE OF ANALYSIS: LEAD ANTIMONY; SPLP LEAD SPLP ANTIMONY; SPLP LEAD SPLP ANTIMONY; LEAD, TAH ANTIMONY; SPLP LEAD SPLP ANTIMONY; ANTIMONY; SPLP LEAD; PAH ANTIMONY; SPLP LEAD; LEAD, TAH; LEAD

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	LEAD ANTIMONY	SPLP LEAD SPLP ANTIMONY	SPLP LEAD SPLP ANTIMONY	LEAD, TAH ANTIMONY	SPLP LEAD SPLP ANTIMONY	ANTIMONY	PAH SPLP LEAD SPLP ANTIMONY	LEAD, TAH	LEAD	COMMENTS
9/11	1435	27PDI-SO-001-0204	27	2	4	SO	G	2	2	—	—	—	—	—	—	—		
	1437	27PDI-SO-001-0607		6	7			2	2	—	—	—	—	—	—	—		
	1140	27PDI-SO-002-0002		0	2			2	—	—	2	—	—	—	—	—		
	1140	27PDI-SO-002-0002		0	2			4	—	4	—	—	—	—	—	—		MS/MSD
	1150	27PDI-SO-002-0607		6	7			2	—	—	2	—	—	—	—	—		
	0000	27PDI-SO-002-0607-D		6	7			2	—	2	—	—	—	—	—	—		DUP
	1413	27PDI-SO-004-0002		0	2			2	—	—	2	—	—	—	—	—		
	1418	27PDI-SO-004-0304		3	4			2	—	—	—	2	—	—	—	—		
	1423	27PDI-SO-004-0406		4	6			2	—	—	—	—	2	—	—	—		
	1020	27PDI-SO-005-0002		0	2			1	—	—	—	—	—	1	—	—		
	1050	27PDI-SO-005-0204		2	4			1	—	—	—	—	—	1	—	—		
	1500	27PDI-SO-006-0002		0	2			1	—	—	—	—	—	—	1	—		

1. RELINQUISHED BY: [signature]	DATE 9/14/10	TIME 11:00	1. RECEIVED BY: FEDEX	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER № 027906 | PAGE 6 OF 7

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB-NLON	COREY RICH	412 921 9984	KATAHDIN- KELLY PERKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		KEITH SIMPSON	412 352 2264	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FEDEX		

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G G G G G G

PRESERVATIVE USED: 4°C 4°C 4°C 4°C 4°C 4°C 4°C 4°C

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: LEAD, SPLP ANTIMONY, ANTIMONY, PAH	LEAD, ANTIMONY	LEAD, SPLP ANTIMONY, ANTIMONY, SPLP LEAD	ANTIMONY	ANTIMONY, SPLP ANTIMONY, SPLP LEAD	SPLP LEAD	~~SPLP~~ KS	SPLP LEAD, SPLP ANTIMONY, LEAD, ANTIMONY, PAH	COMMENTS
9/11	1310	Z7PDI-SO-009-0002	Z7	0	2	SO	G	2	2	—	—	—	—	—	—	—	
	1310	~~Z7PDI-SO-009-0002~~		0	2			1	—	1	—	—	—	—	—	—	KS
	0000	Z7PDI-SO-009-0002-D		0	2			1	—	1	—	—	—	—	—	—	DUP
	1320	Z7PDI-SO-009-0607		6	7			2	—	—	2	—	—	—	—	—	
	0000	Z7PDI-SO-009-0607-D		6	7			1	—	—	—	1	—	—	—	—	DUP
	1107	Z7PDI-SO-017-0002		0	2			2	—	—	—	—	2	—	—	—	
	1107	Z7PDI-SO-017-0002		0	2			4	—	—	—	4	—	—	—	—	MS/MSD
	1130	Z7PDI-SO-017-0406		4	6			2	—	—	2	—	—	—	—	—	
9/12	0852	Z3PDI-SO-002-0002	Z3	0	2			2	—	—	—	—	—	2	—	—	
	0900	Z3PDI-SO-002-0406		4	6			2	—	—	—	—	—	—	2	—	
	0840	Z3PDI-SO-005-0002		0	2			2	—	—	—	—	—	2	—	—	
	0938	Z2PDI-SO-002-0204	Z2	2	4			2	—	—	—	—	—	—	2	—	
	0954	~~Z2~~ Z2 CR PDI-SO-001-0002	~~Z2~~ Z2 CR	0	2			1 ~~2~~	—	—	—	—	—	—	—	X	2 KS

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
[signature]	9/13/10	1430	FEDEX		
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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4/02R
FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER № 027907 | PAGE 7 OF 7

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB-NLON	CORCY RICH	412 921 5984	LATAHDIN - KELLY PERKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		KEITH SIMPSON	412 352 2264	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FEDEX		

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G
PRESERVATIVE USED: K2C

TYPE OF ANALYSIS: CTPH

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT. 2010)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CTPH	COMMENTS
9/12	0956	Z2 PDI-SO-001-0204	Z2	2	4	SO	G	1	1	
↓	1000	Z2 PDI-SO-001-0506	↓	5	6	↓	↓	1	1	
↓	1048	Z1 PDI-SO-005-0002	Z1	0	2	↓	↓	1	1	
↓	1055	Z1 PDI-SO-005-0305	↓	3	5	↓	↓	1	1	
↓	1100	Z1 PDI-SO-005-0507	↓	5	7	↓	↓	1	1	

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	9/13/10	1630	1. RECEIVED BY FEDEX		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE 1 OF 2

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
1126-02630	NSB NOR	CORLEY RICH 412 921 8984	KATAHDIN K. PERKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		KEITH SIMPSON 412 352 2204	
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FEDEX 8735 5966 0998	

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): G G G

PRESERVATIVE USED: 4°C 4°C 4°C

TYPE OF ANALYSIS

DATE YEAR 2010	TIME	SAMPLE ID (PDI SOIL SAMPLING SEPT. 2010)	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	ETPH + PAH	ETPH	LEAD	SPLP LEAD					COMMENTS
9/14	0920	Z1PDISO.008.0002	SO	G	1	1	—	—	—					
	0925	Z1PDISO.008.0405			1	1	—	—	—					
	0930	Z1PDISO.009.0910			1	—	1	—	—					
	1118	Z3PDISO.001.0002			2	—	—	2	—					
	1124	Z3PDISO.001.0304			2	—	—	—	2					
	1020	Z3PDISO.003.0002			2	—	—	2	—					
	1027	Z3PDISO.003.0204			2	—	—	—	2					
	1255	Z6PDISO.003.0002			1	—	1	—	—					
	1300	Z6PDISO.003.0304			1	—	1	—	—					

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9/14/10	1620	1. RECEIVED BY FEDEX	9-14-10	1620
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

3/99
FORM NO. TtNUS-001

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

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02030	NSB NMJ	CURCY RICH 402 921 8484	NATALIE K. PERKINS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		KEITH SIMPSON 402 392 2264	
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FED EX 8735 5966 0998	

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

PDI SOIL SAMPLING SEPT 2010

DATE YEAR 2010	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	ETPH	PAH	SVOC METALS	TOTAL METALS					COMMENTS
		CONTAINER TYPE PLASTIC (P) or GLASS (G)				G	G	P	P					
		PRESERVATIVE USED				4°C	4°C	4°C	4°C HNO3					
		TYPE OF ANALYSIS												
9/14	1345	RB091410-01	QA	G	8	2	2	3	1					SEE DIT
↓	1350	RB091410-02	QA	G	8	2	2	3	1					

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY	9-14-10	1500	1. RECEIVED BY	9-14-10	1500
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS NCAL BRAND DI WT. [illegible]

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

3/99
FORM NO. TtNUS-001

APPENDIX A.4

EQUIPMENT CALIBRATION LOG

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : RASB NLON

INSTRUMENT NAME/MODEL: PHO CHECK TIGER PID

SITE NAME: LOWER BASÉ - PDI

MANUFACTURER: ION SCIENCE

PROJECT No.: 112602630

SERIAL NUMBER: 105454

Date of Calibration	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot No.)	Remarks and Comments
			Pre-calibration	Post-calibration	Pre-calibration	Post-calibration		
9/8/10	105454	C. WARING	~~100.0~~ 94.6	100.0	0.0	0.0	LT1029-MB-CM	100 PPM ISO BUT.
9/9/10	↓	↓	96.9	100.0	0.0	0.0	↓	↓
9/10/10			99.2	100.0	0.0	0.0		
9/11/10			100.2	100.0	0.1	0.0		
9/13/10			102.6	101.1	0.0	0.0		

US Environmental Rental Corporation

(888) 550-8100 www.usenvironmental.com

166 Riverview Ave, Waltham, MA 02453 (781) 899-1560
91 Prestige Park Circle, Suite 5, East Hartford, CT 06108 (860) 289-8700
5C South Gold Dr, Hamilton, NJ 08691 (609) 570-8555
1202 Tech Blvd., Suite 108, Tampa, FL 33619 (813) 628-4200

Order No.: 13429
Date: 8/23/2010
Technician: RA

Company: Tetra Tech NUS - PPA
Contact: Charlie Warino
Phone #: 412-921-8277

Packing List

Item	Serial Number	Included	QC
Ion Science Tiger	**105454**	✓	✓
Manual		✓	✓
Charger		✓	✓
Probe Tip		✓	✓
Alkaline Battery Pack		✓	✓
External Filters		✓	✓
Software			
Comm. Cable			
Regulator		✓	✓
Tedlar Bag		✓	✓
Calibration Gas		✓	✓
Tube Holder			
Zero Tubes			

Calibration Report

Item		Information	
Ion Science Tiger	**105454**		
Calibration Gas:		***Isobutylene***	
Lot Number:		0	
Span Setting:		***100.00***	***ppm***
Correction Factor:		***1.00***	
Zero Reading:		***0.00***	***ppm***
Span Reading:		***100.00***	***ppm***
Post-Cal Bump Test:		***101.10***	***ppm***
Lamp		***10.6 eV***	

This document certifies that US Environmental Rental Corporation has provided this rental equipment and all accessories in good working order. It is the renter's responsibility to: a) review all included items upon receipt, b) verify that all items are in acceptable condition and function properly, and c) contact a US Environmental associate immediately if any item is missing, damaged, and/or not functioning properly. Any delay in notifying US Environmental will be considered as the Renter taking responsibility for such missing, damaged, and/or malfunctioning item.

Missing, damaged, and/or malfunctioning equipment and accessories will result in additional fees.

APPENDIX A.5

IDW INFORMATION

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CT417002020
2. Page 1 of: 1
3. Emergency Response Phone: 800-698-1865
4. Manifest Tracking Number: 007537934 JJK

5. Generator's Name and Mailing Address:
U.S. Naval Submarine Base
Box 400 - Environmental Bldg. 562
Groton CT 06349
Generator's Phone: 860 694-4298

Generator's Site Address (if different than mailing address):
U.S. Naval Submarine Base
Route 12 - Crystal Lake Road
Groton CT 06349

6. Transporter 1 Company Name: New England Disposal Technologies, Inc.
U.S. EPA ID Number: MAC300008059

7. Transporter 2 Company Name: New England Disposal Technologies, Inc.
U.S. EPA ID Number: MAC300008059

8. Designated Facility Name and Site Address:
EQ - Detroit, Inc.
1923 Frederick Street
Detroit MI 48211
Facility's Phone: 313 923-0080
U.S. EPA ID Number: MID980991566

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. RQ NA3077, Hazardous waste, solid, n.o.s. (soil, lead) 9, PGIII (RQ D008)	1	DM	300	P	D008		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1JJ105063DET ERG#171

Job# 01-11528

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: X David Carter
Signature: X
Month 10 Day 29 Year 10

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Shawn M. Ford
Signature:
Month 10 Day 29 Year 10
Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name Signature Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Tracking #_____

WASTE CHARACTERIZATION REPORT

☐ ***I authorize EQ – The Environmental Quality Company to choose the appropriate facility and method of waste management from the technologies offered at the EQ facilities identified below.***

☐ **Michigan Disposal Waste Treatment Plant** (Stabilization and Treatment)	49350 N. I-94 Service Drive, Belleville, MI 48111 Phone: 800-592-5489 Fax: 800-592-5329	EPA ID # MID 000 724 831
☐ **Wayne Disposal, Inc. Site #2 Landfill** (Hazardous & PCB Waste Landfill)	49350 N. I-94 Service Drive, Belleville, MI 48111 Phone: 800-592-5489 Fax: 800-592-5329	EPA ID # MID 048 090 633
☐ **EQ Detroit, Inc.** (Stabilization, Wastewater Treatment)	1923 Frederick Street, Detroit, MI 48211 Phone: 313-923-0080 Fax: 313-923-3375	EPA ID # MID 980 991 566
☐ **EQ Resource Recovery, Inc.** (Solvent Recycling, Fuel Blending, WW Treatment)	36345 Van Born Road, Romulus, MI 48174 Phone: 866-373-8357 Fax: 734-326-4033	EPA ID # MID 060 975 844
☐ **EQ North Carolina** (Stabilization, Treatment, Labpack Decommissioning)	1005 Investment Blvd, Apex, NC 27502 Phone: 919-363-4700 Fax: 919-363-4714	EPA ID # NCD 982 170 292
☐ **EQ Florida, Inc.** (Drum Consolidation, Labpack Decommissioning)	7202 East 8th Ave, Tampa, FL 33619 Phone: 813-623-5463 Fax: 813-628-0842	EPA ID # FLD 981 932 494
☐ **EQ Transfer & Processing** (Drum Transfer/Universal Waste Handling)	2000 Ferry Street, Detroit, MI 48211 Phone: 313-923-0080 Fax: 313-922-8419	EPA ID # MIK 939 928 313
☐ **EQ Indianapolis** (Drum Transfer/Non-Hazardous Waste Processing)	4000 West 10th Street, Indianapolis, IN 46222 Phone: 317-247-7160 Fax: 317-247-7170	EPA ID # IND 161 049 309
☐ **EQ Atlanta** (Drum Transfer/Non-Hazardous Waste Processing)	5600 Fulton Industrial Blvd SW, Atlanta, GA 30336 Phone: 404-494-3520 Fax: 404-494-3560	EPA ID # GAR 000 039 776
☐ **EQ Augusta, Inc.** (Wastewater Treatment)	3920 Goshen Industrial Blvd, Augusta, GA 30906 Phone: 706-771-9100 Fax: 706-771-9124	EPA ID # GAR 000 011 817

Waste Common Name:

Section 1 – Generator & Customer Information

SIC/NAICS* _____

Generator EPA ID # _____

Generator _____

Facility Address _____

City _____ State _____ Zip _____

County _____

Mailing Address _____

City _____ State _____ Zip _____

Generator Contact _____

Title _____

Phone _____ Fax _____

*For a list of NAICS codes, please refer to Section 9 of the EQ Resource Guide.

Internal Use Only: EQ Division _____

EQ Customer No. _____

Invoicing Company _____

Address _____

City _____ State _____ Zip _____

Country _____

Invoicing Contact _____

Phone _____ Fax _____

Technical Contact _____

Phone _____ Fax _____

Mobile _____ Pager _____

E-mail _____

Section 2 – Shipping & Packaging Information

2.1) Shipping Volume & Frequency _____
☐ One Time Only ☐ Year ☐ Quarter ☐ Month

2.2) DOT Shipping Name _____

_____

_____

2.3) Is this waste surcharge exempt? ☐ Yes ☐ No
If yes, please attach a surcharge exemption form, found in Section 2 of the EQ Resource Guide.

2.4) Packaging **(check all that apply)**
☐ Bulk Solid (Yd^3 < 2000 lbs/yd^3)
☐ Bulk Solid (Ton >2000 lbs/yd^3)
☐ Bulk Liquids (Gallon)
☐ Totes, Size _____
☐ Cubic Yard Boxes/Bags
☐ Drums, Size _____
☐ Other (palletized, 5 gal. Pail, etc.) _____
Quoted bulk disposal charges for solid materials will be billed by the cubic yard, if the waste density is less than 2,000lbs./cubic yard. If waste density is greater than 2,000 lbs./cubic yard, then bulk disposal charges will be billed by the ton, regardless of the approved container.

Section 3 – Physical Characteristics

3.1) Color _____ 3.2) Odor _____

3.3) Does this waste contain any "Potentially Odorous Constituents" as defined in the EQ Resource Guide? (Section 3) ☐ Yes ☐ No

3.4) Physical State at 70^{0}F: ☐ Solid ☐ Dust/Powder ☐ Liquid ☐ Sludge

3.5) What is the pH of this waste? ☐ ≤2 ☐ 2.1-4.9 ☐ 5-10 ☐ 10.1-12.4 ☐ ≥12.5

3.6) What is the flash point of this waste? ☐ <90^{0}F ☐ 90-140^{0}F ☐ 140-199^{0}F ☐ >200^{0}F

3.7) Does this waste contain? **(check all that apply)** ☐ **None** ☐ Free Liquids ☐ Oily Residue ☐ Metal Fines

☐ Biodegradable Sorbants ☐ Amines ☐ Ammonia ☐ Water Reactive ☐ Biohazard ☐ Aluminum

☐ Shock Sensitive Waste ☐ Reactive Waste ☐ Radioactive Waste ☐ Explosives ☐ Pyrophoric Waste ☐ Isocyanates

☐ Asbestos – non-friable ☐ Asbestos – friable ☐ Dioxins ☐ Furans

Section 4 – Waste Composition and Generating Process

4.1) Describe the physical composition of the waste (i.e., soil, water, PPE, debris, key chemical compounds, etc.)

_____ _____ to _____ % _____ _____ to _____ %

_____ _____ to _____ % _____ _____ to _____ %

Total: 100%

4.2) Provide a *detailed* description of the process generating this waste (attach flow diagram if available).

_____

_____

_____

_____

Section 5 – Is This Hazardous Waste?

Please refer to Section 5 of the EQ Resource Guide for a list of waste codes

As determined by 40 CFR, Part 261 and State Rules: **Please list applicable waste code(s):**

5.1) Is this an EPA RCRA listed hazardous waste (F, K, P or U)? ☐ Yes ☐ No _____

5.2) Is this an EPA RCRA characteristic hazardous waste (D001-D043)? ☐ Yes ☐ No _____

5.3) Do any State Hazardous Waste Codes apply? ☐ Yes ☐ No _____

5.4) Is this waste intended for wastewater treatment? ☐ Yes* ☐ No

If you answered 'no' to 5.1, 5.2, and 5.3, please skip to Section 7. *If you answered 'yes' to 5.4, please attach the Waste Characterization Report Addendum found in Section 7 of the EQ Resource Guide.

Section 6 – Hazardous Wastes

6.1) Does this waste exceed Land Disposal Restriction levels? ☐ Yes ☐ No

6.1a) If this waste stream is greater than 50% soil, does it meet the alternative soil treatment standards of 40 CFR 268.49? ☐ Yes ☐ No

6.1b) Does this waste contain greater than 50% debris, by volume? (Debris is greater than 2.5 inches in size.) ☐ Yes ☐ No

6.2) Is the waste an oxidizer (D001)? ☐ Yes ☐ No

6.3) Does this waste contain reactive cyanide ≥ 250 ppm (D003)? ☐ Yes ☐ No

6.4) Does this waste contain reactive sulfide ≥ 500 ppm (D003)? ☐ Yes ☐ No

6.5) Please indicate which constituent concentrations are below or above the regulatory level. Please indicate the basis used in the determination. Either "Below" or "Above" **MUST** be checked for each constituent.

Based On: ☐ **Generator Knowledge** ☐ **Analysis*** ☐ **MSDS***

***Please attach a copy. Analysis or MSDS are required for EQFL Non-hazardous wastes.**

Code		Regulatory Level TCLP (mg/l)	Concentration (if above)	Code		Regulatory Level TCLP (mg/l)	Concentration (if above)
D004	Arsenic	5	☐ Below ☐ Above _____	D024	m-Cresol	200	☐ Below ☐ Above _____
D005	Barium	100	☐ Below ☐ Above _____	D025	p-Cresol	200	☐ Below ☐ Above _____
D006	Cadmium	1	☐ Below ☐ Above _____	D026	Cresols	200	☐ Below ☐ Above _____
D007	Chromium	5	☐ Below ☐ Above _____	D027	1,4-Dichlorobenzene	7.5	☐ Below ☐ Above _____
D008	Lead	5	☐ Below ☐ Above _____	D028	1,2-Dicholoroethane	0.5	☐ Below ☐ Above _____
D009	Mercury	0.2	☐ Below ☐ Above _____	D029	1,1-Dichloroethylene	0.7	☐ Below ☐ Above _____
D010	Selenium	1	☐ Below ☐ Above _____	D030	2,4-Dinitrotoluene	0.13	☐ Below ☐ Above _____
D011	Silver	5	☐ Below ☐ Above _____	D031	Heptachlor	0.008	☐ Below ☐ Above _____
D012	Endrin	0.02	☐ Below ☐ Above _____	D032	Hexachlorobenzene	0.13	☐ Below ☐ Above _____
D013	Lindane	0.4	☐ Below ☐ Above _____	D033	Hexachlorobutadiene	0.5	☐ Below ☐ Above _____
D014	Methoxychlor	10	☐ Below ☐ Above _____	D034	Hexachloroethane	3.0	☐ Below ☐ Above _____
D015	Toxaphene	0.5	☐ Below ☐ Above _____	D035	Methyl Ethyl Ketone	200	☐ Below ☐ Above _____
D016	2,4-D	10	☐ Below ☐ Above _____	D036	Nitrobenzene	2	☐ Below ☐ Above _____
D017	2,4,5-TP (Silvex)	1	☐ Below ☐ Above _____	D037	Pentachlorophenol	100	☐ Below ☐ Above _____
D018	Benzene	0.5	☐ Below ☐ Above _____	D038	Pyridine	5	☐ Below ☐ Above _____
D019	Carbon Tetrachloride	0.5	☐ Below ☐ Above _____	D039	Tetrachloroethylene	0.7	☐ Below ☐ Above _____
D020	Chlordane	0.03	☐ Below ☐ Above _____	D040	Trichloroethylene	0.5	☐ Below ☐ Above _____
D021	Chlorobenzene	100	☐ Below ☐ Above _____	D041	2,4,5-Trichlorophenol	400	☐ Below ☐ Above _____
D022	Chloroform	6.0	☐ Below ☐ Above _____	D042	2,4,6-Trichlorophenol	2	☐ Below ☐ Above _____
D023	o-Cresol	200	☐ Below ☐ Above _____	D043	Vinyl Chloride	0.2	☐ Below ☐ Above _____

6.6) If this is a characteristic hazardous waste, does it contain underlying hazardous constituents? ☐ Yes ☐ No

If yes, please list the constituents in Section 11.

Section 7 – Non-Hazardous Wastes

For a complete list of non-hazardous waste codes, please refer to Section 7 of the EQ Resource Guide

Please list applicable waste code:

7.1) Is this a Michigan non-hazardous liquid industrial waste? ☐ Yes ☑ No _____
7.2) Is this a Universal waste? ☐ Yes ☑ No
7.3) Is this a Recyclable Commodity? (e.g.: computer monitors, free mercury, etc.) ☐ Yes ☑ No
7.4) Is this waste a recoverable petroleum product? ☐ Yes* ☑ No
7.5) Is this waste used oil as defined by 40 CFR Part 279? ☐ Yes* ☑ No

If you answered 'yes' to questions 7.4 or 7.5 please attach the Waste Characterization Report Addendum found in Section 7 of the EQ Resource Guide.

Section 8 – TSCA Information

8.1) What is the concentration of PCBs in the waste? ☑ None ☐ 0-5 ppm ☐ 6-49 ppm ☐ 50-499 ppm ☐ 500+ ppm
8.2) Does the waste contain PCB contamination from a source with a concentration ≥ 50 ppm? ☐ Yes ☑ No
If you answered "no" to 8.1 and 8.2, please skip to Section 9.
8.3) Has this waste been processed into a non-liquid form? ☐ Yes ☐ No
If yes, what was the concentration of PCBs prior to processing? ☐ N/A ☐ 0-499 ppm ☐ 500+ ppm
8.4) Is the non-liquid PCB waste in the form of soil, rags, debris, or other contaminated media? ☐ Yes ☐ No
8.5) Are you a PCB capacitor manufacturer or a PCB equipment manufacturer? ☐ Yes ☐ No
8.6) Has the PCB Article (e.g., transformer, hydraulic machine, PCB-contaminated electrical equipment) been drained/flushed of all PCBs and decontaminated in accordance with 40 CFR 761.60(b)? ☐ N/A ☐ Yes ☐ No

Section 9 – Clean Air Act Information

NESHAP SIC*		
2812	2836	2875
2813	2841	2879
2816	2842	2891
2819	2843	2892
2821	2844	2893
2822	2851	2895
2823	2861	2899
2824	2865	2911
2833	2869	3312
2834	2873	4953
2835	2874	9511

9.1) Is this waste subject to regulation under 40 CFR, Part 63, Subpart DD or 40 CFR, Part 264, Subpart CC (RCRA)? ☐ Yes ☑ No
(Does the waste contain >500 ppm Volatile Organic Hazardous Air Pollutants – VOHAP's or Volatile Organic Compounds – VOC's?)
For a complete list of VOHAP's, please see Section 11 of the EQ Resource Guide
9.2) Is the site, or waste, subject to any other MACT or NESHAP? ☐ Yes, please specify: _____ ☑ No
9.3) Does this waste stream contain Benzene? ☐ Yes ☑ No
If you answered "no" to 9.3, please skip to Section 10.
9.4) Does the waste stream come from a facility with one of the SIC/NAICS codes listed under the NESHAP? ☐ Yes ☑ No
9.5) Is the generating source of this waste stream a facility with Total Annual Benzene (TAB) ≥10 Mg/year? ☐ Yes ☑ No
For assistance in calculating the TAB, please see the TAB Worksheet in Section 9 of the EQ Resource Guide.
If you answered "no" to question 9.4 and 9.5, please skip to Section 10.
9.6) Does the waste contain >10% water? ☐ Yes ☐ No
9.7) What is the TAB quantity for your facility? _____ Mg/Year
9.8) Does the waste contain >1.0 mg/kg total Benzene? ☐ Yes ☐ No
9.9) What is the total Benzene concentration in your waste? _____ Percent or _____ ppmw.
(Do not use TCLP analytical results. Acceptable laboratory methods include 8020, 8240, 8260, 602 and 624.)
*For a list of NAICS codes, please refer to Section 9 of the EQ Resource Guide.

Section 10 – Fuel Blending Information

10.1) Is this waste intended for fuel blending? ☐ Yes* ☑ No
*If yes, Heat value (BTU/lb.) _____ Chlorine (%) _____ Water (%) _____ Solids (%) _____
10.2) Is this waste intended for reclamation? ☐ Yes ☑ No (5-Gallon Sample required for all reclaim waste streams)

Section 11 – Constituent Information

Please identify your waste constituents from these four categories: ***Underlying Hazardous Constituents (UHC's), Volatile Organic Hazardous Air Pollutants (VOHAP's), Volatile Organic Compounds (VOC's) and Toxic Release Inventory Constituents (TRI)***

Constituent	Concentration	UHC?		Constituent	Concentration	UHC?	
		☐ Yes	☐ No			☐ Yes	☐ No
		☐ Yes	☐ No			☐ Yes	☐ No
		☐ Yes	☐ No			☐ Yes	☐ No
		☐ Yes	☐ No			☐ Yes	☐ No
		☐ Yes	☐ No			☐ Yes	☐ No

Please see Section 11 of the EQ Resource Guide for a list of UHC's, VOHAP's and VOC's. For a complete list of TRI constituents, please refer to 40 CFR 372.65.

Section 12 – Certification

I certify that all information (including attachments) is complete and factual and is an accurate representation of the known and suspected hazards, pertaining to the waste described herein. I authorize EQ's Resource Team to add supplemental information to the waste approval file, provided I am contacted and give verbal permission. I authorize EQ's Resource Team to obtain a sample from any waste shipment for purposes of verification and confirmation. I agree that, if EQ approves the waste described herein, all such wastes that are transported, delivered, or tendered to EQ by Generator or on Generator's behalf shall be subject to, and Generator shall be bound by the attached Standard Terms and Conditions.

Generator Signature _____ Printed Name Linda J. Tirrell

Company US Naval Submarine Base Title Haz Waste Program Mgr Date 10-4-10

The generator's signature MUST appear on the EQ Waste Characterization Report. If the generator has authorized a third party to certify this document, a written notice (on generator letterhead) must accompany this submittal. Although the EQ Resource Team is authorized to make certain modifications to the information provided on this form, the addition or removal of waste codes and waste constituents must be documented by the generator.

STANDARD TERMS AND CONDITIONS

The Agreement between the Customer and EQ – The Environmental Quality Company and/or its member companies (hereinafter "EQ") related to or associated with Delivered Waste, as herein defined, shall be governed by the following Standard Terms and Conditions in addition to the terms and conditions contained in any Waste Characterization Report, Customer Approval Quote Confirmation, Generator Approval Notification, Notice of Waste Approval Expiration, and/or Credit Agreement associated with such Delivered Waste.

The Customer may use its standard forms (such as purchase orders, acknowledgments of orders, and invoices) to administer its dealings under this Agreement for convenience purposes, but all provisions thereof in conflict with these terms and conditions shall be deemed stricken.

Definitions

The following definitions shall apply for purposes of this Agreement:

"**Acceptable Waste"** shall mean any hazardous waste, as defined under applicable State or federal law, determined by EQ as acceptable for treatment and/or disposal in accordance with this Agreement.

"**Delivered Wastes"** shall mean all wastes (i) which are transported, delivered, or tendered to EQ by the Customer; (ii) which the Customer has arranged for the transport, delivery or tender to EQ; or (iii)) which are transported, delivered, or tendered to EQ under a Credit Agreement between the Customer and EQ.

"Non-Conforming Wastes" shall mean wastes that (a) are not in accordance in all material respects with the warranties, descriptions, specifications or limitations stated in the Waste Characterization Report and this Agreement; (b) have constituents or components of a type or concentration not specifically identified in the Waste Characterization Report (i) which increase the nature or extent of the hazard and risk undertaken by EQ in treating and/or disposing of the waste, or (ii) for whose treatment and/or disposal a Waste Management Facility is not designed or permitted, or (iii) which increase the cost of treatment and/or disposal of waste beyond that specified in EQ's price quote; or (c) are not properly packaged, labeled, described, or placarded, or otherwise not in compliance with United States Department of Transportation and United States Environmental Protection Agency regulations.

Control of Operations.

EQ shall have sole control over all aspects of the operation of any treatment and/or disposal facility of EQ receiving Delivered Wastes under this Agreement (hereinafter, "Waste Management Facility"), including, without limitation, maintaining EQ's desired volume of Acceptable Wastes being delivered to any Waste Management Facility by the Customer or any other person or entity.

Identification of Waste.

For each waste material to be transported, delivered, or tendered to EQ under this Agreement, the Customer shall provide, or cause to be provided, to EQ a representative sample of the waste material and a completed Waste Characterization Report containing a physical and chemical description or analysis of such waste material, which description shall conform with any and all guidelines for waste acceptance provided by EQ. On the basis of EQ's analysis of such representative sample of the waste material and such Waste Characterization Report, EQ will determine whether such wastes are Acceptable Wastes. EQ does not make any guarantee that it will handle any waste material or any particular quantity or type of waste material, and EQ reserves the right to the decline to transport, treat and/or dispose of waste material. The Customer shall promptly furnish to EQ any information regarding known, suspected or planned changes in the composition of the waste material. Further, the Customer shall promptly inform EQ of any change in the characteristic or condition of the waste material which becomes known to the Customer subsequent to the date of the Waste Characterization Report.

Non-Conforming Wastes.

In the event that EQ at any time discovers that any Delivered Waste is Non-Conforming Waste, EQ may reject or revoke its acceptance of the Non-Conforming Waste. The Customer shall have seven (7) days to direct an alternative lawful manner of disposition of the waste, unless it is necessary by reason of law or otherwise to move the Non-Conforming Waste prior to expiration of the seven (7) day period. If the Customer does not direct an alternative disposal, at its option, EQ may return any such Non-Conforming Wastes to the Customer, and the Customer shall pay or reimburse EQ for all costs and expenses incurred by EQ in connection with the receipt, handling, sampling, analyses, transportation and return to the Customer of such Non-Conforming Wastes. If it is impossible or impractical for EQ to return the Non-Conforming Waste to the Customer, the Customer shall reimburse EQ for all costs, of any type or nature whatsoever, incurred by EQ, solely because such Delivered Waste was Non-Conforming Waste (including, but not limited to, all costs associated with any remedial steps necessary, due to the nature of the Non-Conforming Waste, in connection with material with which the Non-Conforming Waste may have been commingled and all expenses and charges for analyzing, handling, locating, preparing for transporting, storing and disposing of any Non-Conforming Waste).

Customer Warranty - Acceptable Wastes.

All Delivered Wastes shall be Acceptable Wastes and shall conform in all material respects to the description and specifications contained in the Waste Characterization Report. The information set forth in the Waste Characterization Report or any manifest, placard or label associated with any Delivered Wastes, or otherwise represented by the Customer or the generator (if other than the Customer) to EQ, is and shall be true, accurate and complete as of the date of receipt of the involved waste by EQ.

Customer Warranty - Title to Wastes.

Either the Customer or the generator (if other than the Customer) shall hold clear title, free of any all liens, claims, encumbrances, and charges to Delivered Waste until such waste is accepted by EQ.

Customer Warranty - Compliance with Laws.

The Customer shall comply with all applicable federal, state and local environmental statutes, regulations, and other governmental requirements, as well as directives issued by EQ from time to time, governing the transportation, treatment and/or disposal of Acceptable Wastes, including, but not limited to, all packaging, manifesting, containerization, placarding and labeling requirements.

Customer Warranty - Updating Information.

If the Customer receives information that Delivered Waste or other hazardous waste described in the Waste Characterization Report, or some component of such waste, presents or may present a hazard or risk to persons, property or the environment which was not disclosed to EQ, or if the Customer or generator (if other than the Customer) has changed the process by which such waste results, the Customer shall promptly report such information to EQ in writing.

Customer Indemnity.

The Customer shall indemnify, defend and hold harmless EQ, and its affiliated or related companies, and all of their respective present or future officers, directors, shareholders, employees and agents from and against any and all losses, damages, liabilities, penalties, fines, forfeitures, demands, claims, causes of action, suits, costs and expenses (including, but not limited to, reasonable costs of defense, settlement, and reasonable attorneys' fees), which may be asserted against any or all of them by any person or any governmental agency, or which any or all of them may hereafter suffer, incur, be responsible for or pay out, as a result of or in connection with bodily injuries (including, but not limited to, death, sickness, disease and emotional or mental distress) to any person (including EQ's employees), damage (including, but not limited to, loss of use) to any property (public or private), or any requirements to conduct or incur expense for investigative, removal or remedial expenses in connection with contamination of or adverse effect on the environment, or any violation or alleged violation of any statues, ordinances, orders, rules or regulations of any governmental entity or agency, caused or arising out of (i) a breach of this Agreement by the Customer, (ii) the failure of any warranty of the Customer to be true, accurate and complete, or (iii) any willful or negligent act or omission of the Customer, or its employees or agents in connection with the performance of this Agreement.

Force Majeure

EQ shall not be liable for any failure to accept, receive, handle, treat, and/or dispose of Delivered Waste due to an act of God, fire, casualty, flood, war, strike, lockout, labor trouble, failure of public utilities, equipment failure, facility shutdown, injunction, accident, epidemic, riot, insurrection, destruction of operation or transportation facilities, the inability to procure materials, equipment, or sufficient personnel or energy in order to meet operational needs without the necessity of allocation, the failure or inability to obtain any governmental approvals or to meet Environmental Requirements (including, but not limited to voluntary or involuntary compliance with any act, exercise, assertion, or requirement of any governmental authority) which may temporarily or permanently prohibit operations of EQ, the Customer, or the Generator, or any other circumstances beyond the control of EQ which prevents or delays performance of any of its obligations under this Agreement.

Governing Laws

This Agreement shall in all respects be governed by and shall be construed in accordance with the laws of the State of Michigan applied to contracts executed and performed wholly within such state.

Land Disposal Restriction & Certification Form

Please check the appropriate facility:

☐ **Michigan Disposal Waste Treatment Plant**	49350 N. I-94 Service Drive, Belleville, MI 48111	EPA ID # MID 000 724 831
☐ **Wayne Disposal, Inc. Site #2 Landfill**	49350 N. I-94 Service Drive, Belleville, MI 48111	EPA ID # MID 048 090 633
☑ **EQ Detroit, Inc.**	1923 Frederick Street, Detroit, MI 48211	EPA ID # MID 980 991 566
☐ **EQ Resource Recovery, Inc.**	36345 Van Born Road, Romulus, MI 48174	EPA ID # MID 060 975 844
☐ **EQ North Carolina**	1005 Investment Blvd, Apex, NC 27502	EPA ID # NCD 982 170 292
☐ **EQ Florida, Inc.**	7202 East 8th Ave, Tampa, FL 33619	EPA ID # FLD 981 932 494

Generator Name: Naval Submarine Base New London **U.S. EPA ID No.:** CT4170022020

Generator Address: Crystal Lake Rd. & Rt. 12, Groton, CT 06349

State Manifest No.: _____ **Manifest Doc. No.:** _____

Instructions

Column 1: Identify all U.S. EPA hazardous waste codes that apply to this waste shipment.
Column 2: Choose the appropriate treatability group: Non-Wastewater (NWW) or Wastewater (WW).
Column 3: Enter the appropriate Subcategory, if applicable, and also enter "Contaminated Soil" or "Debris" if the waste will be treated using one of the alternative treatment technologies provided by 268.49 (c) – soil, or 268.45 – debris.
Column 4: Enter the letter of the appropriate paragraph from pages 1-2 of this form.
Column 5: For F001 – F005, F039, D001 – D043, Debris and Contaminated Soil: please enter the Reference Number(s) for any constituents in your waste stream subject to treatment. The Reference Number(s) can be found in the EQ Resource Guide, LDR/UHC Constituent Table.

Manifest Line Item	U.S. EPA Hazardous Waste Code (s)	NWW or WW	Subcategory	How Must the Waste be Managed?	Reference Number(s) of Hazardous Constituents contained in the waste. Complete for F001-F005, F039, D001-D043, Soil and Debris wastes.
11A	D008	NWW		A	
11B					
11C					
11D					

I hereby certify that all information submitted on this and all associated documents is complete and accurate to the best of my knowledge and information.

Generator Signature: _____ **Title:** Haz Waste Program Mgr

Printed Name: Linda J. Tirrell **Date:** 10/4/10

How Must the Waste Be Managed?

S. THIS CONTAMINATED SOIL *DOES* / *DOES NOT* (CIRCLE ONE) CONTAIN LISTED HAZARDOUS WASTE AND *DOES* / *DOES NOT* (CIRCLE ONE) EXHIBIT A CHARACTERISTIC OF HAZARDOUS WASTE AND *IS SUBJECT TO* / *COMPLIES WITH* (CIRCLE ONE) THE SOIL TREATMENT STANDARDS AS PROVIDED BY 268.49(c) OR THE UNIVERSAL TREATMENT STANDARDS. I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and believe that it has been maintained and operated properly so as to comply with treatment standards specified in 40 CFR 268.49 without impermissible dilution of the prohibited wastes. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

Land Disposal Restriction & Certification Form

A. THIS RESTRICTED WASTE REQUIRES TREATMENT TO THE APPLICABLE STANDARD. This waste must be treated to the applicable performance based treatment standard set forth in 40CFR Part 268 Subpart C and Subpart D, 268.40 or RCRA Section 3004(d) prior to land disposal.

B. THIS HAZARDOUS DEBRIS IS SUBJECT TO THE ALTERNATIVE TREATMENT STANDARDS OF 40 CFR 268.45.

C. THIS RESTRICTED WASTE HAS BEEN TREATED TO THE PERFORMANCE STANDARDS. I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

D. THIS RESTRICTED WASTE CAN BE LAND DISPOSED WITHOUT TREATMENT. I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR part 268 subpart D. I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

E. THIS LAB PACK DOES NOT CONTAIN ANY WASTES IDENTIFIED AT APPENDIX IV TO PART 268. I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have not been excluded under appendix IV to 40 CFR part 268 and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at 40 CFR 268.42(c). I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

F. THIS RESTRICTED WASTE HAS BEEN TREATED TO REMOVE THE HAZARDOUS CHARACTERISTIC AND CONTAINS UNDERLYING HAZARDOUS CONSTITUENTS THAT REQUIRE FURTHER TREATMENT TO MEET THE UNIVERSAL TREATMENT STANDARDS. I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 or 268.49 to remove the hazardous characteristic. This decharacterized waste contains underlying hazardous constituents that require further treatment to meet treatment standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

G. THIS RESTRICTED WASTE HAS BEEN TREATED TO REMOVE THE HAZARDOUS CHARACTERISTIC AND BEEN TREATED FOR UNDERLYING HAZARDOUS CONSTITUENTS. I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic and that underlying hazardous constituents, as defined in §268.2(i) have been treated on-site to meet the §268.48 Universal Treatment Standards. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment..

H. THIS RESTRICTED WASTE IS SUBJECT TO AN EXEMPTION FROM LAND DISPOSAL. *(Please include the date the waste is subject to the prohibitions in Column 5)* This waste is subject to an exemption from a prohibition on the type of land disposal method utilized for the waste (such as, but not limited to, a case-by-case extension under 40 CFR Part 268.5, an exemption under 40 CFR 268.6, or a nationwide capacity variance under 40 CFR 269 Subpart C)

I. THIS RESTRICTED WASTE WITH TREATMENT STANDARDS EXPRESSED AS CONCENTRATIONS IN THE WASTE PURSUANT TO 268.43, IF COMPLIANCE WITH THE TREATMENT STANDARDS IN SUBPART D OF THIS PART IS BASED IN PART OR IN WHOLE ON THE ANALYTICAL DETECTION LIMIT ALTERNATIVE IN 268.439(c). I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the nonwastewater organic constituents have been treated by combustion units as specified in 268.42, Table 1. I have been unable to detect the nonwastewater organic constituents, despite having used best good-faith efforts to analyze for such constituents. I am aware there are significant penalties for submitting a false certifications, including the possibility of fine and imprisonment.

Report Date:
29-Sep-10 09:44

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

New England Disposal Technologies, Inc
83 Gilmore Drive
Sutton, MA 01590
Attn: Lon Cohen

Project: Navy Base-Crystal Lake Rd - Groton, CT
Project #: IDW - Phase I

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SB18230-01	Soil	Soil	15-Sep-10 09:30	16-Sep-10 17:17

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393

Authorized by:

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.
Please note that this report contains 13 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 5.0 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 3.0 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

These samples do not exhibit the characteristics of reactivity as defined in 40 CFR 261.23, sections (1), (2), (4), and (5); however, Spectrum Analytical, Inc. does not test for detonation, explosive reaction or potential, or forbidden explosives as defined in 40 CFR 261.23, sections (3), (6), (7) and (8).

All VOC soils samples submitted and analyzed in methanol will have a minimum dilution factor of 50. This is the minimum amount of solvent allowed on the instrumentation without causing interference. Additional dilution factors may be required to keep analyte concentration within instrument calibration.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 1030

Duplicates:

1019742-DUP1 *Source: SB18230-01*

A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for Ignitability is not specified within the method other than to state that the samples should be analyzed as soon as possible.

Ignitability by Definition

Samples:

SB18230-01 *Soil*

A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for Ignitability is not specified within the method other than to state that the samples should be analyzed as soon as possible.

Ignitability by Definition

SW846 1311/6010B

Blanks:

1019828-BLK1

The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.

Barium

Samples:

SB18230-01 *Soil*

Data confirmed with duplicate analysis.

Barium
Cadmium
Lead

SW846 9045C

SW846 9045C

Laboratory Control Samples:

1019736 SRM

pH percent recovery 111 (92-108) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Soil

1019736 SRM/SRMD

pH percent recoveries (111/101) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially bias:

Soil

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Soil SB18230-01	IDW - Phase I	Soil	15-Sep-10 09:30	16-Sep-10

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
	TCLP Extraction	Completed		N/A		1	SW846 1311	17-Sep-10	17-Sep-10	AMT	1019769	X
TCLP Volatile Organic Compounds by 8260B (TCL) Prepared by method SW846 5030 Water MS					Initial weight: 5 ml							
71-43-2	Benzene	BRL		µg/l	5.0	5	SW846 1311/8260B	24-Sep-10	24-Sep-10	EK/	1020148	
78-93-3	2-Butanone (MEK)	BRL		µg/l	50.0	5	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	5.0	5	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	5.0	5	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	5.0	5	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*98*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*93*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*108*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*99*			*70-130 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GCMS												
	TCLP Extraction	Completed		N/A		1	SW846 1311	17-Sep-10	17-Sep-10	AMT	1019763	X
TCLP Semivolatiles by SW846 1311/8270C (TCL) Prepared by method SW846 3535												
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	5.00	1	SW846 1311/8270C/D	20-Sep-10	20-Sep-10	SM	1019783	X
121-14-2	2,4-Dinitrotoluene	BRL		µg/l	5.00	1	"	"	"	"	"	X
118-74-1	Hexachlorobenzene	BRL		µg/l	5.00	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	BRL		µg/l	5.00	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	BRL		µg/l	5.00	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	BRL		µg/l	10.0	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	BRL		µg/l	5.00	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
110-86-1	Pyridine	BRL		µg/l	5.00	1	"	"	"	"	"	X
95-95-4	2,4,5-Trichlorophenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
Surrogate recoveries:												
321-60-8	*2-Fluorobiphenyl*	*83*			*30-130 %*		"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*79*			*30-130 %*		"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*76*			*30-130 %*		"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*80*			*30-130 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3545A												
12674-11-2	Aroclor-1016	BRL		µg/kg dry	20.1	1	SW846 8082	17-Sep-10	17-Sep-10	SM	1019681	X
11104-28-2	Aroclor-1221	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X
11141-16-5	Aroclor-1232	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Soil SB18230-01	IDW - Phase I	Soil	15-Sep-10 09:30	16-Sep-10

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3545A												
53469-21-9	Aroclor-1242	BRL		µg/kg dry	20.1	1	SW846 8082	17-Sep-10	17-Sep-10	SM	1019681	X
12672-29-6	Aroclor-1248	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	BRL		µg/kg dry	20.1	1	"	"	"	"	"	X
Surrogate recoveries:												
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr)*	*75*			*30-150 %*		"	"	"	"	"	
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr) [2C]*	*76*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr)*	*46*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*52*			*30-150 %*		"	"	"	"	"	
TCLP Metals by EPA 1311 & 6000/7000 Series Methods												
	TCLP Extraction	Completed		N/A		1	SW846 1311	17-Sep-10	17-Sep-10	WW	1019759	X
7440-22-4	Silver	BRL		mg/l	0.0100	1	SW846 1311/6010B	20-Sep-10	20-Sep-10	JB	1019828	X
7440-38-2	Arsenic	BRL		mg/l	0.0090	1	"	"	21-Sep-10	"	"	X
7440-39-3	Barium	0.410	V11	mg/l	0.0100	1	"	"	20-Sep-10	"	"	X
7440-43-9	Cadmium	0.0054	V11	mg/l	0.0050	1	"	"	"	"	"	X
7440-47-3	Chromium	BRL		mg/l	0.0100	1	"	"	"	"	"	X
7439-97-6	Mercury	BRL		mg/l	0.00020	1	SW846 1311/7470A	"	21-Sep-10	ARF	1019829	X
7439-92-1	Lead	25.2	V11	mg/l	0.0150	1	SW846 1311/6010B	"	20-Sep-10	JB	1019828	X
7782-49-2	Selenium	BRL		mg/l	0.0300	1	"	"	"	"	"	X
General Chemistry Parameters												
	% Solids	96.0		%		1	SM2540 G Mod.	17-Sep-10	17-Sep-10	AB	1019723	
Toxicity Characteristics												
	Ignitability by Definition	Negative	IgHT	N/A		1	SW846 1030	17-Sep-10 09:55	17-Sep-10 09:55	VK	1019742	X
	pH	10.6	pH	pH Units		1	SW846 9045C	17-Sep-10 12:28	17-Sep-10 15:46	TDD	1019736	X
Reactivity Cyanide/Sulfide Prepared by method General Preparation												
	Reactivity	Nonreactive		mg/kg dry		1	SW846 Ch. 7.3	23-Sep-10	24-Sep-10	BD	1020103	X
	Reactive Cyanide	BRL		mg/kg dry	24.8	1	"	"	"	"	"	X
	Reactive Sulfide	BRL		mg/kg dry	49.5	1	"	"	"	"	"	X

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1020148 - SW846 5030 Water MS										
Blank (1020148-BLK1)					Prepared & Analyzed: 24-Sep-10					
Benzene	BRL		µg/l	1.0						
2-Butanone (MEK)	BRL		µg/l	10.0						
Carbon tetrachloride	BRL		µg/l	1.0						
Chlorobenzene	BRL		µg/l	1.0						
Chloroform	BRL		µg/l	1.0						
1,2-Dichloroethane	BRL		µg/l	1.0						
1,1-Dichloroethene	BRL		µg/l	1.0						
Tetrachloroethene	BRL		µg/l	1.0						
Trichloroethene	BRL		µg/l	1.0						
Vinyl chloride	BRL		µg/l	1.0						
Surrogate: 4-Bromofluorobenzene	*30.1*		µg/l		*30.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*27.9*		µg/l		*30.0*		*93*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*32.8*		µg/l		*30.0*		*110*	*70-130*		
Surrogate: Dibromofluoromethane	*30.1*		µg/l		*30.0*		*100*	*70-130*		
Blank (1020148-BLK2)					Prepared & Analyzed: 24-Sep-10					
Benzene	BRL		µg/l	5.0						
2-Butanone (MEK)	BRL		µg/l	50.0						
Carbon tetrachloride	BRL		µg/l	5.0						
Chlorobenzene	BRL		µg/l	5.0						
Chloroform	BRL		µg/l	5.0						
1,2-Dichloroethane	BRL		µg/l	5.0						
1,1-Dichloroethene	BRL		µg/l	5.0						
Tetrachloroethene	BRL		µg/l	5.0						
Trichloroethene	BRL		µg/l	5.0						
Vinyl chloride	BRL		µg/l	5.0						
Surrogate: 4-Bromofluorobenzene	*30.7*		µg/l		*30.0*		*102*	*70-130*		
Surrogate: Toluene-d8	*27.9*		µg/l		*30.0*		*93*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*31.6*		µg/l		*30.0*		*105*	*70-130*		
Surrogate: Dibromofluoromethane	*29.2*		µg/l		*30.0*		*97*	*70-130*		
LCS (1020148-BS1)					Prepared & Analyzed: 24-Sep-10					
Benzene	20.6		µg/l		20.0		103	70-130		
2-Butanone (MEK)	19.2		µg/l		20.0		96	70-130		
Carbon tetrachloride	22.1		µg/l		20.0		111	70-130		
Chlorobenzene	18.2		µg/l		20.0		91	70-130		
Chloroform	19.9		µg/l		20.0		99	70-130		
1,2-Dichloroethane	21.2		µg/l		20.0		106	70-130		
1,1-Dichloroethene	23.0		µg/l		20.0		115	70-130		
Tetrachloroethene	20.7		µg/l		20.0		104	70-130		
Trichloroethene	20.6		µg/l		20.0		103	70-130		
Vinyl chloride	22.6		µg/l		20.0		113	70-130		
Surrogate: 4-Bromofluorobenzene	*30.9*		µg/l		*30.0*		*103*	*70-130*		
Surrogate: Toluene-d8	*29.0*		µg/l		*30.0*		*96*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*32.4*		µg/l		*30.0*		*108*	*70-130*		
Surrogate: Dibromofluoromethane	*30.8*		µg/l		*30.0*		*103*	*70-130*		
LCS Dup (1020148-BSD1)					Prepared & Analyzed: 24-Sep-10					
Benzene	21.2		µg/l		20.0		106	70-130	3	30
2-Butanone (MEK)	18.1		µg/l		20.0		91	70-130	6	30
Carbon tetrachloride	23.6		µg/l		20.0		118	70-130	6	30
Chlorobenzene	19.4		µg/l		20.0		97	70-130	6	30
Chloroform	20.5		µg/l		20.0		103	70-130	3	30

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1020148 - SW846 5030 Water MS										
LCS Dup (1020148-BSD1)					Prepared & Analyzed: 24-Sep-10					
1,2-Dichloroethane	21.1		µg/l		20.0		106	70-130	0.3	30
1,1-Dichloroethene	23.4		µg/l		20.0		117	70-130	2	30
Tetrachloroethene	21.3		µg/l		20.0		106	70-130	3	30
Trichloroethene	21.3		µg/l		20.0		107	70-130	3	30
Vinyl chloride	23.9		µg/l		20.0		119	70-130	5	30
Surrogate: 4-Bromofluorobenzene	*30.9*		µg/l		*30.0*		*103*	*70-130*		
Surrogate: Toluene-d8	*28.6*		µg/l		*30.0*		*95*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*31.5*		µg/l		*30.0*		*105*	*70-130*		
Surrogate: Dibromofluoromethane	*30.1*		µg/l		*30.0*		*100*	*70-130*		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019783 - SW846 3535										
Blank (1019783-BLK1)						Prepared & Analyzed: 20-Sep-10				
1,4-Dichlorobenzene	BRL		µg/l	5.00						
2,4-Dinitrotoluene	BRL		µg/l	5.00						
Hexachlorobenzene	BRL		µg/l	5.00						
Hexachlorobutadiene	BRL		µg/l	5.00						
Hexachloroethane	BRL		µg/l	5.00						
2-Methylphenol	BRL		µg/l	5.00						
3 & 4-Methylphenol	BRL		µg/l	10.0						
Nitrobenzene	BRL		µg/l	5.00						
Pentachlorophenol	BRL		µg/l	5.00						
Pyridine	BRL		µg/l	5.00						
2,4,5-Trichlorophenol	BRL		µg/l	5.00						
2,4,6-Trichlorophenol	BRL		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*45.9*		µg/l		*55.6*		*83*	*30-130*		
Surrogate: 2-Fluorophenol	*45.3*		µg/l		*55.6*		*81*	*30-130*		
Surrogate: Nitrobenzene-d5	*43.3*		µg/l		*55.6*		*78*	*30-130*		
Surrogate: Terphenyl-dl4	*44.1*		µg/l		*55.6*		*79*	*30-130*		
LCS (1019783-BS1)						Prepared & Analyzed: 20-Sep-10				
1,4-Dichlorobenzene	161		µg/l	5.00	200		80	40-140		
2,4-Dinitrotoluene	188		µg/l	5.00	200		94	40-140		
Hexachlorobenzene	183		µg/l	5.00	200		91	40-140		
Hexachlorobutadiene	126		µg/l	5.00	200		63	40-140		
Hexachloroethane	161		µg/l	5.00	200		81	40-140		
2-Methylphenol	157		µg/l	5.00	200		79	30-130		
3 & 4-Methylphenol	165		µg/l	10.0	200		82	40-130		
Nitrobenzene	137		µg/l	5.00	200		68	40-140		
Pentachlorophenol	145		µg/l	5.00	200		73	30-130		
Pyridine	176		µg/l	5.00	200		88	40-140		
2,4,5-Trichlorophenol	152		µg/l	5.00	200		76	30-130		
2,4,6-Trichlorophenol	163		µg/l	5.00	200		82	30-130		
Surrogate: 2-Fluorobiphenyl	*170*		µg/l		*200*		*85*	*30-130*		
Surrogate: 2-Fluorophenol	*168*		µg/l		*200*		*84*	*15-110*		
Surrogate: Nitrobenzene-d5	*139*		µg/l		*200*		*70*	*30-130*		
Surrogate: Terphenyl-dl4	*157*		µg/l		*200*		*78*	*30-130*		
LCS Dup (1019783-BSD1)						Prepared & Analyzed: 20-Sep-10				
1,4-Dichlorobenzene	165		µg/l	5.00	200		82	40-140	2	20
2,4-Dinitrotoluene	196		µg/l	5.00	200		98	40-140	4	20
Hexachlorobenzene	189		µg/l	5.00	200		94	40-140	3	20
Hexachlorobutadiene	130		µg/l	5.00	200		65	40-140	3	20
Hexachloroethane	166		µg/l	5.00	200		83	40-140	3	20
2-Methylphenol	161		µg/l	5.00	200		80	30-130	2	20
3 & 4-Methylphenol	168		µg/l	10.0	200		84	40-130	2	20
Nitrobenzene	139		µg/l	5.00	200		69	40-140	1	20
Pentachlorophenol	152		µg/l	5.00	200		76	30-130	5	20
Pyridine	178		µg/l	5.00	200		89	40-140	1	20
2,4,5-Trichlorophenol	157		µg/l	5.00	200		79	30-130	3	20
2,4,6-Trichlorophenol	169		µg/l	5.00	200		85	30-130	4	20
Surrogate: 2-Fluorobiphenyl	*176*		µg/l		*200*		*88*	*30-130*		
Surrogate: 2-Fluorophenol	*173*		µg/l		*200*		*87*	*15-110*		
Surrogate: Nitrobenzene-d5	*143*		µg/l		*200*		*71*	*30-130*		
Surrogate: Terphenyl-dl4	*165*		µg/l		*200*		*82*	*30-130*		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019783 - SW846 3535										
Duplicate (1019783-DUP1)			**Source: SB18230-01**		Prepared & Analyzed: 20-Sep-10					
1,4-Dichlorobenzene	BRL		µg/l	5.00		BRL				50
2,4-Dinitrotoluene	BRL		µg/l	5.00		BRL				50
Hexachlorobenzene	BRL		µg/l	5.00		BRL				50
Hexachlorobutadiene	BRL		µg/l	5.00		BRL				50
Hexachloroethane	BRL		µg/l	5.00		BRL				50
2-Methylphenol	BRL		µg/l	5.00		BRL				50
3 & 4-Methylphenol	BRL		µg/l	10.0		BRL				50
Nitrobenzene	BRL		µg/l	5.00		BRL				50
Pentachlorophenol	BRL		µg/l	5.00		BRL				50
Pyridine	BRL		µg/l	5.00		BRL				50
2,4,5-Trichlorophenol	BRL		µg/l	5.00		BRL				50
2,4,6-Trichlorophenol	BRL		µg/l	5.00		BRL				50
Surrogate: 2-Fluorobiphenyl	*82.7*		µg/l		*100*		*83*	*30-130*		
Surrogate: 2-Fluorophenol	*76.5*		µg/l		*100*		*76*	*30-130*		
Surrogate: Nitrobenzene-d5	*74.3*		µg/l		*100*		*74*	*30-130*		
Surrogate: Terphenyl-dl4	*78.0*		µg/l		*100*		*78*	*30-130*		

Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019681 - SW846 3545A										
Blank (1019681-BLK1)					Prepared & Analyzed: 17-Sep-10					
Aroclor-1016	BRL		µg/kg wet	20.0						
Aroclor-1016 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1221	BRL		µg/kg wet	20.0						
Aroclor-1221 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1232	BRL		µg/kg wet	20.0						
Aroclor-1232 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1242	BRL		µg/kg wet	20.0						
Aroclor-1242 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1248	BRL		µg/kg wet	20.0						
Aroclor-1248 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1254	BRL		µg/kg wet	20.0						
Aroclor-1254 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1260	BRL		µg/kg wet	20.0						
Aroclor-1260 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1262	BRL		µg/kg wet	20.0						
Aroclor-1262 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1268	BRL		µg/kg wet	20.0						
Aroclor-1268 [2C]	BRL		µg/kg wet	20.0						
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*18.0*		µg/kg wet		*20.0*		*90*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*19.3*		µg/kg wet		*20.0*		*96*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*17.9*		µg/kg wet		*20.0*		*90*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*18.4*		µg/kg wet		*20.0*		*92*	*30-150*		
LCS (1019681-BS1)					Prepared & Analyzed: 17-Sep-10					
Aroclor-1016	212		µg/kg wet	20.0	250		85	50-140		
Aroclor-1016 [2C]	208		µg/kg wet	20.0	250		83	50-140		
Aroclor-1260	197		µg/kg wet	20.0	250		79	50-140		
Aroclor-1260 [2C]	229		µg/kg wet	20.0	250		91	50-140		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*21.3*		µg/kg wet		*20.0*		*107*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*19.6*		µg/kg wet		*20.0*		*98*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*17.4*		µg/kg wet		*20.0*		*87*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*19.3*		µg/kg wet		*20.0*		*96*	*30-150*		
LCS Dup (1019681-BSD1)					Prepared & Analyzed: 17-Sep-10					
Aroclor-1016	200		µg/kg wet	20.0	250		80	50-140	6	30
Aroclor-1016 [2C]	195		µg/kg wet	20.0	250		78	50-140	6	30
Aroclor-1260	183		µg/kg wet	20.0	250		73	50-140	8	30
Aroclor-1260 [2C]	223		µg/kg wet	20.0	250		89	50-140	3	30
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*19.9*		µg/kg wet		*20.0*		*100*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*18.0*		µg/kg wet		*20.0*		*90*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*16.1*		µg/kg wet		*20.0*		*80*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*18.6*		µg/kg wet		*20.0*		*93*	*30-150*		

TCLP Metals by EPA 1311 & 6000/7000 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019828 - SW846 3010A										
Blank (1019828-BLK1)						Prepared & Analyzed: 20-Sep-10				
Lead	BRL		mg/l	0.0150						
Selenium	BRL		mg/l	0.0300						
Arsenic	BRL		mg/l	0.0090						
Silver	BRL		mg/l	0.0100						
Chromium	BRL		mg/l	0.0100						
Cadmium	BRL		mg/l	0.0050						
Barium	0.0105	QB1	mg/l	0.0100						
LCS (1019828-BS1)						Prepared & Analyzed: 20-Sep-10				
Selenium	2.56		mg/l	0.0300	2.50		102	85-115		
Lead	2.46		mg/l	0.0150	2.50		98	85-115		
Arsenic	2.47		mg/l	0.0090	2.50		99	85-115		
Cadmium	2.47		mg/l	0.0050	2.50		99	85-115		
Chromium	2.60		mg/l	0.0100	2.50		104	85-115		
Silver	2.59		mg/l	0.0100	2.50		103	85-115		
Barium	2.44		mg/l	0.0100	2.50		98	85-115		
LCS Dup (1019828-BSD1)						Prepared & Analyzed: 20-Sep-10				
Lead	2.48		mg/l	0.0150	2.50		99	85-115	1	20
Selenium	2.56		mg/l	0.0300	2.50		102	85-115	0.08	20
Chromium	2.60		mg/l	0.0100	2.50		104	85-115	0.3	20
Silver	2.59		mg/l	0.0100	2.50		103	85-115	0	104
Arsenic	2.49		mg/l	0.0090	2.50		100	85-115	0.9	20
Cadmium	2.48		mg/l	0.0050	2.50		99	85-115	0.3	20
Barium	2.45		mg/l	0.0100	2.50		98	85-115	0.4	20
Duplicate (1019828-DUP1)			**Source: SB18230-01**			Prepared & Analyzed: 20-Sep-10				
Selenium	0.0114	J	mg/l	0.0300		0.0095			18	20
Lead	27.9		mg/l	0.0150		25.2			10	20
Silver	BRL		mg/l	0.0100		BRL				20
Arsenic	0.0076	J	mg/l	0.0090		BRL				20
Cadmium	0.0055		mg/l	0.0050		0.0054			2	20
Chromium	0.0068	J	mg/l	0.0100		BRL				20
Barium	0.451		mg/l	0.0100		0.410			10	20
Batch 1019829 - EPA200/SW7000 Series										
Blank (1019829-BLK1)						Prepared: 20-Sep-10 Analyzed: 21-Sep-10				
Mercury	BRL		mg/l	0.00020						
LCS (1019829-BS1)						Prepared: 20-Sep-10 Analyzed: 21-Sep-10				
Mercury	0.00510		mg/l	0.00020	0.00500		102	85-115		
Duplicate (1019829-DUP1)			**Source: SB18230-01**			Prepared: 20-Sep-10 Analyzed: 21-Sep-10				
Mercury	BRL		mg/l	0.00020		BRL				20

Toxicity Characteristics - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019736 - General Preparation										
Reference (1019736-SRM1)						Prepared & Analyzed: 17-Sep-10				
pH	6.13		pH Units		5.51		111	92-108		
Reference (1019736-SRM2)						Prepared & Analyzed: 17-Sep-10				
pH	6.07		pH Units		6.00		101	97.5-102.5		
Batch 1019742 - General Preparation										
Duplicate (1019742-DUP1)			**Source: SB18230-01**			Prepared & Analyzed: 17-Sep-10				
Ignitability by Definition	Negative	IgHT	N/A			Negative				35
Batch 1020103 - General Preparation										
Blank (1020103-BLK1)						Prepared: 23-Sep-10 Analyzed: 24-Sep-10				
Reactivity	0.00		mg/kg wet							
Reactive Cyanide	BRL		mg/kg wet	25.0						
Reactive Sulfide	BRL		mg/kg wet	50.0						
Reference (1020103-SRM1)						Prepared: 23-Sep-10 Analyzed: 24-Sep-10				
Reactive Cyanide	3.23		mg/kg wet	25.0	100		3	0-200		
Reference (1020103-SRM2)						Prepared: 23-Sep-10 Analyzed: 24-Sep-10				
Reactive Sulfide	176		mg/kg wet	50.0	6700		3	0-200		

Notes and Definitions

IgHT	A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for Ignitability is not specified within the method other than to state that the samples should be analyzed as soon as possible.
QB1	The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.
V11	Data confirmed with duplicate analysis.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:
Hanibal C. Tayeh, Ph.D.
Kimberly Wisk
Nicole Leja
Rebecca Merz

✓ SB 18230

SPECTRUM ANALYTICAL, INC.
Featuring
HANDAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- ☒ Standard TAT - 7 to 10 business days
- ☐ Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: N.E.D.T., Inc.
83 Gilmore Dr.
Sutton, MA 01590

Telephone #: 508-234-4440
Project Mgr. Lon Cohen

Invoice To: Same

P.O. No.: _____ RQN: _____

Project No.: IDW - Phase I
Site Name: Navy Base - Crystal Lake Rd.
Location: Groton State: CT
Sampler(s): BB

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 4°C 10= _____ 11= _____

List preservative code below: 9

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	pH	Reactivity CN/S	TCLP RCRA 8 Metals	TCLP VOC	TCLP SVOC	Ignitability	PCB
B2230-01	SOIL	9/15/10	9:30AM	G	SO		1			✓	✓	✓	✓	✓	✓	✓

Analyses:

☐ Provide MA DEP MCP CAM Report
☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
[signature]	Sandy Foster	9/15/10	12:00	
Sandy Foster	[signature]	9/16/10	11:20	5.0
[signature]	[signature]	9/16/10	17:17	3.9

☐ EDD Format _____
☒ E-mail to lcohen@nedtinc.com

☐ Ambient ☐ Iced ☒ Refrigerated ☒ Fridge temp 4 °C ☐ Freezer temp ___ °C

Report Date:
20-Oct-10 16:24

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

New England Disposal Technologies, Inc
83 Gilmore Drive
Sutton, MA 01590
Attn: Lon Cohen

Project: Navy Base-Crystal Lake Rd - Groton, CT
Project #: IDW-Disposal

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SB19562-01	IDW Soil	Soil	14-Oct-10 09:00	15-Oct-10 15:30

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435

Authorized by:

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.
Please note that this report contains 19 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

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CASE NARRATIVE:

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 3.8 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 1.2 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

All VOC soils samples submitted and analyzed in methanol will have a minimum dilution factor of 50. This is the minimum amount of solvent allowed on the instrumentation without causing interference. Additional dilution factors may be required to keep analyte concentration within instrument calibration.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 8260B/C

Calibration:

1008010

Analyte quantified by quadratic equation type calibration.

1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane (EDB)
2-Hexanone (MBK)
4-Methyl-2-pentanone (MIBK)
Bromodichloromethane
Bromoform
Carbon disulfide
cis-1,3-Dichloropropene
Dibromochloromethane
Naphthalene
trans-1,3-Dichloropropene

This affected the following samples:

1021778-BLK1
1021778-BS1
1021778-BSD1
IDW Soil
S007387-ICV1
S009371-CCV1

S007387-ICV1

Analyte percent recovery is outside individual acceptance criteria (70-130).

Methyl tert-butyl ether (221%)

This affected the following samples:

1021778-BLK1
1021778-BS1
1021778-BSD1
IDW Soil
S009371-CCV1

Laboratory Control Samples:

SW846 8260B/C

Laboratory Control Samples:

1021778 BS/BSD

Ethyl tert-butyl ether percent recoveries (68/71) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Tert-amyl methyl ether percent recoveries (64/66) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Samples:

S009371-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Chloroethane (-24.8%)
Chloromethane (-30.3%)
Dichlorodifluoromethane (Freon12) (-26.0%)
Ethanol (-28.2%)
Ethyl tert-butyl ether (-33.8%)
Methyl tert-butyl ether (-22.8%)
Tert-Butanol / butyl alcohol (-29.4%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

n-Butylbenzene (-21.8%)
Tert-amyl methyl ether (-36.2%)

This affected the following samples:

1021778-BLK1
1021778-BS1
1021778-BSD1
IDW Soil

SW846 8270C/D

Calibration:

1009014

Analyte quantified by quadratic equation type calibration.

Aniline
Benzidine

This affected the following samples:

S008553-ICV1

S008553-ICV1

Analyte percent recovery is outside individual acceptance criteria (70-130).

4-Bromophenyl phenyl ether (142%)
4-Nitroaniline (143%)
Aniline (0%)
Hexachlorocyclopentadiene (378%)
N-Nitrosodiphenylamine (144%)

SW846 8270C/D

Calibration:

S008553-ICV1

This affected the following samples:

IDW Soil
S009403-CCV1

Laboratory Control Samples:

1021617 BS

2,4-Dinitrophenol percent recovery 16 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

2-Nitrophenol percent recovery 33 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

4,6-Dinitro-2-methylphenol percent recovery 11 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

4-Nitroaniline percent recovery 138 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

IDW Soil

4-Nitrophenol percent recovery 35 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Benzidine percent recovery 7 (40-140) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Benzoic acid percent recovery 37 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Hexachlorocyclopentadiene percent recovery 32 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Pentachlorophenol percent recovery 29 (40-130) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

IDW Soil

Samples:

S009341-CCV1

SW846 8270C/D

Samples:

S009341-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

2-Nitrophenol (44.6%)
3-Nitroaniline (33.9%)
4-Nitroaniline (39.6%)
4-Nitrophenol (24.5%)
Hexachlorocyclopentadiene (20.3%)
Pentachloronitrobenzene (31.5%)
Pyridine (-43.6%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

2,4-Dinitrophenol (111%)
2,4-Dinitrotoluene (28.6%)
2,6-Dinitrotoluene (31.7%)
2-Nitroaniline (28.4%)
4,6-Dinitro-2-methylphenol (95.4%)
Benzoic acid (63.3%)
Pentachlorophenol (23.6%)

This affected the following samples:

1021617-BLK1
1021617-BS1

S009403-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

Azobenzene/Diphenyldiazine (20.5%)
Bis(2-chloroisopropyl)ether (31.1%)
Bis(2-ethylhexyl)phthalate (81.6%)
Butyl benzyl phthalate (26.8%)
Chrysene (51.2%)
Di-n-butyl phthalate (30.8%)
Di-n-octyl phthalate (34.0%)
Nitrobenzene (26.4%)
N-Nitrosodiphenylamine (21.7%)
Pentachloronitrobenzene (32.4%)
Pentachlorophenol (-25.9%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

4,6-Dinitro-2-methylphenol (28.7%)
Aniline (-46.0%)

This affected the following samples:

IDW Soil

SB19562-01 *IDW Soil*

Elevated Reporting Limits due to the presence of high levels of non-target analytes.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
IDW Soil	IDW-Disposal	Soil	14-Oct-10 09:00	15-Oct-10
SB19562-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
	VOC Extraction	Field extracted		N/A		1	VOC Soil Extraction	15-Oct-10	15-Oct-10	SJL	1021604	
Volatile Organic Compounds												
Prepared by method SW846 5030 Soil (high level)					Initial weight: 14.95 g							
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/kg dry	54.9	50	SW846 8260B/C	19-Oct-10	20-Oct-10	eq	1021778	X
67-64-1	Acetone	BRL		µg/kg dry	549	50	"	"	"	"	"	X
107-13-1	Acrylonitrile	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
71-43-2	Benzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
108-86-1	Bromobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
74-97-5	Bromochloromethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-27-4	Bromodichloromethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-25-2	Bromoform	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
74-83-9	Bromomethane	BRL		µg/kg dry	110	50	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	BRL		µg/kg dry	549	50	"	"	"	"	"	X
104-51-8	n-Butylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-15-0	Carbon disulfide	BRL		µg/kg dry	110	50	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
108-90-7	Chlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-00-3	Chloroethane	BRL		µg/kg dry	110	50	"	"	"	"	"	X
67-66-3	Chloroform	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
74-87-3	Chloromethane	BRL		µg/kg dry	110	50	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
106-43-4	4-Chlorotoluene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/kg dry	110	50	"	"	"	"	"	X
124-48-1	Dibromochloromethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
74-95-3	Dibromomethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/kg dry	110	50	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
100-41-4	Ethylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	BRL		µg/kg dry	549	50	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
IDW Soil	IDW-Disposal	Soil	14-Oct-10 09:00	15-Oct-10
SB19562-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds												
Prepared by method SW846 5030 Soil (high level)					Initial weight: 14.95 g							
98-82-8	Isopropylbenzene	BRL		µg/kg dry	54.9	50	SW846 8260B/C	19-Oct-10	20-Oct-10	eq	1021778	X
99-87-6	4-Isopropyltoluene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
1634-04-4	Methyl tert-butyl ether	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/kg dry	549	50	"	"	"	"	"	X
75-09-2	Methylene chloride	BRL		µg/kg dry	110	50	"	"	"	"	"	X
91-20-3	Naphthalene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
103-65-1	n-Propylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
100-42-5	Styrene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
127-18-4	Tetrachloroethene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
108-88-3	Toluene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
79-01-6	Trichloroethene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
75-01-4	Vinyl chloride	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
179601-23-1	m,p-Xylene	BRL		µg/kg dry	110	50	"	"	"	"	"	X
95-47-6	o-Xylene	BRL		µg/kg dry	54.9	50	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	BRL		µg/kg dry	110	50	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/kg dry	54.9	50	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/kg dry	54.9	50	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/kg dry	54.9	50	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/kg dry	54.9	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/kg dry	549	50	"	"	"	"	"	X
123-91-1	1,4-Dioxane	BRL		µg/kg dry	1100	50	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/kg dry	274	50	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/kg dry	21900	50	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*95*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*103*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*87*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*85*			*70-130 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C			R05									
Prepared by method SW846 3545A												
83-32-9	Acenaphthene	BRL		µg/kg dry	3360	20	SW846 8270C/D	18-Oct-10	20-Oct-10	ML	1021617	X
208-96-8	Acenaphthylene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
IDW Soil	IDW-Disposal	Soil	14-Oct-10 09:00	15-Oct-10
SB19562-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3545A			R05									
62-53-3	Aniline	BRL		µg/kg dry	6720	20	SW846 8270C/D	18-Oct-10	20-Oct-10	ML	1021617	X
120-12-7	Anthracene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
103-33-3	Azobenzene/Diphenyldiazine	BRL		µg/kg dry	6720	20	"	"	"	"	"	
92-87-5	Benzidine	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
65-85-0	Benzoic acid	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
100-51-6	Benzyl alcohol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
86-74-8	Carbazole	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
106-47-8	4-Chloroaniline	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
95-57-8	2-Chlorophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
218-01-9	Chrysene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
132-64-9	Dibenzofuran	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
91-94-1	3,3´-Dichlorobenzidine	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
84-66-2	Diethyl phthalate	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
206-44-0	Fluoranthene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
86-73-7	Fluorene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
118-74-1	Hexachlorobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
IDW Soil	IDW-Disposal	Soil	14-Oct-10 09:00	15-Oct-10
SB19562-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3545A			R05									
77-47-4	Hexachlorocyclopentadiene	BRL		µg/kg dry	6720	20	SW846 8270C/D	18-Oct-10	20-Oct-10	ML	1021617	X
67-72-1	Hexachloroethane	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	BRL		µg/kg dry	3360	20	"	"	"	"	"	
78-59-1	Isophorone	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
95-48-7	2-Methylphenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
91-20-3	Naphthalene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
88-74-4	2-Nitroaniline	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
99-09-2	3-Nitroaniline	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
100-01-6	4-Nitroaniline	BRL		µg/kg dry	26900	20	"	"	"	"	"	X
98-95-3	Nitrobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
88-75-5	2-Nitrophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
100-02-7	4-Nitrophenol	BRL		µg/kg dry	26900	20	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
87-86-5	Pentachlorophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
85-01-8	Phenanthrene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
108-95-2	Phenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
129-00-0	Pyrene	BRL		µg/kg dry	3360	20	"	"	"	"	"	X
110-86-1	Pyridine	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
95-95-4	2,4,5-Trichlorophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
95-94-3	1,2,4,5-Tetrachlorobenzene	BRL		µg/kg dry	6720	20	"	"	"	"	"	X
Surrogate recoveries:												
321-60-8	*2-Fluorobiphenyl*	*71*			*30-130 %*		"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*62*			*30-130 %*		"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*85*			*30-130 %*		"	"	"	"	"	
4165-62-2	*Phenol-d5*	*68*			*30-130 %*		"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*67*			*30-130 %*		"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*30*			*30-130 %*		"	"	"	"	"	
General Chemistry Parameters												
	% Solids	95.5		%		1	SM2540 G Mod.	15-Oct-10	15-Oct-10	BD	1021599	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021778 - SW846 5030 Soil (high level)										
Blank (1021778-BLK1)					Prepared & Analyzed: 19-Oct-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/kg wet	50.0						
Acetone	BRL		µg/kg wet	500						
Acrylonitrile	BRL		µg/kg wet	50.0						
Benzene	BRL		µg/kg wet	50.0						
Bromobenzene	BRL		µg/kg wet	50.0						
Bromochloromethane	BRL		µg/kg wet	50.0						
Bromodichloromethane	BRL		µg/kg wet	50.0						
Bromoform	BRL		µg/kg wet	50.0						
Bromomethane	BRL		µg/kg wet	100						
2-Butanone (MEK)	BRL		µg/kg wet	500						
n-Butylbenzene	BRL		µg/kg wet	50.0						
sec-Butylbenzene	BRL		µg/kg wet	50.0						
tert-Butylbenzene	BRL		µg/kg wet	50.0						
Carbon disulfide	BRL		µg/kg wet	100						
Carbon tetrachloride	BRL		µg/kg wet	50.0						
Chlorobenzene	BRL		µg/kg wet	50.0						
Chloroethane	BRL		µg/kg wet	100						
Chloroform	BRL		µg/kg wet	50.0						
Chloromethane	BRL		µg/kg wet	100						
2-Chlorotoluene	BRL		µg/kg wet	50.0						
4-Chlorotoluene	BRL		µg/kg wet	50.0						
1,2-Dibromo-3-chloropropane	BRL		µg/kg wet	100						
Dibromochloromethane	BRL		µg/kg wet	50.0						
1,2-Dibromoethane (EDB)	BRL		µg/kg wet	50.0						
Dibromomethane	BRL		µg/kg wet	50.0						
1,2-Dichlorobenzene	BRL		µg/kg wet	50.0						
1,3-Dichlorobenzene	BRL		µg/kg wet	50.0						
1,4-Dichlorobenzene	BRL		µg/kg wet	50.0						
Dichlorodifluoromethane (Freon12)	BRL		µg/kg wet	100						
1,1-Dichloroethane	BRL		µg/kg wet	50.0						
1,2-Dichloroethane	BRL		µg/kg wet	50.0						
1,1-Dichloroethene	BRL		µg/kg wet	50.0						
cis-1,2-Dichloroethene	BRL		µg/kg wet	50.0						
trans-1,2-Dichloroethene	BRL		µg/kg wet	50.0						
1,2-Dichloropropane	BRL		µg/kg wet	50.0						
1,3-Dichloropropane	BRL		µg/kg wet	50.0						
2,2-Dichloropropane	BRL		µg/kg wet	50.0						
1,1-Dichloropropene	BRL		µg/kg wet	50.0						
cis-1,3-Dichloropropene	BRL		µg/kg wet	50.0						
trans-1,3-Dichloropropene	BRL		µg/kg wet	50.0						
Ethylbenzene	BRL		µg/kg wet	50.0						
Hexachlorobutadiene	BRL		µg/kg wet	50.0						
2-Hexanone (MBK)	BRL		µg/kg wet	500						
Isopropylbenzene	BRL		µg/kg wet	50.0						
4-Isopropyltoluene	BRL		µg/kg wet	50.0						
Methyl tert-butyl ether	BRL		µg/kg wet	50.0						
4-Methyl-2-pentanone (MIBK)	BRL		µg/kg wet	500						
Methylene chloride	BRL		µg/kg wet	100						
Naphthalene	BRL		µg/kg wet	50.0						
n-Propylbenzene	BRL		µg/kg wet	50.0						
Styrene	BRL		µg/kg wet	50.0						
1,1,1,2-Tetrachloroethane	BRL		µg/kg wet	50.0						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021778 - SW846 5030 Soil (high level)										
Blank (1021778-BLK1)					Prepared & Analyzed: 19-Oct-10					
1,1,2,2-Tetrachloroethane	BRL		µg/kg wet	50.0						
Tetrachloroethene	BRL		µg/kg wet	50.0						
Toluene	BRL		µg/kg wet	50.0						
1,2,3-Trichlorobenzene	BRL		µg/kg wet	50.0						
1,2,4-Trichlorobenzene	BRL		µg/kg wet	50.0						
1,3,5-Trichlorobenzene	BRL		µg/kg wet	50.0						
1,1,1-Trichloroethane	BRL		µg/kg wet	50.0						
1,1,2-Trichloroethane	BRL		µg/kg wet	50.0						
Trichloroethene	BRL		µg/kg wet	50.0						
Trichlorofluoromethane (Freon 11)	BRL		µg/kg wet	50.0						
1,2,3-Trichloropropane	BRL		µg/kg wet	50.0						
1,2,4-Trimethylbenzene	BRL		µg/kg wet	50.0						
1,3,5-Trimethylbenzene	BRL		µg/kg wet	50.0						
Vinyl chloride	BRL		µg/kg wet	50.0						
m,p-Xylene	BRL		µg/kg wet	100						
o-Xylene	BRL		µg/kg wet	50.0						
Tetrahydrofuran	BRL		µg/kg wet	100						
Ethyl ether	BRL		µg/kg wet	50.0						
Tert-amyl methyl ether	BRL		µg/kg wet	50.0						
Ethyl tert-butyl ether	BRL		µg/kg wet	50.0						
Di-isopropyl ether	BRL		µg/kg wet	50.0						
Tert-Butanol / butyl alcohol	BRL		µg/kg wet	500						
1,4-Dioxane	BRL		µg/kg wet	1000						
trans-1,4-Dichloro-2-butene	BRL		µg/kg wet	250						
Ethanol	BRL		µg/kg wet	20000						
Surrogate: 4-Bromofluorobenzene	*24.8*		µg/kg wet		*30.0*		*83*	*70-130*		
Surrogate: Toluene-d8	*30.6*		µg/kg wet		*30.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*27.4*		µg/kg wet		*30.0*		*92*	*70-130*		
Surrogate: Dibromofluoromethane	*28.5*		µg/kg wet		*30.0*		*95*	*70-130*		
LCS (1021778-BS1)					Prepared & Analyzed: 19-Oct-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	20.0		µg/kg wet		20.0		100	70-130		
Acetone	18.2		µg/kg wet		20.0		91	70-130		
Acrylonitrile	17.4		µg/kg wet		20.0		87	70-130		
Benzene	19.5		µg/kg wet		20.0		98	70-130		
Bromobenzene	23.7		µg/kg wet		20.0		118	70-130		
Bromochloromethane	20.8		µg/kg wet		20.0		104	70-130		
Bromodichloromethane	20.1		µg/kg wet		20.0		101	70-130		
Bromoform	23.5		µg/kg wet		20.0		118	70-130		
Bromomethane	18.2		µg/kg wet		20.0		91	70-130		
2-Butanone (MEK)	17.9		µg/kg wet		20.0		90	70-130		
n-Butylbenzene	16.3		µg/kg wet		20.0		82	70-130		
sec-Butylbenzene	20.2		µg/kg wet		20.0		101	70-130		
tert-Butylbenzene	20.8		µg/kg wet		20.0		104	70-130		
Carbon disulfide	21.8		µg/kg wet		20.0		109	70-130		
Carbon tetrachloride	20.1		µg/kg wet		20.0		100	70-130		
Chlorobenzene	20.1		µg/kg wet		20.0		101	70-130		
Chloroethane	17.8		µg/kg wet		20.0		89	70-130		
Chloroform	16.7		µg/kg wet		20.0		83	70-130		
Chloromethane	17.3		µg/kg wet		20.0		86	70-130		
2-Chlorotoluene	22.4		µg/kg wet		20.0		112	70-130		
4-Chlorotoluene	19.4		µg/kg wet		20.0		97	70-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021778 - SW846 5030 Soil (high level)										
LCS (1021778-BS1)					Prepared & Analyzed: 19-Oct-10					
1,2-Dibromo-3-chloropropane	16.0		µg/kg wet		20.0		80	70-130		
Dibromochloromethane	20.7		µg/kg wet		20.0		103	70-130		
1,2-Dibromoethane (EDB)	19.8		µg/kg wet		20.0		99	70-130		
Dibromomethane	18.6		µg/kg wet		20.0		93	70-130		
1,2-Dichlorobenzene	20.5		µg/kg wet		20.0		103	70-130		
1,3-Dichlorobenzene	22.6		µg/kg wet		20.0		113	70-130		
1,4-Dichlorobenzene	18.3		µg/kg wet		20.0		91	70-130		
Dichlorodifluoromethane (Freon12)	18.7		µg/kg wet		20.0		94	70-130		
1,1-Dichloroethane	18.4		µg/kg wet		20.0		92	70-130		
1,2-Dichloroethane	17.4		µg/kg wet		20.0		87	70-130		
1,1-Dichloroethene	21.1		µg/kg wet		20.0		106	70-130		
cis-1,2-Dichloroethene	19.6		µg/kg wet		20.0		98	70-130		
trans-1,2-Dichloroethene	20.2		µg/kg wet		20.0		101	70-130		
1,2-Dichloropropane	16.8		µg/kg wet		20.0		84	70-130		
1,3-Dichloropropane	18.5		µg/kg wet		20.0		93	70-130		
2,2-Dichloropropane	18.3		µg/kg wet		20.0		91	70-130		
1,1-Dichloropropene	19.5		µg/kg wet		20.0		98	70-130		
cis-1,3-Dichloropropene	18.9		µg/kg wet		20.0		94	70-130		
trans-1,3-Dichloropropene	18.5		µg/kg wet		20.0		92	70-130		
Ethylbenzene	20.0		µg/kg wet		20.0		100	70-130		
Hexachlorobutadiene	20.6		µg/kg wet		20.0		103	70-130		
2-Hexanone (MBK)	20.0		µg/kg wet		20.0		100	70-130		
Isopropylbenzene	23.4		µg/kg wet		20.0		117	70-130		
4-Isopropyltoluene	18.4		µg/kg wet		20.0		92	70-130		
Methyl tert-butyl ether	15.4		µg/kg wet		20.0		77	70-130		
4-Methyl-2-pentanone (MIBK)	22.1		µg/kg wet		20.0		110	70-130		
Methylene chloride	18.4		µg/kg wet		20.0		92	70-130		
Naphthalene	21.5		µg/kg wet		20.0		107	70-130		
n-Propylbenzene	19.0		µg/kg wet		20.0		95	70-130		
Styrene	19.6		µg/kg wet		20.0		98	70-130		
1,1,1,2-Tetrachloroethane	22.7		µg/kg wet		20.0		113	70-130		
1,1,2,2-Tetrachloroethane	18.7		µg/kg wet		20.0		94	70-130		
Tetrachloroethene	24.1		µg/kg wet		20.0		120	70-130		
Toluene	21.0		µg/kg wet		20.0		105	70-130		
1,2,3-Trichlorobenzene	20.8		µg/kg wet		20.0		104	70-130		
1,2,4-Trichlorobenzene	22.1		µg/kg wet		20.0		111	70-130		
1,3,5-Trichlorobenzene	24.3		µg/kg wet		20.0		121	70-130		
1,1,1-Trichloroethane	19.4		µg/kg wet		20.0		97	70-130		
1,1,2-Trichloroethane	18.9		µg/kg wet		20.0		95	70-130		
Trichloroethene	19.1		µg/kg wet		20.0		96	70-130		
Trichlorofluoromethane (Freon 11)	18.8		µg/kg wet		20.0		94	70-130		
1,2,3-Trichloropropane	18.0		µg/kg wet		20.0		90	70-130		
1,2,4-Trimethylbenzene	19.4		µg/kg wet		20.0		97	70-130		
1,3,5-Trimethylbenzene	19.8		µg/kg wet		20.0		99	70-130		
Vinyl chloride	23.7		µg/kg wet		20.0		118	70-130		
m,p-Xylene	42.0		µg/kg wet		40.0		105	70-130		
o-Xylene	20.6		µg/kg wet		20.0		103	70-130		
Tetrahydrofuran	18.1		µg/kg wet		20.0		91	70-130		
Ethyl ether	18.5		µg/kg wet		20.0		93	70-130		
Tert-amyl methyl ether	12.9	QC2	µg/kg wet		20.0		64	70-130		
Ethyl tert-butyl ether	13.7	QM9	µg/kg wet		20.0		68	70-130		
Di-isopropyl ether	17.4		µg/kg wet		20.0		87	70-130		

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021778 - SW846 5030 Soil (high level)										
LCS (1021778-BS1)						Prepared & Analyzed: 19-Oct-10				
Tert-Butanol / butyl alcohol	139		µg/kg wet		200		70	70-130		
1,4-Dioxane	169		µg/kg wet		200		84	70-130		
trans-1,4-Dichloro-2-butene	18.9		µg/kg wet		20.0		94	70-130		
Ethanol	294		µg/kg wet		400		74	70-130		
Surrogate: 4-Bromofluorobenzene	*31.1*		µg/kg wet		*30.0*		*104*	*70-130*		
Surrogate: Toluene-d8	*33.4*		µg/kg wet		*30.0*		*112*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*25.9*		µg/kg wet		*30.0*		*86*	*70-130*		
Surrogate: Dibromofluoromethane	*29.4*		µg/kg wet		*30.0*		*98*	*70-130*		
LCS Dup (1021778-BSD1)						Prepared & Analyzed: 19-Oct-10				
1,1,2-Trichlorotrifluoroethane (Freon 113)	19.7		µg/kg wet		20.0		98	70-130	2	25
Acetone	17.6		µg/kg wet		20.0		88	70-130	3	50
Acrylonitrile	16.9		µg/kg wet		20.0		84	70-130	3	25
Benzene	19.0		µg/kg wet		20.0		95	70-130	3	25
Bromobenzene	23.4		µg/kg wet		20.0		117	70-130	1	25
Bromochloromethane	20.7		µg/kg wet		20.0		104	70-130	0.2	25
Bromodichloromethane	20.6		µg/kg wet		20.0		103	70-130	2	25
Bromoform	25.4		µg/kg wet		20.0		127	70-130	8	25
Bromomethane	18.4		µg/kg wet		20.0		92	70-130	1	50
2-Butanone (MEK)	18.0		µg/kg wet		20.0		90	70-130	0.6	50
n-Butylbenzene	16.1		µg/kg wet		20.0		80	70-130	1	25
sec-Butylbenzene	20.4		µg/kg wet		20.0		102	70-130	1	25
tert-Butylbenzene	21.3		µg/kg wet		20.0		107	70-130	3	25
Carbon disulfide	21.0		µg/kg wet		20.0		105	70-130	4	25
Carbon tetrachloride	19.6		µg/kg wet		20.0		98	70-130	2	25
Chlorobenzene	20.9		µg/kg wet		20.0		104	70-130	4	25
Chloroethane	16.8		µg/kg wet		20.0		84	70-130	6	50
Chloroform	16.9		µg/kg wet		20.0		84	70-130	1	25
Chloromethane	17.1		µg/kg wet		20.0		85	70-130	1	25
2-Chlorotoluene	23.2		µg/kg wet		20.0		116	70-130	3	25
4-Chlorotoluene	20.7		µg/kg wet		20.0		103	70-130	6	25
1,2-Dibromo-3-chloropropane	17.5		µg/kg wet		20.0		87	70-130	9	25
Dibromochloromethane	22.4		µg/kg wet		20.0		112	70-130	8	50
1,2-Dibromoethane (EDB)	21.0		µg/kg wet		20.0		105	70-130	6	25
Dibromomethane	18.6		µg/kg wet		20.0		93	70-130	0	25
1,2-Dichlorobenzene	20.7		µg/kg wet		20.0		103	70-130	0.8	25
1,3-Dichlorobenzene	23.8		µg/kg wet		20.0		119	70-130	5	25
1,4-Dichlorobenzene	19.0		µg/kg wet		20.0		95	70-130	4	25
Dichlorodifluoromethane (Freon12)	18.0		µg/kg wet		20.0		90	70-130	4	50
1,1-Dichloroethane	17.8		µg/kg wet		20.0		89	70-130	3	25
1,2-Dichloroethane	17.5		µg/kg wet		20.0		88	70-130	1	25
1,1-Dichloroethene	20.8		µg/kg wet		20.0		104	70-130	1	25
cis-1,2-Dichloroethene	19.9		µg/kg wet		20.0		99	70-130	2	25
trans-1,2-Dichloroethene	19.7		µg/kg wet		20.0		98	70-130	2	25
1,2-Dichloropropane	17.9		µg/kg wet		20.0		90	70-130	7	25
1,3-Dichloropropane	19.5		µg/kg wet		20.0		97	70-130	5	25
2,2-Dichloropropane	17.2		µg/kg wet		20.0		86	70-130	6	25
1,1-Dichloropropene	19.3		µg/kg wet		20.0		96	70-130	1	25
cis-1,3-Dichloropropene	19.8		µg/kg wet		20.0		99	70-130	5	25
trans-1,3-Dichloropropene	19.9		µg/kg wet		20.0		100	70-130	8	25
Ethylbenzene	20.1		µg/kg wet		20.0		101	70-130	0.4	25
Hexachlorobutadiene	21.5		µg/kg wet		20.0		108	70-130	4	50

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021778 - SW846 5030 Soil (high level)										
LCS Dup (1021778-BSD1)					Prepared & Analyzed: 19-Oct-10					
2-Hexanone (MBK)	19.1		µg/kg wet		20.0		96	70-130	4	25
Isopropylbenzene	23.6		µg/kg wet		20.0		118	70-130	0.6	25
4-Isopropyltoluene	18.1		µg/kg wet		20.0		91	70-130	2	25
Methyl tert-butyl ether	16.2		µg/kg wet		20.0		81	70-130	5	25
4-Methyl-2-pentanone (MIBK)	22.3		µg/kg wet		20.0		112	70-130	0.9	50
Methylene chloride	19.2		µg/kg wet		20.0		96	70-130	5	25
Naphthalene	22.4		µg/kg wet		20.0		112	70-130	5	25
n-Propylbenzene	18.0		µg/kg wet		20.0		90	70-130	6	25
Styrene	20.9		µg/kg wet		20.0		104	70-130	6	25
1,1,1,2-Tetrachloroethane	23.6		µg/kg wet		20.0		118	70-130	4	25
1,1,2,2-Tetrachloroethane	20.3		µg/kg wet		20.0		102	70-130	8	25
Tetrachloroethene	24.0		µg/kg wet		20.0		120	70-130	0.3	25
Toluene	20.7		µg/kg wet		20.0		104	70-130	1	25
1,2,3-Trichlorobenzene	22.1		µg/kg wet		20.0		110	70-130	6	25
1,2,4-Trichlorobenzene	23.2		µg/kg wet		20.0		116	70-130	5	25
1,3,5-Trichlorobenzene	24.0		µg/kg wet		20.0		120	70-130	1	25
1,1,1-Trichloroethane	19.1		µg/kg wet		20.0		95	70-130	1	25
1,1,2-Trichloroethane	19.5		µg/kg wet		20.0		98	70-130	3	25
Trichloroethene	19.3		µg/kg wet		20.0		97	70-130	0.9	25
Trichlorofluoromethane (Freon 11)	17.9		µg/kg wet		20.0		90	70-130	5	50
1,2,3-Trichloropropane	19.3		µg/kg wet		20.0		96	70-130	7	25
1,2,4-Trimethylbenzene	20.3		µg/kg wet		20.0		101	70-130	4	25
1,3,5-Trimethylbenzene	20.2		µg/kg wet		20.0		101	70-130	2	25
Vinyl chloride	22.5		µg/kg wet		20.0		112	70-130	5	25
m,p-Xylene	42.8		µg/kg wet		40.0		107	70-130	2	25
o-Xylene	21.6		µg/kg wet		20.0		108	70-130	4	25
Tetrahydrofuran	16.2		µg/kg wet		20.0		81	70-130	11	25
Ethyl ether	19.0		µg/kg wet		20.0		95	70-130	2	50
Tert-amyl methyl ether	13.2	QC2	µg/kg wet		20.0		66	70-130	3	25
Ethyl tert-butyl ether	14.1		µg/kg wet		20.0		71	70-130	3	25
Di-isopropyl ether	17.6		µg/kg wet		20.0		88	70-130	1	25
Tert-Butanol / butyl alcohol	141		µg/kg wet		200		71	70-130	2	25
1,4-Dioxane	194		µg/kg wet		200		97	70-130	14	25
trans-1,4-Dichloro-2-butene	21.5		µg/kg wet		20.0		107	70-130	13	25
Ethanol	302		µg/kg wet		400		76	70-130	3	30
Surrogate: 4-Bromofluorobenzene	*31.4*		µg/kg wet		*30.0*		*105*	*70-130*		
Surrogate: Toluene-d8	*33.2*		µg/kg wet		*30.0*		*111*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*26.4*		µg/kg wet		*30.0*		*88*	*70-130*		
Surrogate: Dibromofluoromethane	*28.8*		µg/kg wet		*30.0*		*96*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021617 - SW846 3545A										
Blank (1021617-BLK1)					Prepared & Analyzed: 18-Oct-10					
Acenaphthene	BRL		µg/kg wet	165						
Acenaphthylene	BRL		µg/kg wet	165						
Aniline	BRL		µg/kg wet	330						
Anthracene	BRL		µg/kg wet	165						
Azobenzene/Diphenyldiazine	BRL		µg/kg wet	330						
Benzidine	BRL		µg/kg wet	330						
Benzo (a) anthracene	BRL		µg/kg wet	165						
Benzo (a) pyrene	BRL		µg/kg wet	165						
Benzo (b) fluoranthene	BRL		µg/kg wet	165						
Benzo (g,h,i) perylene	BRL		µg/kg wet	165						
Benzo (k) fluoranthene	BRL		µg/kg wet	165						
Benzoic acid	BRL		µg/kg wet	330						
Benzyl alcohol	BRL		µg/kg wet	330						
Bis(2-chloroethoxy)methane	BRL		µg/kg wet	330						
Bis(2-chloroethyl)ether	BRL		µg/kg wet	330						
Bis(2-chloroisopropyl)ether	BRL		µg/kg wet	330						
Bis(2-ethylhexyl)phthalate	BRL		µg/kg wet	330						
4-Bromophenyl phenyl ether	BRL		µg/kg wet	330						
Butyl benzyl phthalate	BRL		µg/kg wet	330						
Carbazole	BRL		µg/kg wet	330						
4-Chloro-3-methylphenol	BRL		µg/kg wet	330						
4-Chloroaniline	BRL		µg/kg wet	330						
2-Chloronaphthalene	BRL		µg/kg wet	330						
2-Chlorophenol	BRL		µg/kg wet	330						
4-Chlorophenyl phenyl ether	BRL		µg/kg wet	330						
Chrysene	BRL		µg/kg wet	165						
Dibenzo (a,h) anthracene	BRL		µg/kg wet	165						
Dibenzofuran	BRL		µg/kg wet	330						
1,2-Dichlorobenzene	BRL		µg/kg wet	330						
1,3-Dichlorobenzene	BRL		µg/kg wet	330						
1,4-Dichlorobenzene	BRL		µg/kg wet	330						
3,3´-Dichlorobenzidine	BRL		µg/kg wet	330						
2,4-Dichlorophenol	BRL		µg/kg wet	330						
Diethyl phthalate	BRL		µg/kg wet	330						
Dimethyl phthalate	BRL		µg/kg wet	330						
2,4-Dimethylphenol	BRL		µg/kg wet	330						
Di-n-butyl phthalate	BRL		µg/kg wet	330						
4,6-Dinitro-2-methylphenol	BRL		µg/kg wet	330						
2,4-Dinitrophenol	BRL		µg/kg wet	330						
2,4-Dinitrotoluene	BRL		µg/kg wet	330						
2,6-Dinitrotoluene	BRL		µg/kg wet	330						
Di-n-octyl phthalate	BRL		µg/kg wet	330						
Fluoranthene	BRL		µg/kg wet	165						
Fluorene	BRL		µg/kg wet	165						
Hexachlorobenzene	BRL		µg/kg wet	330						
Hexachlorobutadiene	BRL		µg/kg wet	330						
Hexachlorocyclopentadiene	BRL		µg/kg wet	330						
Hexachloroethane	BRL		µg/kg wet	330						
Indeno (1,2,3-cd) pyrene	BRL		µg/kg wet	165						
1-Methylnaphthalene	BRL		µg/kg wet	165						
Isophorone	BRL		µg/kg wet	330						
2-Methylnaphthalene	BRL		µg/kg wet	165						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021617 - SW846 3545A										
Blank (1021617-BLK1)					Prepared & Analyzed: 18-Oct-10					
2-Methylphenol	BRL		µg/kg wet	330						
3 & 4-Methylphenol	BRL		µg/kg wet	330						
Naphthalene	BRL		µg/kg wet	165						
2-Nitroaniline	BRL		µg/kg wet	330						
3-Nitroaniline	BRL		µg/kg wet	330						
4-Nitroaniline	BRL		µg/kg wet	1320						
Nitrobenzene	BRL		µg/kg wet	330						
2-Nitrophenol	BRL		µg/kg wet	330						
4-Nitrophenol	BRL		µg/kg wet	1320						
N-Nitrosodimethylamine	BRL		µg/kg wet	330						
N-Nitrosodi-n-propylamine	BRL		µg/kg wet	330						
N-Nitrosodiphenylamine	BRL		µg/kg wet	330						
Pentachlorophenol	BRL		µg/kg wet	330						
Phenanthrene	BRL		µg/kg wet	165						
Phenol	BRL		µg/kg wet	330						
Pyrene	BRL		µg/kg wet	165						
Pyridine	BRL		µg/kg wet	330						
1,2,4-Trichlorobenzene	BRL		µg/kg wet	330						
2,4,5-Trichlorophenol	BRL		µg/kg wet	330						
2,4,6-Trichlorophenol	BRL		µg/kg wet	330						
Pentachloronitrobenzene	BRL		µg/kg wet	330						
1,2,4,5-Tetrachlorobenzene	BRL		µg/kg wet	330						
Surrogate: 2-Fluorobiphenyl	*1270*		µg/kg wet		*1670*		*76*	*30-130*		
Surrogate: 2-Fluorophenol	*1420*		µg/kg wet		*1670*		*85*	*30-130*		
Surrogate: Nitrobenzene-d5	*1550*		µg/kg wet		*1670*		*93*	*30-130*		
Surrogate: Phenol-d5	*1520*		µg/kg wet		*1670*		*91*	*30-130*		
Surrogate: Terphenyl-dl4	*1210*		µg/kg wet		*1670*		*73*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*875*		µg/kg wet		*1670*		*52*	*30-130*		
LCS (1021617-BS1)					Prepared & Analyzed: 18-Oct-10					
Acenaphthene	1280		µg/kg wet	165	1670		77	40-130		
Acenaphthylene	1230		µg/kg wet	165	1670		74	40-130		
Aniline	1130		µg/kg wet	330	1670		68	40-130		
Anthracene	1310		µg/kg wet	165	1670		78	40-130		
Azobenzene/Diphenyldiazine	1220		µg/kg wet	330	1670		73	40-130		
Benzidine	121	QC2	µg/kg wet	330	1670		7	40-140		
Benzo (a) anthracene	1360		µg/kg wet	165	1670		82	40-130		
Benzo (a) pyrene	1370		µg/kg wet	165	1670		82	40-130		
Benzo (b) fluoranthene	1610		µg/kg wet	165	1670		97	40-130		
Benzo (g,h,i) perylene	1260		µg/kg wet	165	1670		75	40-130		
Benzo (k) fluoranthene	1040		µg/kg wet	165	1670		63	40-130		
Benzoic acid	615	QC2	µg/kg wet	330	1670		37	40-130		
Benzyl alcohol	1260		µg/kg wet	330	1670		75	40-130		
Bis(2-chloroethoxy)methane	1180		µg/kg wet	330	1670		71	40-130		
Bis(2-chloroethyl)ether	1180		µg/kg wet	330	1670		71	40-130		
Bis(2-chloroisopropyl)ether	1250		µg/kg wet	330	1670		75	40-130		
Bis(2-ethylhexyl)phthalate	1340		µg/kg wet	330	1670		80	40-130		
4-Bromophenyl phenyl ether	1350		µg/kg wet	330	1670		81	40-130		
Butyl benzyl phthalate	1320		µg/kg wet	330	1670		79	40-130		
Carbazole	1620		µg/kg wet	330	1670		97	40-130		
4-Chloro-3-methylphenol	1340		µg/kg wet	330	1670		80	40-130		
4-Chloroaniline	1090		µg/kg wet	330	1670		65	40-130		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021617 - SW846 3545A										
LCS (1021617-BS1)					Prepared & Analyzed: 18-Oct-10					
2-Chloronaphthalene	1280		µg/kg wet	330	1670		77	40-130		
2-Chlorophenol	1210		µg/kg wet	330	1670		73	40-130		
4-Chlorophenyl phenyl ether	1350		µg/kg wet	330	1670		81	40-130		
Chrysene	1310		µg/kg wet	165	1670		79	40-130		
Dibenzo (a,h) anthracene	1400		µg/kg wet	165	1670		84	40-130		
Dibenzofuran	1350		µg/kg wet	330	1670		81	40-130		
1,2-Dichlorobenzene	1250		µg/kg wet	330	1670		75	40-130		
1,3-Dichlorobenzene	1230		µg/kg wet	330	1670		74	40-130		
1,4-Dichlorobenzene	1230		µg/kg wet	330	1670		74	40-130		
3,3´-Dichlorobenzidine	1010		µg/kg wet	330	1670		61	40-130		
2,4-Dichlorophenol	1300		µg/kg wet	330	1670		78	40-130		
Diethyl phthalate	1240		µg/kg wet	330	1670		74	40-130		
Dimethyl phthalate	1190		µg/kg wet	330	1670		71	40-130		
2,4-Dimethylphenol	1190		µg/kg wet	330	1670		71	40-130		
Di-n-butyl phthalate	1310		µg/kg wet	330	1670		79	40-130		
4,6-Dinitro-2-methylphenol	178	QC2	µg/kg wet	330	1670		11	40-130		
2,4-Dinitrophenol	268	QC2	µg/kg wet	330	1670		16	40-130		
2,4-Dinitrotoluene	1450		µg/kg wet	330	1670		87	40-130		
2,6-Dinitrotoluene	1590		µg/kg wet	330	1670		95	40-130		
Di-n-octyl phthalate	1500		µg/kg wet	330	1670		90	40-130		
Fluoranthene	1360		µg/kg wet	165	1670		82	40-130		
Fluorene	1290		µg/kg wet	165	1670		77	40-130		
Hexachlorobenzene	1470		µg/kg wet	330	1670		88	40-130		
Hexachlorobutadiene	1190		µg/kg wet	330	1670		72	40-130		
Hexachlorocyclopentadiene	539	QC2	µg/kg wet	330	1670		32	40-130		
Hexachloroethane	1090		µg/kg wet	330	1670		65	40-130		
Indeno (1,2,3-cd) pyrene	1390		µg/kg wet	165	1670		83	40-130		
1-Methylnaphthalene	1300		µg/kg wet	165	1670		78	40-140		
Isophorone	1240		µg/kg wet	330	1670		75	40-130		
2-Methylnaphthalene	1390		µg/kg wet	165	1670		84	40-130		
2-Methylphenol	1250		µg/kg wet	330	1670		75	40-130		
3 & 4-Methylphenol	1310		µg/kg wet	330	1670		79	40-130		
Naphthalene	1280		µg/kg wet	165	1670		77	40-130		
2-Nitroaniline	1810		µg/kg wet	330	1670		109	40-130		
3-Nitroaniline	1940		µg/kg wet	330	1670		116	40-130		
4-Nitroaniline	2300	QC2	µg/kg wet	1320	1670		138	40-130		
Nitrobenzene	1570		µg/kg wet	330	1670		94	40-130		
2-Nitrophenol	556	QC2	µg/kg wet	330	1670		33	40-130		
4-Nitrophenol	578	QC2	µg/kg wet	1320	1670		35	40-130		
N-Nitrosodimethylamine	1190		µg/kg wet	330	1670		71	40-130		
N-Nitrosodi-n-propylamine	1200		µg/kg wet	330	1670		72	40-130		
N-Nitrosodiphenylamine	1440		µg/kg wet	330	1670		86	40-130		
Pentachlorophenol	486	QC2	µg/kg wet	330	1670		29	40-130		
Phenanthrene	1310		µg/kg wet	165	1670		79	40-130		
Phenol	1150		µg/kg wet	330	1670		69	40-130		
Pyrene	1310		µg/kg wet	165	1670		79	40-130		
Pyridine	1020		µg/kg wet	330	1670		61	40-140		
1,2,4-Trichlorobenzene	1260		µg/kg wet	330	1670		76	40-130		
2,4,5-Trichlorophenol	1340		µg/kg wet	330	1670		81	40-130		
2,4,6-Trichlorophenol	1370		µg/kg wet	330	1670		82	40-130		
Pentachloronitrobenzene	1690		µg/kg wet	330	1670		102	40-140		
1,2,4,5-Tetrachlorobenzene	1400		µg/kg wet	330	1670		84	40-140		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1021617 - SW846 3545A										
LCS (1021617-BS1)					Prepared & Analyzed: 18-Oct-10					
Surrogate: 2-Fluorobiphenyl	*1300*		µg/kg wet		*1670*		*78*	*30-130*		
Surrogate: 2-Fluorophenol	*1350*		µg/kg wet		*1670*		*81*	*30-130*		
Surrogate: Nitrobenzene-d5	*1550*		µg/kg wet		*1670*		*93*	*30-130*		
Surrogate: Phenol-d5	*1450*		µg/kg wet		*1670*		*87*	*30-130*		
Surrogate: Terphenyl-dl4	*1240*		µg/kg wet		*1670*		*74*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*1940*		µg/kg wet		*1670*		*117*	*30-130*		

Notes and Definitions

QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
R05	Elevated Reporting Limits due to the presence of high levels of non-target analytes.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:
Hanibal C. Tayeh, Ph.D.
Kimberly Wisk

SB19562

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Page 1 of 1

Special Handling:
- ☐ Standard TAT - 7 to 10 business days
- ☒ Rush TAT - Date Needed: 10/20/10
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: New England Disposal Technologies
63 Gilmore Drive
Sutton, MA 01590

Project Mgr.: Len Cohen

Invoice To: SAMC

P.O. No.: RQN:

Project No.: IDW Disposal
Site Name: Navy Submarine Base New London
Location: Groton, State: CT
Sampler(s): Mark Medeiros

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8= $NaHSO_4$ 9= 40 10=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

QA Reporting Notes: (check if needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other
State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		VOC (Total)	SVOC (Total)						
SB19562-01	IDW Soil	10/14/10	9:00AM	G	SO	9	2	1				✓	✓						

☐ Fax results when available to (____)
☒ E-mail to ~~tes~~ lcohen@NEDTinc.com
EDD Format

Condition upon receipt: ☐ Iced ☐ Ambient ☒ °C 3.8 Ref.

Relinquished by:	Received by:	Date:	Time:
M. Medeiros	Sandy Lester	10/14/10	12:00
Sandy Lester	Bill Tang	10/15/10	1145
Bill Tang	D. Wade	10/15/10	15:30

1.2

Rich, Corey

From: Damico.William@epamail.epa.gov
Sent: Friday, October 01, 2010 4:18 PM
To: Rich, Corey
Subject: Re: Off site rule

EQ Detroit in Detroit,MI is acceptable to receive waste regulated by the CERCLA Off-Site Rule. This facility was inspected 8/19/2010.

_____
William Damico
312-353-8207 (v)
312-582-5113 (f)

From: "Rich, Corey" <Corey.Rich@tetratech.com>

To: William Damico/R5/USEPA/US@EPA

Cc: "Gravette, James CIV NAVFAC" <james.gravette@navy.mil>, "Conant, Richard CIV NAVFAC MIDLANT"
<richard.conant@navy.mil>

Date: 10/01/2010 12:04 PM

Subject: Off site rule

Will,

Additional waste was generated during a CERCLA investigation at Naval Submarine Base - New London in Groton, CT in September 2010. The soil waste (one 55-gallon drum) was tested and determined to be RCRA characteristic hazardous waste because of lead (see attached analytical information). The waste management contractor proposes to send the waste to EQ in Detroit, MI for treatment/disposal. The facility's information is included in the attached file. Please let me know if they are acceptable to treat/dispose waste under the CERCLA off site rule?

Regards,

Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040 Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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intended recipient, please notify the sender by replying to this message and then delete it from your system.

-----Original Message-----
From: Damico.William@epamail.epa.gov [
mailto:Damico.William@epamail.epa.gov]
Sent: Thursday, May 13, 2010 4:40 PM
To: Rich, Corey
Subject: RE: FW: off site rule

Dynecol in Detroit, MI is acceptable to receive waste regulated by the CERCLA Off-Site Rule. This facility was inspected March 19, 2010.

_____
William Damico
312-353-8207 (v)
312-582-5113 (f)

From: "Rich, Corey" <Corey.Rich@tetratech.com>

To: William Damico/R5/USEPA/US@EPA

Cc: Lon Cohen <lcohen@nedtinc.com>, "Gravette, James CIV NAVFAC" <james.gravette@navy.mil>, "Conant, Richard CIV NAVFAC MIDLANT" <richard.conant@navy.mil>, "Tirrell, Linda CIV NAVFAC MIDLANT" <linda.tirrell@navy.mil>

Date: 05/13/2010 02:02 PM

Subject: RE: FW: off site rule

Will

The disposal contractor indicated that they will use the following disposal facility instead of Environmental Specialists. Please let me know if they are acceptable.

Dynecol, Inc.
6520 Georgia Street
Detroit, MI 48211
Phone: 313-571-7140 Fax: 313-571-7190
Contact: John Cannon - President
Hours of Operation: 7:00AM to 5:00PM M-F EPA ID#: MID074259565
Type of Facility: Wastewater Treat Facility

Thanks,
Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040 Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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-----Original Message-----
From: Damico.William@epamail.epa.gov [
mailto:Damico.William@epamail.epa.gov]
Sent: Thursday, May 13, 2010 12:14 PM
To: Rich, Corey
Subject: Re: FW: off site rule

Vexor Technologies in Medina, OH is acceptable to receive waste regulated by the CERCLA Off-Site Rule. This facility was inspected 10/14/2009.

The Noble Rd. Landfill in Shiloh, OH is acceptable to receive waste regulated by the CERCLA Off-Site Rule.

Environmental Specialists in Youngstown, OH have not requested a review for acceptability. Therefore, they are not acceptable since they have not undergone the review to determine whether or not they can be acceptable.

_____
William Damico
312-353-8207 (v)
312-582-5113 (f)

From: "Rich, Corey" <Corey.Rich@tetratech.com>

To: William Damico/R5/USEPA/US@EPA

Date: 05/12/2010 02:55 PM

Subject: FW: off site rule

Will,

See email chain below. I was referred to you by Ken Rota (EPA Region 1). Please let me know if you have any concerns with the proposed Ohio disposal facilities.

Thanks

Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040 Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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-----Original Message-----
From: rota.ken@epamail.epa.gov [mailto:rota.ken@epamail.epa.gov]
Sent: Wednesday, May 12, 2010 3:50 PM
To: Rich, Corey
Cc: james.gravette@navy.mil; Keckler.Kymberlee@epamail.epa.gov; Lon Cohen; Tirrell, Linda CIV NAVFAC MIDLANT; richard.conant@navy.mil
Subject: RE: off site rule

Rich,

Since we're talking about treatment and disposal activities that will involve destination facilities outside of New England, you'll need to contact Will Damico directly in our Region 5 Office (which oversees
Ohio) to obtain approval. If you have anything that involves off-site disposal to a New England TSDF or solid waste facility, I'll be happy to handle those. Will's direct line is (312) 353-8207. His email address is damico.william@epa.gov.

Ken R.

Kenneth B. Rota, Senior Enforcement Analyst OES Enforcement Office US EPA - New England Region
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Mail Code: OES04-04

Tel: (617) 918-1751
Fax: (617) 918-0751

From: "Rich, Corey" <Corey.Rich@tetratech.com>

To: Ken Rota/R1/USEPA/US@EPA, Kymberlee

Keckler/R1/USEPA/US@EPA

Cc: "james.gravette@navy.mil" <james.gravette@navy.mil>, "richard.conant@navy.mil"
<richard.conant@navy.mil>, Lon Cohen <lcohen@nedtinc.com>, "Tirrell, Linda CIV NAVFAC MIDLANT"
<linda.tirrell@navy.mil>

Date: 05/12/2010 03:34 PM

Subject: RE: off site rule

Ken,

Solid and liquid wastes were generated during a recent investigation at Naval Submarine Base - New London, Groton, Connecticut under the CERCLA Installation Restoration Program. The waste has been characterized and the waste characterization profiles and supporting analytical results are included in two attached files. The characterization results indicate that all waste is non-hazardous. The current plan is to ship both solid and liquid waste to Vexor Technology, Inc. (Ohio) for processing and then the solid waste will be disposed at Rumpke Noble Road Landfill (Ohio) and the liquid waste will be disposed at Environmental Specialist, Inc. (Ohio). Detailed information for all proposed waste handling and disposal facilities in included in two attached files. I believe this is all of the information you requested in your April 14, 2010 email. Please let me know if you agree with the proposed disposal facilities. I would appreciate your input on this issue at your earliest convenience because the Navy would like us to proceed as soon as possible with the transportation and disposal of the waste.

Thank You,

Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040 Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group
661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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-----Original Message-----
From: rota.ken@epamail.epa.gov [mailto:rota.ken@epamail.epa.gov]
Sent: Wednesday, April 14, 2010 8:45 AM
To: Keckler.Kymberlee@epamail.epa.gov

Cc: Rich, Corey; james.gravette@navy.mil; richard.conant@navy.mil
Subject: Re: off site rule

Kymberlee,

I noticed you did not provide these gentlemen with the standard questions that I ask (and had asked you to forward), so, for everyone's benefit, if you are making an Off-site request involving a facility in New England, I need the following information:

1. the name of the facility or facilities to which the wastes may be sent, 2. the EPA ID number(s) or other unique identifying number(s) of those facilities 3. the city and state in which each potential receiving facility is located 4. the site from which the waste or wastes is to be sent 5. the type of waste or wastes to be shipped 6. the amount of each waste to be sent 7. the anticipated date for shipment of these wastes 8. a representative waste analysis (for screening purposes)

On the sneaking suspicion you haven't relayed the details of our CAD discussion from 2008 to your Navy contacts (and this is a CAD issue), we came up with the following at that time:

Under RCRA at 40 CFR 261.4(g), dredged material that is subject to the requirements of a permit that has been issued under 404 of the Federal Water Pollution Control Act or Section 103 of the Marine Protection Research and Sanctuaries Act is not a hazardous waste and has the same meaning as defined in 40 CFR 232.2.

Since the material is being dredged from a CERCLA site the dredged sediment is subject to a permit under the CWA or the MPRSA (for the process of dredging it). The CWA standards are applicable standards for the CERCLA remedy, so the Navy has to comply with their substantive provisions, but not the administrative provisions (getting a permit).

Assuming the CAD facility has CWA and or MPRSA permits for the disposal of dredged sediments that come from outside sources. I would expect these permits have limits for the level of contaminants that can be disposed of in the CAD (which would allow contaminated harbor sediments from navigational dredging to be placed and capped in the CAD). Whether the contaminant levels in the Navy's CERCLA sediments meet these standards is a question for you and the Navy to answer.

If I remember correctly the Navy would only dispose of sediments in the CAD that didn't fail TCLP (so no characteristic hazardous waste). I don't believe there's any information to identify that the sediments are contaminated with listed hazardous waste which would make them listed hazardous waste via the contained-in rule.

Under the acceptability criteria of 300.440(b)(1)(i) - a facility used to store or ultimately dispose of CERCLA waste will be deemed in compliance so long as it complies with the terms and conditions of the permit and there are no violations at or affecting the receiving unit. For any proposed CAD, we would need to know what the permit requires and whether it meets the conditions of the permit.

Under 300.440(b)(2)(i)(D) - CERCLA wastes can be transferred (my paraphrasing) to any unit at an "other-than-RCRA subtitle C facility" if the EPA Regional Office does not have information showing that an environmentally significant release of hazardous substances has occurred or that the release is controlled by an enforceable agreement.

The only thing that I would throw into this equation is that Superfund would be required to get something in writing from the Army Corp. of Engineers (who I presume is managing the CAD) and stating that they have reviewed the dredge spoils and found them to be acceptable and to also to also describe how the CAD is being monitored to ensure that is in compliance with its

permit and that the early detection of any potential release is addressed. I would particularly be interested in knowing whether there are actual physical inspections going on and whether there is actual sampling and analysis taking place to confirm the integrity of the CAD.

I think I covered all the bases for this (not knowing but guessing what the questions are). While you and I had this discussion back in the fall/early winter of 2008, I do not know what you've told the Navy so I wanted to lay out the process here so they can sleep on it for a bit and
decide what they want to do. I see two potential roadblocks for the
CAD proposal. One is that the CAD does not have a bonafide monitoring program (which involves the actual inspection of the cap and an active analytical testing and monitoring to assure that contaminants are not on the move). The second issue is the transfer of waste from a barge thru the water column, into the disposal area itself and whether the transfer process will be problematic.

Ken

Kenneth B. Rota, Senior Enforcement Analyst OES Enforcement Office US EPA - New England Region
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Mail Code: OES04-04

Tel: (617) 918-1751
Fax: (617) 918-0751

From: Kymberlee Keckler/R1/USEPA/US

To: Corey.Rich@ttnus.com

Cc: Ken Rota/R1/USEPA/US@EPA, james.gravette@navy.mil, richard.conant@navy.mil

Date: 04/13/2010 03:01 PM

Subject: off site rule

Ken Rota of EPA's enforcement office handles the off-site rule that approves disposal facilities. His number is 617.918.1751

Kymberlee Keckler, Chemical Engineer
Federal Facilities Superfund Section
U.S. Environmental Protection Agency, Region 1

5 Post Office Square, Suite 100
Mail Code: OSRR07-3
Boston, MA 02109-3912

Telephone: 617.918.1385
Facsimile: 617.918.0385
E-mail: keckler.kymberlee@epa.gov

[attachment "Final DISPOSAL FACILITY INFORMATION.PDF" deleted by Ken Rota/R1/USEPA/US] [attachment "Vexor profile - Water IDW.PDF" deleted by Ken Rota/R1/USEPA/US] [attachment "Vexor profile - Soil IDW.PDF" deleted by Ken Rota/R1/USEPA/US] [attachment "TRANSFER FACILITY INFORMATION.pdf"
deleted by Ken Rota/R1/USEPA/US]

[attachment "Final DISPOSAL FACILITY INFORMATION.PDF" deleted by William Damico/R5/USEPA/US] [attachment "Vexor profile - Water IDW.PDF" deleted by William Damico/R5/USEPA/US] [attachment "Vexor profile - Soil IDW.PDF" deleted by William Damico/R5/USEPA/US] [attachment "TRANSFER FACILITY INFORMATION.PDF" deleted by William Damico/R5/USEPA/US]

[attachment "NSB-Groton IDW Submittal_EQInfo.pdf" deleted by William Damico/R5/USEPA/US] [attachment "Analytical Soil - 2nd phase.pdf"
deleted by William Damico/R5/USEPA/US]

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CT417002202 0
2. Page 1 of 1
3. Emergency Response Phone: 800-698-1865
4. Manifest Tracking Number: 007537933 JJK

5. Generator's Name and Mailing Address:
U.S. Naval Submarine Base
Box 400 - Environmental Bldg. 562
Groton CT 06349
Generator's Phone: 860 694-4298

Generator's Site Address (if different than mailing address):
U.S. Naval Submarine Base
Route 12 & Crystal Lake Road
Groton CT 06349

6. Transporter 1 Company Name: New England Disposal Technologies, Inc.
U.S. EPA ID Number: MAC300008059

7. Transporter 2 Company Name: New England Disposal Technologies, Inc.
U.S. EPA ID Number: MAC300008059

8. Designated Facility Name and Site Address:
Dynecol, Inc.
6520 Georgia Street
Detroit MI 48211
Facility's Phone: 313 571-7140
U.S. EPA ID Number: MID074259565

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
	1. Non-RCRA, non-DOT Regulated Material (water)	1	DM	55	G	~~NONSPEC~~	NRM	
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
1)172231

Job# 01-11528

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: X David Carter — Signature: X — Month 10 Day 29 Year 10

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Shawn M. Ford — Signature: — Month 10 Day 29 Year 10

Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

DYNECOL, INC.
6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7140
FAX: (313) 571-7190

WASTE APPROVAL FORM

I. General Information					
Approval Number			**Cust./Gen.Code:**		
Generator Name:					
Address:					
City:		**State:**		**Zip Code:**	
Contact Name:					
Phone Number:			**Fax Number:**		
24 Hour Emergency #:					
EPA ID Number:			**SIC Code:**		
Customer Name:					
Customer Contact:					
Address:					
City:		**State:**		**Zip Code:**	
Phone Number:			**Fax Number:**		
24 Hour Emergency #:					

II. Waste Description	
Waste Common Name:	
Specific Process Generating the waste:	

DYNECOL, INC. Waste Approval Form PAGE 2 **Approval Number:**

III. Waste Composition (Must equal 100%)

Constituent	Actual % of representative sample	Min. % of waste stream	Max. % of waste stream

III. Waste Characterization

A. Michigan Act 451 and EPA 40 CFR Information: (For the following, please use SW 846 test method for determination)

1. Is this a hazardous waste as defined by either R299.9212-9214 or 261 Subpart B,C, or D?

Check One: ____ **YES** _____ **NO**

a) *IF YES,* please list all applicable waste codes:

b) *IF NO* , please list all applicable non-hazardous waste codes as defined by Michigan Act 451 Part 121:

2. Does this waste indicate a volatile organic concentration in excess of 500 ppm or the compounds listed in 40 CFR 265 Appendix VI?:

Check One: _____ **YES** _____ **NO**

a) *IF YES* , please indicate constituents and concentrations:

3. Does the analysis indicate PCB's above the detection limit?

Check One: _____ **YES** _____ **NO**

a) IF YES, does the waste contain PCB contamination from a source with a concentration greater than or equal to 50 ppm?

Check One: _____ **YES** **NO**

DYNECOL, INC. Waste Approval Form PAGE 3 **Approval Number:**

III. Waste Characterization (continued)

B. Benzene/NESHAP Information (For the following, please use SW 846 method 8020 and/or EPA 602 and/or 624 for determination)

1. Does the waste stream have a benzene concentration of 10 ppm or more?

Check One: _____ **YES** _____ **NO**

IF YES, please indicate total benzene concentration of waste:

2. Does the waste stream contain greater than 10% water ?

Check One: _____ **Yes** ___ **NO**

3. Does the generator manage wastes from facilities with Total Annual Benzene (TAB) greater or equal to 10 mg/year?

Check One: _____ **Yes** _____ **NO**

IF YES , please indicate TAB quantity for generator facility:

C. Land Disposal Restriction Information (For the following, please see 40 CFR part 268.2 for definitions)

1. Does the waste stream contain less than 1% by weight Total Organic Carbon (TOC) and less than 1% by weight Total Suspended Solids?

Check One: _____ **YES** (wastewater) _____ **NO** (Non-wastewater)

IV. General Characteristics (at 70 degrees F unless otherwise specified:

Color		Phases
pH		☐ Single Layer
☐ Liquid ☐ Sludge/Slurry ☐ Solid		☐ Double Layer
Odor:		☐ Multi-Layer
☐ None ☐ Strong ☐ Mild		

V. Shipping Information

A. Determination of shipping name as defined by 29 CFR 172.101:

1. Proper Shipping Name:						
2. Hazard Class:	3. UN/NA Number:					
4. Packing Group (Circle one):	I		II		III	None
B. Shipping Container (Circle one)	Bulk	Drums	Pails	Totes	Roll Off	Other:
C. Waste Volume						
D. Shipping Frequency (Circle one)	Weekly		**Monthly**	Quarterly	Yearly	One Time Only

DYNECOL, INC. Waste Approval Form PAGE 4 **Approval Number:**

VII. Comment Section

Please list any additional comments concerning this waste stream below:

VIII. Generator Authorizations

A. Authorization to correct material profile sheet

I _____(generator signature) hereby give authorization for Dynecol, Inc. to make corrections with oral authorization to establish consistency with the results of sample analysis and/or applicable federal and state regulations and the information on this profile. These changes WILL NOT include the addition or removal of waste codes and waste constituents which must have written authorization to be changed by the generator. I understand that Dynecol reserves the right to reject any material that does not conform to specifications described in profile.

B. Certification

I certify, under penalty of law, that I have personally examined, and am familiar with, the waste profiled through knowledge of the waste, and I believe the information submitted to be true, accurate, and complete.

Generator Name (Please print or type)	Title

Generator Signature	Date

IX. Revision Section

Please list any revisions made to form

Revision	Date of Revision	Generator Authorization

X. Dynecol Use only

A. Approval Information

CMF WASTES:		**PLANT WASTES:**	
Primary outbound approval number		Plant treatment code	
Off-site management code		On-site management code:	

WAF Initiator signature:			
Approved by:		Date:	

Report Date:
30-Sep-10 14:31

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

New England Disposal Technologies, Inc
83 Gilmore Drive
Sutton, MA 01590
Attn: Lon Cohen

Project: Navy Base-Crystal Lake Rd - Groton, CT
Project #: IDW - Phase I

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SB18232-01	Water	Ground Water	15-Sep-10 09:30	16-Sep-10 17:17

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435

Authorized by:

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes.
Please note that this report contains 25 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

CASE NARRATIVE:

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 5.0 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 0.4 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

These samples do not exhibit the characteristics of reactivity as defined in 40 CFR 261.23, sections (1), (2), (4), and (5); however, Spectrum Analytical, Inc. does not test for detonation, explosive reaction or potential, or forbidden explosives as defined in 40 CFR 261.23, sections (3), (6), (7) and (8).

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

Samples:

SB18232-01 *Water*

The pH of this sample has been adjusted in the laboratory for the tests listed below in accordance with the preservation requirements of the applicable methods.

Semivolatile Organic Compounds by SW846 8270C

SW846 6010B

Duplicates:

1020164-DUP1 *Source: SB18232-01*

Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.

Cadmium
Lead

SW846 8260B/C

Calibration:

1008026

Analyte quantified by quadratic equation type calibration.

Bromoform
Dibromochloromethane

This affected the following samples:

1019816-BLK1
1019816-BS1
1019816-BSD1
S007870-ICV1
S008676-CCV1
Water

S007870-ICV1

Analyte percent recovery is outside individual acceptance criteria (70-130).

Methyl tert-butyl ether (159%)

SW846 8260B/C

Calibration:

S007870-ICV1

This affected the following samples:

1019816-BLK1
1019816-BS1
1019816-BSD1
S008676-CCV1
Water

Laboratory Control Samples:

1019816 BS/BSD

Acetone percent recoveries (131/133) are outside individual acceptance criteria (70-130), but within overall method allowances.
All reported results of the following samples are considered to have a potentially high bias:

Water

Acrylonitrile percent recoveries (130/131) are outside individual acceptance criteria (70-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Water

Naphthalene percent recoveries (61/59) are outside individual acceptance criteria (70-130), but within overall method allowances.
All reported results of the following samples are considered to have a potentially low bias:

Water

Samples:

S008676-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

1,1,2-Trichlorotrifluoroethane (Freon 113) (21.5%)
1,1-Dichloroethane (27.3%)
Acrylonitrile (30.4%)
Chloromethane (21.9%)
Trichlorofluoromethane (Freon 11) (24.1%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

1,2,4-Trichlorobenzene (-27.0%)
Acetone (31.2%)
Naphthalene (-39.3%)

This affected the following samples:

1019816-BLK1
1019816-BS1
1019816-BSD1
Water

SW846 8270C/D

Calibration:

1009014

Analyte quantified by quadratic equation type calibration.

Aniline
Benzidine

SW846 8270C/D

Calibration:

1009014

This affected the following samples:

1019679-BLK1
1019679-BS1
1019679-BSD1
S008630-CCV1
S008726-CCV1
Water

Laboratory Control Samples:

1019679 BS/BSD

4-Nitrophenol percent recoveries (37/34) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Water

Aniline percent recoveries (17/10) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Water

Benzidine percent recoveries (/) are outside individual acceptance criteria (40-140), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Water

Benzoic acid percent recoveries (35/33) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Water

Bis(2-ethylhexyl)phthalate percent recoveries (77/358) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Water

Hexachlorobutadiene percent recoveries (39/41) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Water

Hexachlorocyclopentadiene percent recoveries (170/165) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Water

Phenol percent recoveries (34/34) are outside individual acceptance criteria (40-130), but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Water

1019679 BSD

Aniline RPD 50% (20%) is outside individual acceptance criteria, but within overall method allowances.

Benzo (b) fluoranthene RPD 32% (20%) is outside individual acceptance criteria, but within overall method allowances.

Bis(2-ethylhexyl)phthalate RPD 129% (20%) is outside individual acceptance criteria, but within overall method allowances.

Samples:

SW846 8270C/D

Samples:

S008726-CCV1

Analyte percent difference is outside individual acceptance criteria (20), but within overall method allowances.

3,3´-Dichlorobenzidine (27.5%)
Benzoic acid (-41.5%)
Bis(2-ethylhexyl)phthalate (20.6%)

Analyte percent drift is outside individual acceptance criteria (20), but within overall method allowances.

2,4-Dinitrophenol (-59.3%)
4,6-Dinitro-2-methylphenol (-43.6%)

This affected the following samples:

Water

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water	IDW - Phase I	Ground Water	15-Sep-10 09:30	16-Sep-10
SB18232-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B/C	20-Sep-10	23-Sep-10	JLG	1019816	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water	IDW - Phase I	Ground Water	15-Sep-10 09:30	16-Sep-10
SB18232-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B/C	20-Sep-10	23-Sep-10	JLG	1019816	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	1.0	1	"	"	"	"	"	
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*88*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*105*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*119*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*105*			*70-130 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3510C												
83-32-9	Acenaphthene	BRL		µg/l	5.88	1	SW846 8270C/D	17-Sep-10	23-Sep-10	SM	1019679	
208-96-8	Acenaphthylene	BRL		µg/l	5.88	1	"	"	"	"	"	
62-53-3	Aniline	BRL		µg/l	5.88	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water	IDW - Phase I	Ground Water	15-Sep-10 09:30	16-Sep-10
SB18232-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3510C												
120-12-7	Anthracene	BRL		µg/l	5.88	1	SW846 8270C/D	17-Sep-10	23-Sep-10	SM	1019679	
103-33-3	Azobenzene/Diphenyldiazine	BRL		µg/l	5.88	1	"	"	"	"	"	
92-87-5	Benzidine	BRL		µg/l	5.88	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	BRL		µg/l	5.88	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	BRL		µg/l	5.88	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	BRL		µg/l	5.88	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	BRL		µg/l	5.88	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	BRL		µg/l	5.88	1	"	"	"	"	"	
65-85-0	Benzoic acid	BRL		µg/l	5.88	1	"	"	"	"	"	
100-51-6	Benzyl alcohol	BRL		µg/l	5.88	1	"	"	"	"	"	
111-91-1	Bis(2-chloroethoxy)methane	BRL		µg/l	5.88	1	"	"	"	"	"	
111-44-4	Bis(2-chloroethyl)ether	BRL		µg/l	5.88	1	"	"	"	"	"	
108-60-1	Bis(2-chloroisopropyl)ether	BRL		µg/l	5.88	1	"	"	"	"	"	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL		µg/l	5.88	1	"	"	"	"	"	
101-55-3	4-Bromophenyl phenyl ether	BRL		µg/l	5.88	1	"	"	"	"	"	
85-68-7	Butyl benzyl phthalate	BRL		µg/l	5.88	1	"	"	"	"	"	
86-74-8	Carbazole	BRL		µg/l	5.88	1	"	"	"	"	"	
59-50-7	4-Chloro-3-methylphenol	BRL		µg/l	5.88	1	"	"	"	"	"	
106-47-8	4-Chloroaniline	BRL		µg/l	5.88	1	"	"	"	"	"	
91-58-7	2-Chloronaphthalene	BRL		µg/l	5.88	1	"	"	"	"	"	
95-57-8	2-Chlorophenol	BRL		µg/l	5.88	1	"	"	"	"	"	
7005-72-3	4-Chlorophenyl phenyl ether	BRL		µg/l	5.88	1	"	"	"	"	"	
218-01-9	Chrysene	BRL		µg/l	5.88	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	BRL		µg/l	5.88	1	"	"	"	"	"	
132-64-9	Dibenzofuran	BRL		µg/l	5.88	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
91-94-1	3,3´-Dichlorobenzidine	BRL		µg/l	5.88	1	"	"	"	"	"	
120-83-2	2,4-Dichlorophenol	BRL		µg/l	5.88	1	"	"	"	"	"	
84-66-2	Diethyl phthalate	BRL		µg/l	5.88	1	"	"	"	"	"	
131-11-3	Dimethyl phthalate	BRL		µg/l	5.88	1	"	"	"	"	"	
105-67-9	2,4-Dimethylphenol	BRL		µg/l	5.88	1	"	"	"	"	"	
84-74-2	Di-n-butyl phthalate	BRL		µg/l	5.88	1	"	"	"	"	"	
534-52-1	4,6-Dinitro-2-methylphenol	BRL		µg/l	5.88	1	"	"	"	"	"	
51-28-5	2,4-Dinitrophenol	BRL		µg/l	5.88	1	"	"	"	"	"	
121-14-2	2,4-Dinitrotoluene	BRL		µg/l	5.88	1	"	"	"	"	"	
606-20-2	2,6-Dinitrotoluene	BRL		µg/l	5.88	1	"	"	"	"	"	
117-84-0	Di-n-octyl phthalate	BRL		µg/l	5.88	1	"	"	"	"	"	
206-44-0	Fluoranthene	BRL		µg/l	5.88	1	"	"	"	"	"	
86-73-7	Fluorene	BRL		µg/l	5.88	1	"	"	"	"	"	
118-74-1	Hexachlorobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
87-68-3	Hexachlorobutadiene	BRL		µg/l	5.88	1	"	"	"	"	"	
77-47-4	Hexachlorocyclopentadiene	BRL		µg/l	5.88	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water	IDW - Phase I	Ground Water	15-Sep-10 09:30	16-Sep-10
SB18232-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3510C												
67-72-1	Hexachloroethane	BRL		µg/l	5.88	1	SW846 8270C/D	17-Sep-10	23-Sep-10	SM	1019679	
193-39-5	Indeno (1,2,3-cd) pyrene	BRL		µg/l	5.88	1	"	"	"	"	"	
78-59-1	Isophorone	BRL		µg/l	5.88	1	"	"	"	"	"	
91-57-6	2-Methylnaphthalene	BRL		µg/l	5.88	1	"	"	"	"	"	
95-48-7	2-Methylphenol	BRL		µg/l	5.88	1	"	"	"	"	"	
108-39-4, 106-44-5	3 & 4-Methylphenol	BRL		µg/l	11.8	1	"	"	"	"	"	
91-20-3	Naphthalene	BRL		µg/l	5.88	1	"	"	"	"	"	
88-74-4	2-Nitroaniline	BRL		µg/l	5.88	1	"	"	"	"	"	
99-09-2	3-Nitroaniline	BRL		µg/l	5.88	1	"	"	"	"	"	
100-01-6	4-Nitroaniline	BRL		µg/l	23.5	1	"	"	"	"	"	
98-95-3	Nitrobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
88-75-5	2-Nitrophenol	BRL		µg/l	5.88	1	"	"	"	"	"	
100-02-7	4-Nitrophenol	BRL		µg/l	23.5	1	"	"	"	"	"	
62-75-9	N-Nitrosodimethylamine	BRL		µg/l	5.88	1	"	"	"	"	"	
621-64-7	N-Nitrosodi-n-propylamine	BRL		µg/l	5.88	1	"	"	"	"	"	
86-30-6	N-Nitrosodiphenylamine	BRL		µg/l	5.88	1	"	"	"	"	"	
87-86-5	Pentachlorophenol	BRL		µg/l	23.5	1	"	"	"	"	"	
85-01-8	Phenanthrene	BRL		µg/l	5.88	1	"	"	"	"	"	
108-95-2	Phenol	BRL		µg/l	5.88	1	"	"	"	"	"	
129-00-0	Pyrene	BRL		µg/l	5.88	1	"	"	"	"	"	
110-86-1	Pyridine	BRL		µg/l	5.88	1	"	"	"	"	"	
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
90-12-0	1-Methylnaphthalene	BRL		µg/l	5.88	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	BRL		µg/l	5.88	1	"	"	"	"	"	
88-06-2	2,4,6-Trichlorophenol	BRL		µg/l	5.88	1	"	"	"	"	"	
82-68-8	Pentachloronitrobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
95-94-3	1,2,4,5-Tetrachlorobenzene	BRL		µg/l	5.88	1	"	"	"	"	"	
Surrogate recoveries:												
321-60-8	*2-Fluorobiphenyl*	*57*			*30-130 %*		"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*40*			*15-110 %*		"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*56*			*30-130 %*		"	"	"	"	"	
4165-62-2	*Phenol-d5*	*30*			*15-110 %*		"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*69*			*30-130 %*		"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*66*			*15-110 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3510C												
12674-11-2	Aroclor-1016	BRL		µg/l	0.222	1	SW846 8082	22-Sep-10	24-Sep-10	IMR	1019982	
11104-28-2	Aroclor-1221	BRL		µg/l	0.222	1	"	"	"	"	"	
11141-16-5	Aroclor-1232	BRL		µg/l	0.222	1	"	"	"	"	"	
53469-21-9	Aroclor-1242	BRL		µg/l	0.222	1	"	"	"	"	"	
12672-29-6	Aroclor-1248	BRL		µg/l	0.222	1	"	"	"	"	"	
11097-69-1	Aroclor-1254	BRL		µg/l	0.222	1	"	"	"	"	"	
11096-82-5	Aroclor-1260	BRL		µg/l	0.222	1	"	"	"	"	"	

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water SB18232-01	IDW - Phase I	Ground Water	15-Sep-10 09:30	16-Sep-10

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3510C												
37324-23-5	Aroclor-1262	BRL		µg/l	0.222	1	SW846 8082	22-Sep-10	24-Sep-10	IMR	1019982	
11100-14-4	Aroclor-1268	BRL		µg/l	0.222	1	"	"	"	"	"	
Surrogate recoveries:												
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr)*	*74*			*30-150 %*		"	"	"	"	"	
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr) [2C]*	*67*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr)*	*73*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*54*			*30-150 %*		"	"	"	"	"	
Total Metals by EPA 200/6000 Series Methods												
	Preservation	Field Preservec		N/A		1	EPA 200/6000 methods	17-Sep-10	17-Sep-10	ARF	1019812	
Total Metals by EPA 6000/7000 Series Methods												
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	27-Sep-10	29-Sep-10	TBG	1020164	
7440-38-2	Arsenic	BRL		mg/l	0.0040	1	"	"	"	"	"	
7440-39-3	Barium	0.0550		mg/l	0.0050	1	"	"	"	"	"	
7440-43-9	Cadmium	BRL		mg/l	0.0025	1	"	"	"	"	"	
7440-47-3	Chromium	BRL		mg/l	0.0050	1	"	"	"	"	"	
7439-92-1	Lead	BRL		mg/l	0.0075	1	"	"	"	"	"	
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"	
Total Metals by EPA 200 Series Methods												
7439-97-6	Mercury	BRL		mg/l	0.00020	1	EPA 245.1/7470A	27-Sep-10	29-Sep-10	ARF	1020166	X
General Chemistry Parameters												
	Flashpoint	>150		°F		1	SW846 1010	17-Sep-10	17-Sep-10	VK	1019738	
	pH	8.48	pH	pH Units		1	ASTM D 1293-99B	16-Sep-10 19:35	17-Sep-10 16:59	TDD	1019675	X
Reactivity Cyanide/Sulfide Prepared by method General Preparation												
	Reactivity	Nonreactive		mg/l		1	SW846 Ch. 7.3	23-Sep-10	24-Sep-10	BD	1020105	
	Reactive Cyanide	BRL		mg/l	25.0	1	"	"	"	"	"	
	Reactive Sulfide	BRL		mg/l	50.0	1	"	"	"	"	"	

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019816 - SW846 5030 Water MS										
Blank (1019816-BLK1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0						
Acetone	BRL		µg/l	10.0						
Acrylonitrile	BRL		µg/l	0.5						
Benzene	BRL		µg/l	1.0						
Bromobenzene	BRL		µg/l	1.0						
Bromochloromethane	BRL		µg/l	1.0						
Bromodichloromethane	BRL		µg/l	0.5						
Bromoform	BRL		µg/l	1.0						
Bromomethane	BRL		µg/l	2.0						
2-Butanone (MEK)	BRL		µg/l	10.0						
n-Butylbenzene	BRL		µg/l	1.0						
sec-Butylbenzene	BRL		µg/l	1.0						
tert-Butylbenzene	BRL		µg/l	1.0						
Carbon disulfide	BRL		µg/l	2.0						
Carbon tetrachloride	BRL		µg/l	1.0						
Chlorobenzene	BRL		µg/l	1.0						
Chloroethane	BRL		µg/l	2.0						
Chloroform	BRL		µg/l	1.0						
Chloromethane	BRL		µg/l	2.0						
2-Chlorotoluene	BRL		µg/l	1.0						
4-Chlorotoluene	BRL		µg/l	1.0						
1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0						
Dibromochloromethane	BRL		µg/l	0.5						
1,2-Dibromoethane (EDB)	BRL		µg/l	0.5						
Dibromomethane	BRL		µg/l	1.0						
1,2-Dichlorobenzene	BRL		µg/l	1.0						
1,3-Dichlorobenzene	BRL		µg/l	1.0						
1,4-Dichlorobenzene	BRL		µg/l	1.0						
Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0						
1,1-Dichloroethane	BRL		µg/l	1.0						
1,2-Dichloroethane	BRL		µg/l	1.0						
1,1-Dichloroethene	BRL		µg/l	1.0						
cis-1,2-Dichloroethene	BRL		µg/l	1.0						
trans-1,2-Dichloroethene	BRL		µg/l	1.0						
1,2-Dichloropropane	BRL		µg/l	1.0						
1,3-Dichloropropane	BRL		µg/l	1.0						
2,2-Dichloropropane	BRL		µg/l	1.0						
1,1-Dichloropropene	BRL		µg/l	1.0						
cis-1,3-Dichloropropene	BRL		µg/l	0.5						
trans-1,3-Dichloropropene	BRL		µg/l	0.5						
Ethylbenzene	BRL		µg/l	1.0						
Hexachlorobutadiene	BRL		µg/l	0.5						
2-Hexanone (MBK)	BRL		µg/l	10.0						
Isopropylbenzene	BRL		µg/l	1.0						
4-Isopropyltoluene	BRL		µg/l	1.0						
Methyl tert-butyl ether	BRL		µg/l	1.0						
4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0						
Methylene chloride	BRL		µg/l	2.0						
Naphthalene	BRL		µg/l	1.0						
n-Propylbenzene	BRL		µg/l	1.0						
Styrene	BRL		µg/l	1.0						
1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019816 - SW846 5030 Water MS										
Blank (1019816-BLK1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5						
Tetrachloroethene	BRL		µg/l	1.0						
Toluene	BRL		µg/l	1.0						
1,2,3-Trichlorobenzene	BRL		µg/l	1.0						
1,2,4-Trichlorobenzene	BRL		µg/l	1.0						
1,3,5-Trichlorobenzene	BRL		µg/l	1.0						
1,1,1-Trichloroethane	BRL		µg/l	1.0						
1,1,2-Trichloroethane	BRL		µg/l	1.0						
Trichloroethene	BRL		µg/l	1.0						
Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0						
1,2,3-Trichloropropane	BRL		µg/l	1.0						
1,2,4-Trimethylbenzene	BRL		µg/l	1.0						
1,3,5-Trimethylbenzene	BRL		µg/l	1.0						
Vinyl chloride	BRL		µg/l	1.0						
m,p-Xylene	BRL		µg/l	2.0						
o-Xylene	BRL		µg/l	1.0						
Tetrahydrofuran	BRL		µg/l	2.0						
Ethyl ether	BRL		µg/l	1.0						
Tert-amyl methyl ether	BRL		µg/l	1.0						
Ethyl tert-butyl ether	BRL		µg/l	1.0						
Di-isopropyl ether	BRL		µg/l	1.0						
Tert-Butanol / butyl alcohol	BRL		µg/l	10.0						
1,4-Dioxane	BRL		µg/l	20.0						
trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0						
Ethanol	BRL		µg/l	400						
Surrogate: 4-Bromofluorobenzene	*44.2*		µg/l		*50.0*		*88*	*70-130*		
Surrogate: Toluene-d8	*51.7*		µg/l		*50.0*		*103*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*59.6*		µg/l		*50.0*		*119*	*70-130*		
Surrogate: Dibromofluoromethane	*52.8*		µg/l		*50.0*		*106*	*70-130*		
LCS (1019816-BS1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	24.3		µg/l		20.0		122	70-130		
Acetone	26.2		µg/l		20.0		131	70-130		
Acrylonitrile	26.1		µg/l		20.0		130	70-130		
Benzene	21.4		µg/l		20.0		107	70-130		
Bromobenzene	19.2		µg/l		20.0		96	70-130		
Bromochloromethane	20.1		µg/l		20.0		100	70-130		
Bromodichloromethane	22.8		µg/l		20.0		114	70-130		
Bromoform	22.2		µg/l		20.0		111	70-130		
Bromomethane	21.1		µg/l		20.0		105	70-130		
2-Butanone (MEK)	20.5		µg/l		20.0		102	70-130		
n-Butylbenzene	19.9		µg/l		20.0		99	70-130		
sec-Butylbenzene	20.2		µg/l		20.0		101	70-130		
tert-Butylbenzene	19.5		µg/l		20.0		98	70-130		
Carbon disulfide	23.9		µg/l		20.0		120	70-130		
Carbon tetrachloride	21.1		µg/l		20.0		105	70-130		
Chlorobenzene	19.9		µg/l		20.0		99	70-130		
Chloroethane	23.6		µg/l		20.0		118	70-130		
Chloroform	19.3		µg/l		20.0		96	70-130		
Chloromethane	24.4		µg/l		20.0		122	70-130		
2-Chlorotoluene	20.2		µg/l		20.0		101	70-130		
4-Chlorotoluene	20.8		µg/l		20.0		104	70-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019816 - SW846 5030 Water MS										
LCS (1019816-BS1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
1,2-Dibromo-3-chloropropane	19.4		µg/l		20.0		97	70-130		
Dibromochloromethane	22.9		µg/l		20.0		114	70-130		
1,2-Dibromoethane (EDB)	19.6		µg/l		20.0		98	70-130		
Dibromomethane	22.9		µg/l		20.0		114	70-130		
1,2-Dichlorobenzene	21.3		µg/l		20.0		107	70-130		
1,3-Dichlorobenzene	19.4		µg/l		20.0		97	70-130		
1,4-Dichlorobenzene	20.5		µg/l		20.0		102	70-130		
Dichlorodifluoromethane (Freon12)	23.4		µg/l		20.0		117	70-130		
1,1-Dichloroethane	25.4		µg/l		20.0		127	70-130		
1,2-Dichloroethane	22.8		µg/l		20.0		114	70-130		
1,1-Dichloroethene	23.2		µg/l		20.0		116	70-130		
cis-1,2-Dichloroethene	20.3		µg/l		20.0		102	70-130		
trans-1,2-Dichloroethene	23.3		µg/l		20.0		117	70-130		
1,2-Dichloropropane	22.4		µg/l		20.0		112	70-130		
1,3-Dichloropropane	22.8		µg/l		20.0		114	70-130		
2,2-Dichloropropane	17.3		µg/l		20.0		87	70-130		
1,1-Dichloropropene	20.6		µg/l		20.0		103	70-130		
cis-1,3-Dichloropropene	18.5		µg/l		20.0		92	70-130		
trans-1,3-Dichloropropene	19.3		µg/l		20.0		97	70-130		
Ethylbenzene	20.4		µg/l		20.0		102	70-130		
Hexachlorobutadiene	20.0		µg/l		20.0		100	70-130		
2-Hexanone (MBK)	18.7		µg/l		20.0		93	70-130		
Isopropylbenzene	20.0		µg/l		20.0		100	70-130		
4-Isopropyltoluene	22.4		µg/l		20.0		112	70-130		
Methyl tert-butyl ether	23.3		µg/l		20.0		117	70-130		
4-Methyl-2-pentanone (MIBK)	19.7		µg/l		20.0		99	70-130		
Methylene chloride	22.6		µg/l		20.0		113	70-130		
Naphthalene	12.1	QC2	µg/l		20.0		61	70-130		
n-Propylbenzene	20.4		µg/l		20.0		102	70-130		
Styrene	17.8		µg/l		20.0		89	70-130		
1,1,1,2-Tetrachloroethane	19.4		µg/l		20.0		97	70-130		
1,1,2,2-Tetrachloroethane	18.6		µg/l		20.0		93	70-130		
Tetrachloroethene	20.0		µg/l		20.0		100	70-130		
Toluene	20.9		µg/l		20.0		104	70-130		
1,2,3-Trichlorobenzene	16.2		µg/l		20.0		81	70-130		
1,2,4-Trichlorobenzene	14.6		µg/l		20.0		73	70-130		
1,3,5-Trichlorobenzene	17.5		µg/l		20.0		88	70-130		
1,1,1-Trichloroethane	22.0		µg/l		20.0		110	70-130		
1,1,2-Trichloroethane	22.3		µg/l		20.0		111	70-130		
Trichloroethene	23.5		µg/l		20.0		117	70-130		
Trichlorofluoromethane (Freon 11)	24.8		µg/l		20.0		124	70-130		
1,2,3-Trichloropropane	20.7		µg/l		20.0		104	70-130		
1,2,4-Trimethylbenzene	20.1		µg/l		20.0		100	70-130		
1,3,5-Trimethylbenzene	20.3		µg/l		20.0		101	70-130		
Vinyl chloride	20.0		µg/l		20.0		100	70-130		
m,p-Xylene	40.7		µg/l		40.0		102	70-130		
o-Xylene	20.5		µg/l		20.0		102	70-130		
Tetrahydrofuran	19.9		µg/l		20.0		99	70-130		
Ethyl ether	22.4		µg/l		20.0		112	70-130		
Tert-amyl methyl ether	22.3		µg/l		20.0		111	70-130		
Ethyl tert-butyl ether	19.2		µg/l		20.0		96	70-130		
Di-isopropyl ether	20.8		µg/l		20.0		104	70-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019816 - SW846 5030 Water MS										
LCS (1019816-BS1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
Tert-Butanol / butyl alcohol	231		µg/l		200		116	70-130		
1,4-Dioxane	195		µg/l		200		98	70-130		
trans-1,4-Dichloro-2-butene	16.4		µg/l		20.0		82	70-130		
Ethanol	472		µg/l		400		118	70-130		
Surrogate: 4-Bromofluorobenzene	*47.8*		µg/l		*50.0*		*96*	*70-130*		
Surrogate: Toluene-d8	*50.8*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*54.2*		µg/l		*50.0*		*108*	*70-130*		
Surrogate: Dibromofluoromethane	*49.5*		µg/l		*50.0*		*99*	*70-130*		
LCS Dup (1019816-BSD1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	24.9		µg/l		20.0		124	70-130	2	25
Acetone	26.6		µg/l		20.0		133	70-130	1	50
Acrylonitrile	26.3	QM9	µg/l		20.0		131	70-130	0.8	25
Benzene	20.5		µg/l		20.0		103	70-130	4	25
Bromobenzene	18.9		µg/l		20.0		94	70-130	2	25
Bromochloromethane	21.3		µg/l		20.0		107	70-130	6	25
Bromodichloromethane	23.2		µg/l		20.0		116	70-130	2	25
Bromoform	22.2		µg/l		20.0		111	70-130	0.2	25
Bromomethane	21.1		µg/l		20.0		105	70-130	0	50
2-Butanone (MEK)	20.4		µg/l		20.0		102	70-130	0.6	50
n-Butylbenzene	19.3		µg/l		20.0		97	70-130	3	25
sec-Butylbenzene	20.1		µg/l		20.0		101	70-130	0.3	25
tert-Butylbenzene	19.7		µg/l		20.0		98	70-130	0.9	25
Carbon disulfide	24.2		µg/l		20.0		121	70-130	1	25
Carbon tetrachloride	20.5		µg/l		20.0		103	70-130	3	25
Chlorobenzene	19.9		µg/l		20.0		99	70-130	0.05	25
Chloroethane	24.0		µg/l		20.0		120	70-130	2	50
Chloroform	19.4		µg/l		20.0		97	70-130	0.5	25
Chloromethane	24.6		µg/l		20.0		123	70-130	0.7	25
2-Chlorotoluene	20.3		µg/l		20.0		102	70-130	0.3	25
4-Chlorotoluene	20.5		µg/l		20.0		102	70-130	2	25
1,2-Dibromo-3-chloropropane	19.5		µg/l		20.0		98	70-130	0.7	25
Dibromochloromethane	23.9		µg/l		20.0		120	70-130	4	50
1,2-Dibromoethane (EDB)	20.3		µg/l		20.0		101	70-130	3	25
Dibromomethane	23.3		µg/l		20.0		117	70-130	2	25
1,2-Dichlorobenzene	20.8		µg/l		20.0		104	70-130	3	25
1,3-Dichlorobenzene	19.2		µg/l		20.0		96	70-130	0.7	25
1,4-Dichlorobenzene	20.6		µg/l		20.0		103	70-130	0.7	25
Dichlorodifluoromethane (Freon12)	23.6		µg/l		20.0		118	70-130	0.9	50
1,1-Dichloroethane	25.1		µg/l		20.0		125	70-130	2	25
1,2-Dichloroethane	23.1		µg/l		20.0		115	70-130	1	25
1,1-Dichloroethene	23.4		µg/l		20.0		117	70-130	0.6	25
cis-1,2-Dichloroethene	20.3		µg/l		20.0		102	70-130	0.1	25
trans-1,2-Dichloroethene	23.9		µg/l		20.0		120	70-130	3	25
1,2-Dichloropropane	23.2		µg/l		20.0		116	70-130	4	25
1,3-Dichloropropane	23.2		µg/l		20.0		116	70-130	2	25
2,2-Dichloropropane	17.4		µg/l		20.0		87	70-130	0.7	25
1,1-Dichloropropene	20.7		µg/l		20.0		103	70-130	0.4	25
cis-1,3-Dichloropropene	19.7		µg/l		20.0		98	70-130	6	25
trans-1,3-Dichloropropene	20.0		µg/l		20.0		100	70-130	3	25
Ethylbenzene	20.4		µg/l		20.0		102	70-130	0.3	25
Hexachlorobutadiene	19.9		µg/l		20.0		99	70-130	0.9	50

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019816 - SW846 5030 Water MS										
LCS Dup (1019816-BSD1)					Prepared: 20-Sep-10 Analyzed: 22-Sep-10					
2-Hexanone (MBK)	19.4		µg/l		20.0		97	70-130	4	25
Isopropylbenzene	19.5		µg/l		20.0		98	70-130	2	25
4-Isopropyltoluene	21.4		µg/l		20.0		107	70-130	4	25
Methyl tert-butyl ether	24.0		µg/l		20.0		120	70-130	3	25
4-Methyl-2-pentanone (MIBK)	19.0		µg/l		20.0		95	70-130	4	50
Methylene chloride	23.3		µg/l		20.0		117	70-130	3	25
Naphthalene	11.8	QC2	µg/l		20.0		59	70-130	3	25
n-Propylbenzene	19.8		µg/l		20.0		99	70-130	3	25
Styrene	17.6		µg/l		20.0		88	70-130	2	25
1,1,1,2-Tetrachloroethane	19.0		µg/l		20.0		95	70-130	2	25
1,1,2,2-Tetrachloroethane	18.2		µg/l		20.0		91	70-130	3	25
Tetrachloroethene	19.5		µg/l		20.0		98	70-130	2	25
Toluene	21.3		µg/l		20.0		106	70-130	2	25
1,2,3-Trichlorobenzene	16.1		µg/l		20.0		80	70-130	0.3	25
1,2,4-Trichlorobenzene	14.3		µg/l		20.0		72	70-130	2	25
1,3,5-Trichlorobenzene	16.9		µg/l		20.0		84	70-130	4	25
1,1,1-Trichloroethane	22.2		µg/l		20.0		111	70-130	1	25
1,1,2-Trichloroethane	23.5		µg/l		20.0		118	70-130	5	25
Trichloroethene	24.2		µg/l		20.0		121	70-130	3	25
Trichlorofluoromethane (Freon 11)	25.1		µg/l		20.0		126	70-130	1	50
1,2,3-Trichloropropane	20.9		µg/l		20.0		105	70-130	0.9	25
1,2,4-Trimethylbenzene	19.9		µg/l		20.0		100	70-130	0.7	25
1,3,5-Trimethylbenzene	20.2		µg/l		20.0		101	70-130	0.2	25
Vinyl chloride	21.5		µg/l		20.0		108	70-130	7	25
m,p-Xylene	40.6		µg/l		40.0		102	70-130	0.2	25
o-Xylene	20.5		µg/l		20.0		102	70-130	0.1	25
Tetrahydrofuran	20.4		µg/l		20.0		102	70-130	3	25
Ethyl ether	23.1		µg/l		20.0		115	70-130	3	50
Tert-amyl methyl ether	23.0		µg/l		20.0		115	70-130	3	25
Ethyl tert-butyl ether	20.1		µg/l		20.0		100	70-130	5	25
Di-isopropyl ether	20.9		µg/l		20.0		104	70-130	0.6	25
Tert-Butanol / butyl alcohol	233		µg/l		200		116	70-130	0.5	25
1,4-Dioxane	196		µg/l		200		98	70-130	0.2	25
trans-1,4-Dichloro-2-butene	16.5		µg/l		20.0		82	70-130	0.8	25
Ethanol	475		µg/l		400		119	70-130	0.6	30
Surrogate: 4-Bromofluorobenzene	*49.6*		µg/l		*50.0*		*99*	*70-130*		
Surrogate: Toluene-d8	*52.5*		µg/l		*50.0*		*105*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*56.0*		µg/l		*50.0*		*112*	*70-130*		
Surrogate: Dibromofluoromethane	*51.7*		µg/l		*50.0*		*103*	*70-130*		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019679 - SW846 3510C										
Blank (1019679-BLK1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
Acenaphthene	BRL		µg/l	5.00						
Acenaphthylene	BRL		µg/l	5.00						
Aniline	BRL		µg/l	5.00						
Anthracene	BRL		µg/l	5.00						
Azobenzene/Diphenyldiazine	BRL		µg/l	5.00						
Benzidine	BRL		µg/l	5.00						
Benzo (a) anthracene	BRL		µg/l	5.00						
Benzo (a) pyrene	BRL		µg/l	5.00						
Benzo (b) fluoranthene	BRL		µg/l	5.00						
Benzo (g,h,i) perylene	BRL		µg/l	5.00						
Benzo (k) fluoranthene	BRL		µg/l	5.00						
Benzoic acid	BRL		µg/l	5.00						
Benzyl alcohol	BRL		µg/l	5.00						
Bis(2-chloroethoxy)methane	BRL		µg/l	5.00						
Bis(2-chloroethyl)ether	BRL		µg/l	5.00						
Bis(2-chloroisopropyl)ether	BRL		µg/l	5.00						
Bis(2-ethylhexyl)phthalate	BRL		µg/l	5.00						
4-Bromophenyl phenyl ether	BRL		µg/l	5.00						
Butyl benzyl phthalate	BRL		µg/l	5.00						
Carbazole	BRL		µg/l	5.00						
4-Chloro-3-methylphenol	BRL		µg/l	5.00						
4-Chloroaniline	BRL		µg/l	5.00						
2-Chloronaphthalene	BRL		µg/l	5.00						
2-Chlorophenol	BRL		µg/l	5.00						
4-Chlorophenyl phenyl ether	BRL		µg/l	5.00						
Chrysene	BRL		µg/l	5.00						
Dibenzo (a,h) anthracene	BRL		µg/l	5.00						
Dibenzofuran	BRL		µg/l	5.00						
1,2-Dichlorobenzene	BRL		µg/l	5.00						
1,3-Dichlorobenzene	BRL		µg/l	5.00						
1,4-Dichlorobenzene	BRL		µg/l	5.00						
3,3´-Dichlorobenzidine	BRL		µg/l	5.00						
2,4-Dichlorophenol	BRL		µg/l	5.00						
Diethyl phthalate	BRL		µg/l	5.00						
Dimethyl phthalate	BRL		µg/l	5.00						
2,4-Dimethylphenol	BRL		µg/l	5.00						
Di-n-butyl phthalate	BRL		µg/l	5.00						
4,6-Dinitro-2-methylphenol	BRL		µg/l	5.00						
2,4-Dinitrophenol	BRL		µg/l	5.00						
2,4-Dinitrotoluene	BRL		µg/l	5.00						
2,6-Dinitrotoluene	BRL		µg/l	5.00						
Di-n-octyl phthalate	BRL		µg/l	5.00						
Fluoranthene	BRL		µg/l	5.00						
Fluorene	BRL		µg/l	5.00						
Hexachlorobenzene	BRL		µg/l	5.00						
Hexachlorobutadiene	BRL		µg/l	5.00						
Hexachlorocyclopentadiene	BRL		µg/l	5.00						
Hexachloroethane	BRL		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	BRL		µg/l	5.00						
Isophorone	BRL		µg/l	5.00						
2-Methylnaphthalene	BRL		µg/l	5.00						
2-Methylphenol	BRL		µg/l	5.00						

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019679 - SW846 3510C										
Blank (1019679-BLK1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
3 & 4-Methylphenol	BRL		µg/l	10.0						
Naphthalene	BRL		µg/l	5.00						
2-Nitroaniline	BRL		µg/l	5.00						
3-Nitroaniline	BRL		µg/l	5.00						
4-Nitroaniline	BRL		µg/l	20.0						
Nitrobenzene	BRL		µg/l	5.00						
2-Nitrophenol	BRL		µg/l	5.00						
4-Nitrophenol	BRL		µg/l	20.0						
N-Nitrosodimethylamine	BRL		µg/l	5.00						
N-Nitrosodi-n-propylamine	BRL		µg/l	5.00						
N-Nitrosodiphenylamine	BRL		µg/l	5.00						
Pentachlorophenol	BRL		µg/l	20.0						
Phenanthrene	BRL		µg/l	5.00						
Phenol	BRL		µg/l	5.00						
Pyrene	BRL		µg/l	5.00						
Pyridine	BRL		µg/l	5.00						
1-Methylnaphthalene	BRL		µg/l	5.00						
1,2,4-Trichlorobenzene	BRL		µg/l	5.00						
2,4,5-Trichlorophenol	BRL		µg/l	5.00						
2,4,6-Trichlorophenol	BRL		µg/l	5.00						
Pentachloronitrobenzene	BRL		µg/l	5.00						
1,2,4,5-Tetrachlorobenzene	BRL		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*25.7*		µg/l		*50.0*		*51*	*30-130*		
Surrogate: 2-Fluorophenol	*18.6*		µg/l		*50.0*		*37*	*15-110*		
Surrogate: Nitrobenzene-d5	*25.8*		µg/l		*50.0*		*52*	*30-130*		
Surrogate: Phenol-d5	*13.3*		µg/l		*50.0*		*27*	*15-110*		
Surrogate: Terphenyl-dl4	*27.7*		µg/l		*50.0*		*55*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*29.6*		µg/l		*50.0*		*59*	*15-110*		
LCS (1019679-BS1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
Acenaphthene	32.8		µg/l	5.00	50.0		66	40-130		
Acenaphthylene	33.1		µg/l	5.00	50.0		66	40-130		
Aniline	8.39	QC2	µg/l	5.00	50.0		17	40-130		
Anthracene	35.8		µg/l	5.00	50.0		72	40-130		
Azobenzene/Diphenyldiazine	35.3		µg/l	5.00	50.0		71	40-130		
Benzidine	BRL	QC2	µg/l	5.00	50.0			40-140		
Benzo (a) anthracene	35.5		µg/l	5.00	50.0		71	40-130		
Benzo (a) pyrene	35.7		µg/l	5.00	50.0		71	40-130		
Benzo (b) fluoranthene	34.6		µg/l	5.00	50.0		69	40-130		
Benzo (g,h,i) perylene	35.0		µg/l	5.00	50.0		70	40-130		
Benzo (k) fluoranthene	37.2		µg/l	5.00	50.0		74	40-130		
Benzoic acid	17.5	QC2	µg/l	5.00	50.0		35	40-130		
Benzyl alcohol	29.5		µg/l	5.00	50.0		59	40-130		
Bis(2-chloroethoxy)methane	25.0		µg/l	5.00	50.0		50	40-130		
Bis(2-chloroethyl)ether	23.2		µg/l	5.00	50.0		46	40-130		
Bis(2-chloroisopropyl)ether	28.5		µg/l	5.00	50.0		57	40-130		
Bis(2-ethylhexyl)phthalate	38.5		µg/l	5.00	50.0		77	40-130		
4-Bromophenyl phenyl ether	41.1		µg/l	5.00	50.0		82	40-130		
Butyl benzyl phthalate	35.6		µg/l	5.00	50.0		71	40-130		
Carbazole	39.2		µg/l	5.00	50.0		78	40-130		
4-Chloro-3-methylphenol	26.4		µg/l	5.00	50.0		53	40-130		
4-Chloroaniline	45.3		µg/l	5.00	50.0		91	40-130		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019679 - SW846 3510C										
LCS (1019679-BS1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
2-Chloronaphthalene	29.7		µg/l	5.00	50.0		59	40-130		
2-Chlorophenol	25.6		µg/l	5.00	50.0		51	40-130		
4-Chlorophenyl phenyl ether	36.4		µg/l	5.00	50.0		73	40-130		
Chrysene	37.5		µg/l	5.00	50.0		75	40-130		
Dibenzo (a,h) anthracene	35.1		µg/l	5.00	50.0		70	40-130		
Dibenzofuran	32.7		µg/l	5.00	50.0		65	40-130		
1,2-Dichlorobenzene	26.0		µg/l	5.00	50.0		52	40-130		
1,3-Dichlorobenzene	25.0		µg/l	5.00	50.0		50	40-130		
1,4-Dichlorobenzene	25.1		µg/l	5.00	50.0		50	40-130		
3,3´-Dichlorobenzidine	37.5		µg/l	5.00	50.0		75	40-130		
2,4-Dichlorophenol	24.5		µg/l	5.00	50.0		49	40-130		
Diethyl phthalate	36.4		µg/l	5.00	50.0		73	40-130		
Dimethyl phthalate	36.4		µg/l	5.00	50.0		73	40-130		
2,4-Dimethylphenol	24.0		µg/l	5.00	50.0		48	40-130		
Di-n-butyl phthalate	38.8		µg/l	5.00	50.0		78	40-130		
4,6-Dinitro-2-methylphenol	31.4		µg/l	5.00	50.0		63	40-130		
2,4-Dinitrophenol	28.0		µg/l	5.00	50.0		56	40-130		
2,4-Dinitrotoluene	37.4		µg/l	5.00	50.0		75	40-130		
2,6-Dinitrotoluene	36.8		µg/l	5.00	50.0		74	40-130		
Di-n-octyl phthalate	37.4		µg/l	5.00	50.0		75	40-130		
Fluoranthene	36.9		µg/l	5.00	50.0		74	40-130		
Fluorene	39.3		µg/l	5.00	50.0		79	40-130		
Hexachlorobenzene	36.1		µg/l	5.00	50.0		72	40-130		
Hexachlorobutadiene	19.7	QC2	µg/l	5.00	50.0		39	40-130		
Hexachlorocyclopentadiene	85.2	QC2	µg/l	5.00	50.0		170	40-130		
Hexachloroethane	24.8		µg/l	5.00	50.0		50	40-130		
Indeno (1,2,3-cd) pyrene	38.8		µg/l	5.00	50.0		78	40-130		
Isophorone	28.4		µg/l	5.00	50.0		57	40-130		
2-Methylnaphthalene	26.0		µg/l	5.00	50.0		52	40-130		
2-Methylphenol	26.6		µg/l	5.00	50.0		53	40-130		
3 & 4-Methylphenol	27.6		µg/l	10.0	50.0		55	40-130		
Naphthalene	24.0		µg/l	5.00	50.0		48	40-130		
2-Nitroaniline	36.3		µg/l	5.00	50.0		73	40-130		
3-Nitroaniline	45.0		µg/l	5.00	50.0		90	40-130		
4-Nitroaniline	46.8		µg/l	20.0	50.0		94	40-130		
Nitrobenzene	24.3		µg/l	5.00	50.0		49	40-130		
2-Nitrophenol	23.2		µg/l	5.00	50.0		46	40-130		
4-Nitrophenol	18.4	QC2	µg/l	20.0	50.0		37	40-130		
N-Nitrosodimethylamine	23.4		µg/l	5.00	50.0		47	40-130		
N-Nitrosodi-n-propylamine	30.4		µg/l	5.00	50.0		61	40-130		
N-Nitrosodiphenylamine	42.9		µg/l	5.00	50.0		86	40-130		
Pentachlorophenol	33.3		µg/l	20.0	50.0		67	40-130		
Phenanthrene	34.5		µg/l	5.00	50.0		69	40-130		
Phenol	16.9	QC2	µg/l	5.00	50.0		34	40-130		
Pyrene	35.7		µg/l	5.00	50.0		71	40-130		
Pyridine	23.0		µg/l	5.00	50.0		46	40-140		
1,2,4-Trichlorobenzene	22.5		µg/l	5.00	50.0		45	40-130		
1-Methylnaphthalene	30.0		µg/l	5.00	50.0		60	40-140		
2,4,5-Trichlorophenol	29.7		µg/l	5.00	50.0		59	40-130		
2,4,6-Trichlorophenol	31.6		µg/l	5.00	50.0		63	40-130		
Pentachloronitrobenzene	36.9		µg/l	5.00	50.0		74	40-140		
1,2,4,5-Tetrachlorobenzene	29.3		µg/l	5.00	50.0		59	40-140		

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019679 - SW846 3510C										
LCS (1019679-BS1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
Surrogate: 2-Fluorobiphenyl	*26.8*		µg/l		*50.0*		*54*	*30-130*		
Surrogate: 2-Fluorophenol	*19.8*		µg/l		*50.0*		*40*	*15-110*		
Surrogate: Nitrobenzene-d5	*23.5*		µg/l		*50.0*		*47*	*30-130*		
Surrogate: Phenol-d5	*15.1*		µg/l		*50.0*		*30*	*15-110*		
Surrogate: Terphenyl-dl4	*30.6*		µg/l		*50.0*		*61*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*35.4*		µg/l		*50.0*		*71*	*15-110*		
LCS Dup (1019679-BSD1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
Acenaphthene	33.3		µg/l	5.00	50.0		67	40-130	2	20
Acenaphthylene	33.4		µg/l	5.00	50.0		67	40-130	1	20
Aniline	5.04	QC2	µg/l	5.00	50.0		10	40-130	50	20
Anthracene	35.9		µg/l	5.00	50.0		72	40-130	0.4	20
Azobenzene/Diphenyldiazine	35.7		µg/l	5.00	50.0		71	40-130	1	20
Benzidine	BRL	QC2	µg/l	5.00	50.0			40-140		20
Benzo (a) anthracene	34.6		µg/l	5.00	50.0		69	40-130	3	20
Benzo (a) pyrene	34.7		µg/l	5.00	50.0		69	40-130	3	20
Benzo (b) fluoranthene	25.0	QR5	µg/l	5.00	50.0		50	40-130	32	20
Benzo (g,h,i) perylene	34.7		µg/l	5.00	50.0		69	40-130	0.9	20
Benzo (k) fluoranthene	34.3		µg/l	5.00	50.0		69	40-130	8	20
Benzoic acid	16.5	QC2	µg/l	5.00	50.0		33	40-130	6	20
Benzyl alcohol	29.4		µg/l	5.00	50.0		59	40-130	0.2	20
Bis(2-chloroethoxy)methane	25.7		µg/l	5.00	50.0		51	40-130	3	20
Bis(2-chloroethyl)ether	23.9		µg/l	5.00	50.0		48	40-130	3	20
Bis(2-chloroisopropyl)ether	30.0		µg/l	5.00	50.0		60	40-130	5	20
Bis(2-ethylhexyl)phthalate	179	QC2, QR5	µg/l	5.00	50.0		358	40-130	129	20
4-Bromophenyl phenyl ether	40.4		µg/l	5.00	50.0		81	40-130	2	20
Butyl benzyl phthalate	35.9		µg/l	5.00	50.0		72	40-130	0.8	20
Carbazole	38.8		µg/l	5.00	50.0		78	40-130	1	20
4-Chloro-3-methylphenol	26.0		µg/l	5.00	50.0		52	40-130	1	20
4-Chloroaniline	46.6		µg/l	5.00	50.0		93	40-130	3	20
2-Chloronaphthalene	30.2		µg/l	5.00	50.0		60	40-130	2	20
2-Chlorophenol	26.5		µg/l	5.00	50.0		53	40-130	3	20
4-Chlorophenyl phenyl ether	35.9		µg/l	5.00	50.0		72	40-130	1	20
Chrysene	40.4		µg/l	5.00	50.0		81	40-130	7	20
Dibenzo (a,h) anthracene	34.8		µg/l	5.00	50.0		70	40-130	0.8	20
Dibenzofuran	33.0		µg/l	5.00	50.0		66	40-130	0.8	20
1,2-Dichlorobenzene	27.0		µg/l	5.00	50.0		54	40-130	3	20
1,3-Dichlorobenzene	26.0		µg/l	5.00	50.0		52	40-130	4	20
1,4-Dichlorobenzene	26.4		µg/l	5.00	50.0		53	40-130	5	20
3,3´-Dichlorobenzidine	35.2		µg/l	5.00	50.0		70	40-130	6	20
2,4-Dichlorophenol	24.8		µg/l	5.00	50.0		50	40-130	1	20
Diethyl phthalate	35.9		µg/l	5.00	50.0		72	40-130	1	20
Dimethyl phthalate	35.9		µg/l	5.00	50.0		72	40-130	1	20
2,4-Dimethylphenol	21.2		µg/l	5.00	50.0		42	40-130	12	20
Di-n-butyl phthalate	38.6		µg/l	5.00	50.0		77	40-130	0.4	20
4,6-Dinitro-2-methylphenol	28.9		µg/l	5.00	50.0		58	40-130	8	20
2,4-Dinitrophenol	24.8		µg/l	5.00	50.0		50	40-130	12	20
2,4-Dinitrotoluene	36.7		µg/l	5.00	50.0		73	40-130	2	20
2,6-Dinitrotoluene	35.9		µg/l	5.00	50.0		72	40-130	2	20
Di-n-octyl phthalate	36.1		µg/l	5.00	50.0		72	40-130	4	20
Fluoranthene	36.7		µg/l	5.00	50.0		73	40-130	0.5	20
Fluorene	39.7		µg/l	5.00	50.0		79	40-130	1	20

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019679 - SW846 3510C										
LCS Dup (1019679-BSD1)					Prepared: 17-Sep-10 Analyzed: 20-Sep-10					
Hexachlorobenzene	35.5		µg/l	5.00	50.0		71	40-130	2	20
Hexachlorobutadiene	20.3		µg/l	5.00	50.0		41	40-130	3	20
Hexachlorocyclopentadiene	82.4	QC2	µg/l	5.00	50.0		165	40-130	3	20
Hexachloroethane	25.7		µg/l	5.00	50.0		51	40-130	4	20
Indeno (1,2,3-cd) pyrene	38.4		µg/l	5.00	50.0		77	40-130	0.9	20
Isophorone	28.7		µg/l	5.00	50.0		57	40-130	1	20
2-Methylnaphthalene	26.8		µg/l	5.00	50.0		54	40-130	3	20
2-Methylphenol	27.0		µg/l	5.00	50.0		54	40-130	2	20
3 & 4-Methylphenol	28.0		µg/l	10.0	50.0		56	40-130	1	20
Naphthalene	25.2		µg/l	5.00	50.0		50	40-130	5	20
2-Nitroaniline	35.8		µg/l	5.00	50.0		72	40-130	1	20
3-Nitroaniline	38.7		µg/l	5.00	50.0		77	40-130	15	20
4-Nitroaniline	46.1		µg/l	20.0	50.0		92	40-130	2	20
Nitrobenzene	25.1		µg/l	5.00	50.0		50	40-130	3	20
2-Nitrophenol	23.6		µg/l	5.00	50.0		47	40-130	1	20
4-Nitrophenol	17.0	QC2	µg/l	20.0	50.0		34	40-130	8	20
N-Nitrosodimethylamine	23.0		µg/l	5.00	50.0		46	40-130	2	20
N-Nitrosodi-n-propylamine	30.6		µg/l	5.00	50.0		61	40-130	0.5	20
N-Nitrosodiphenylamine	42.5		µg/l	5.00	50.0		85	40-130	1	20
Pentachlorophenol	31.1		µg/l	20.0	50.0		62	40-130	7	20
Phenanthrene	34.9		µg/l	5.00	50.0		70	40-130	1	20
Phenol	17.2	QC2	µg/l	5.00	50.0		34	40-130	2	20
Pyrene	36.6		µg/l	5.00	50.0		73	40-130	2	20
Pyridine	25.3		µg/l	5.00	50.0		51	40-140	10	20
1-Methylnaphthalene	31.5		µg/l	5.00	50.0		63	40-140	5	20
1,2,4-Trichlorobenzene	23.5		µg/l	5.00	50.0		47	40-130	4	20
2,4,5-Trichlorophenol	29.8		µg/l	5.00	50.0		60	40-130	0.4	20
2,4,6-Trichlorophenol	30.4		µg/l	5.00	50.0		61	40-130	4	20
Pentachloronitrobenzene	36.6		µg/l	5.00	50.0		73	40-140	1	20
1,2,4,5-Tetrachlorobenzene	30.1		µg/l	5.00	50.0		60	40-140	2	20
Surrogate: 2-Fluorobiphenyl	*27.2*		µg/l		*50.0*		*54*	*30-130*		
Surrogate: 2-Fluorophenol	*19.4*		µg/l		*50.0*		*39*	*15-110*		
Surrogate: Nitrobenzene-d5	*23.9*		µg/l		*50.0*		*48*	*30-130*		
Surrogate: Phenol-d5	*14.9*		µg/l		*50.0*		*30*	*15-110*		
Surrogate: Terphenyl-dl4	*29.9*		µg/l		*50.0*		*60*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*33.4*		µg/l		*50.0*		*67*	*15-110*		

Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019982 - SW846 3510C										
Blank (1019982-BLK1)						Prepared: 22-Sep-10	Analyzed: 24-Sep-10			
Aroclor-1016	BRL		µg/l	0.200						
Aroclor-1016 [2C]	BRL		µg/l	0.200						
Aroclor-1221	BRL		µg/l	0.200						
Aroclor-1221 [2C]	BRL		µg/l	0.200						
Aroclor-1232	BRL		µg/l	0.200						
Aroclor-1232 [2C]	BRL		µg/l	0.200						
Aroclor-1242	BRL		µg/l	0.200						
Aroclor-1242 [2C]	BRL		µg/l	0.200						
Aroclor-1248	BRL		µg/l	0.200						
Aroclor-1248 [2C]	BRL		µg/l	0.200						
Aroclor-1254	BRL		µg/l	0.200						
Aroclor-1254 [2C]	BRL		µg/l	0.200						
Aroclor-1260	BRL		µg/l	0.200						
Aroclor-1260 [2C]	BRL		µg/l	0.200						
Aroclor-1262	BRL		µg/l	0.200						
Aroclor-1262 [2C]	BRL		µg/l	0.200						
Aroclor-1268	BRL		µg/l	0.200						
Aroclor-1268 [2C]	BRL		µg/l	0.200						
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.255*		µg/l		*0.200*		*128*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.211*		µg/l		*0.200*		*106*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.226*		µg/l		*0.200*		*113*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.182*		µg/l		*0.200*		*91*	*30-150*		
LCS (1019982-BS1)						Prepared: 22-Sep-10	Analyzed: 24-Sep-10			
Aroclor-1016	1.91		µg/l	0.200	2.50		76	50-140		
Aroclor-1016 [2C]	1.76		µg/l	0.200	2.50		70	50-140		
Aroclor-1260	1.67		µg/l	0.200	2.50		67	50-140		
Aroclor-1260 [2C]	1.60		µg/l	0.200	2.50		64	50-140		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.128*		µg/l		*0.200*		*64*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.111*		µg/l		*0.200*		*56*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.113*		µg/l		*0.200*		*56*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.0980*		µg/l		*0.200*		*49*	*30-150*		
LCS Dup (1019982-BSD1)						Prepared: 22-Sep-10	Analyzed: 24-Sep-10			
Aroclor-1016	1.97		µg/l	0.200	2.50		79	50-140	3	30
Aroclor-1016 [2C]	1.78		µg/l	0.200	2.50		71	50-140	1	30
Aroclor-1260	1.79		µg/l	0.200	2.50		72	50-140	7	30
Aroclor-1260 [2C]	1.52		µg/l	0.200	2.50		61	50-140	5	30
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.147*		µg/l		*0.200*		*74*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.103*		µg/l		*0.200*		*52*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.125*		µg/l		*0.200*		*62*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.101*		µg/l		*0.200*		*50*	*30-150*		

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1020164 - SW846 3005A										
Blank (1020164-BLK1)					Prepared: 27-Sep-10 Analyzed: 29-Sep-10					
Selenium	BRL		mg/l	0.0150						
Lead	BRL		mg/l	0.0075						
Chromium	BRL		mg/l	0.0050						
Silver	BRL		mg/l	0.0050						
Arsenic	BRL		mg/l	0.0040						
Barium	BRL		mg/l	0.0050						
Cadmium	BRL		mg/l	0.0025						
LCS (1020164-BS1)					Prepared: 27-Sep-10 Analyzed: 29-Sep-10					
Lead	1.19		mg/l	0.0075	1.25		95	85-115		
Selenium	1.26		mg/l	0.0150	1.25		101	85-115		
Chromium	1.24		mg/l	0.0050	1.25		100	85-115		
Cadmium	1.28		mg/l	0.0025	1.25		102	85-115		
Barium	1.24		mg/l	0.0050	1.25		99	85-115		
Arsenic	1.25		mg/l	0.0040	1.25		100	85-115		
Silver	1.21		mg/l	0.0050	1.25		97	85-115		
LCS Dup (1020164-BSD1)					Prepared: 27-Sep-10 Analyzed: 29-Sep-10					
Selenium	1.26		mg/l	0.0150	1.25		100	85-115	0.3	20
Lead	1.19		mg/l	0.0075	1.25		95	85-115	0.04	20
Silver	1.21		mg/l	0.0050	1.25		97	85-115	0.5	20
Barium	1.23		mg/l	0.0050	1.25		99	85-115	0.2	20
Arsenic	1.25		mg/l	0.0040	1.25		100	85-115	0.3	20
Cadmium	1.28		mg/l	0.0025	1.25		102	85-115	0.2	20
Chromium	1.24		mg/l	0.0050	1.25		100	85-115	0.08	20
Duplicate (1020164-DUP1)			**Source: SB18232-01**		Prepared: 27-Sep-10 Analyzed: 29-Sep-10					
Lead	0.0040	J,QR8	mg/l	0.0075		0.0031			25	20
Selenium	BRL		mg/l	0.0150		BRL				20
Arsenic	BRL		mg/l	0.0040		BRL				20
Barium	0.0544		mg/l	0.0050		0.0550			1	20
Cadmium	0.0003	J,QR8	mg/l	0.0025		0.0004			29	20
Chromium	BRL		mg/l	0.0050		0.0024				20
Silver	BRL		mg/l	0.0050		BRL				20

Total Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1020166 - EPA200/SW7000 Series										
Blank (1020166-BLK1)						Prepared: 27-Sep-10	Analyzed: 29-Sep-10			
Mercury	BRL		mg/l	0.00020						
LCS (1020166-BS1)						Prepared: 27-Sep-10	Analyzed: 29-Sep-10			
Mercury	0.00445		mg/l	0.00020	0.00500		89	85-115		

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1019675 - General Preparation										
Reference (1019675-SRM1)						Prepared: 16-Sep-10		Analyzed: 17-Sep-10		
pH	6.04		pH Units		6.00		101	97.5-102.5		
Reference (1019675-SRM2)						Prepared: 16-Sep-10		Analyzed: 17-Sep-10		
pH	6.01		pH Units		6.00		100	97.5-102.5		
Batch 1019738 - General Preparation										
Duplicate (1019738-DUP1)			**Source: SB18232-01**			Prepared & Analyzed: 17-Sep-10				
Flashpoint	>150		°F			>150				20
Reference (1019738-SRM1)						Prepared & Analyzed: 17-Sep-10				
Flashpoint	79		°F		81.0		98	95-105		
Batch 1020105 - General Preparation										
Blank (1020105-BLK1)						Prepared: 23-Sep-10		Analyzed: 24-Sep-10		
Reactivity	0.00		mg/l							
Reactive Cyanide	BRL		mg/l	25.0						
Reactive Sulfide	BRL		mg/l	50.0						
Duplicate (1020105-DUP1)			**Source: SB18232-01**			Prepared: 23-Sep-10		Analyzed: 24-Sep-10		
Reactivity	Nonreactive		mg/l			Nonreactive				200
Reactive Cyanide	BRL		mg/l	25.0		BRL				20
Reactive Sulfide	BRL		mg/l	50.0		BRL				20
Reference (1020105-SRM1)						Prepared: 23-Sep-10		Analyzed: 24-Sep-10		
Reactive Cyanide	3.23		mg/l	25.0	100		3	0-200		
Reference (1020105-SRM2)						Prepared: 23-Sep-10		Analyzed: 24-Sep-10		
Reactive Sulfide	176		mg/l	50.0	6700		3	0-200		

Notes and Definitions

QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR5	RPD out of acceptance range.
QR8	Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:
Hanibal C. Tayeh, Ph.D.
June O'Connor
Kimberly Wisk
Rebecca Merz

✓ SB 18232 ②

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- [x] Standard TAT - 7 to 10 business days
- [ ] Rush TAT - Date Needed: _____
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: N.E.D.T. Inc.
83 Gilmore Dr.
Sutton, MA 01590

Telephone #: 508-234-4440
Project Mgr. Lon Cohen

Invoice To: Same

P.O. No.: _____ RQN: _____

Project No.: IDW Phase I
Site Name: Navy Base - Crystal Lake Rd.
Location: Groton State: CT
Sampler(s): BB

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid 7=CH_3OH
8= $NaHSO_4$ 9= 4°C 10= _____ 11= _____

List preservative code below: 9 2 4 5

QA/QC Reporting Notes: (check as needed)

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW= Surface Water SO=Soil SL=Sludge A=Air
X1= _____ X2= _____ X3= _____

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		pH	Reactivity CN/S	Total RCRA Metals	Total VOC (8260)	Total SVOC (8270)	Flashpoint	PCB	
18232-01	WATER	9/15/10	9:30AM	C	GW	2	3		2		✓	✓	✓	✓	✓	✓	✓	

Containers: # of VOA Vials, # of Amber Glass, # of Clear Glass, # of Plastic

Analyses: pH, Reactivity CN/S, Total RCRA Metals, Total VOC (8260), Total SVOC (8270), Flashpoint, PCB

- [ ] Provide MA DEP MCP CAM Report
- [ ] Provide CT DPH RCP Report

QA/QC Reporting Level
- [ ] Standard
- [ ] No QC
- [ ] Other _____

State specific reporting standards: _____

Relinquished by:	Received by:	Date:	Time:	Temp°C
Brian Palmer	Sandy Foster	9/15/10	12:00	
Sandy Foster	Bill Hanzi	9/16/10	11:20	5.0
Bill Hanzi	[illegible]	9/16/10	17:17	0.4

- [ ] EDD Format _____
- [x] E-mail to lcohen@nedtinc.com

- [ ] Ambient
- [ ] Iced
- [x] Refrigerated
- [x] Fridge temp 4 °C
- [ ] Freezer temp ____ °C

APPENDIX A.6

COPIES OF FIELD LOGBOOK

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112602630

BOOK NO. 1333

TUES 7 SEP 2010

Work continued from Page

80° SUNNY

C. WARWO, K. SIMPSON

1200 K. SIMPSON ONSITE @ QUONSETT HUT PREPPING FOR SOIL SAMPLING. C. WARWO PICKING UP BOTTLEWARE AND EQUIPMENT @ HOTEL.

1230 C. WARWO ONSITE @ QUONSETT HUT.

1300 DRILLERS ONSITE, C. WARWO MEETING THEM AND HEADING TO LOWER BASE CORRIDOR TO DROP OFF VEHICLES. C. WARWO TAKING DRILLERS TO BLDG 135 FOR RADCON TRAINING AND H&S REVIEW. K.S. MEETING C.W. AND DRILLERS WITH KEVIN BRANIFF.

1445 RADCON & H&S TRAINING COMPLETE, OBTAINING LONG TERM PASSES FOR DRILLERS AT PASS & ID OFFICE.

1545 HEADING TO LOWER BASE CORRIDOR WITH KEVIN BRANIFF TO DISCUSS LAYDOWN AREA, AND PLACE TO LEAVE EQUIPMENT.

1700 C. WARWO, K. SIMPSON, & DRILLERS TO QUONSETT HUT TO STORE EQUIPMENT AND PACK VEHICLES FOR TOMORROW.

1745 OFFSITE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/7/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

9/8/10

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TITLE NSB NLON - LOWER BASE

PROJECT NO. 112602630

BOOK NO. 1333

WED 8 SEP 2010

Work continued from Page

80° SUNNY - AM SHOWERS

C. WARNO, K. SIMPSON

0700 C.W. & K.S MEET DRILLERS ONSITE NEAR POWER PLANT. DRILLERS UNLOADING RIG, COMPLETING INSPECTION.

0730 MOBILIZING TO LOWER BASE CORRIDOR LOCATIONS IN ZONES 1 & 7 DUE TO PAVING SCHEDULE.

0830 MET REFUSAL @ 2.0' BGS @ FIRST LOCATION (Z1PDI-011) MARK SHULTZ WILL COME TO RELOCATE POINT. MOVING NORTH TO NEXT LOCATIONS.

1100 CORRIDOR LOCATIONS COMPLETE, MOVING TO NON CORRIDOR LOCATIONS IN PAVING AREAS (ZONES 1 & 7).

MET REFUSAL @ LOCATION Z1PDI-010
MARK SHULTZ WILL NEED TO LOCATE NEW LOCATION DUE TO UTILITIES.
MOVING TO LOCATIONS NEAR FIRE STATION.

1500 MET REFUSAL @ LOCATION Z1PDI-001 AT 4 ATTEMPTS. MARK SHULTZ MENTIONED THAT THE ENTIRE AREA WAS ONCE A CONCRETE TANK STRUCTURE.

1515 MOBILIZING BACK TO LOCATION Z1PDI-010 TO TRY 2ND ATTEMPT AFTER MARK S. RELOCATED.

1600 FINISHED DRILLING. 13 LOCATIONS COMPLETED ASIDE FROM LOCATION Z1PDI-011 IN THE CORRIDOR.
K.S. & C.W. TO QUONSETT HUT TO PACK COOLERS AND CHECK PAPER WORK VS. LABELS & BOTTLES.

1730 OFFSITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] **DATE** 9/8/10

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

63 SAMPLES SHIPPED, 61 - SOIL
2 - WATER

C.O.C #S 3880, 3860, 3861, 3864, 3863, & 3862
FED EX AIRBILL # 8631 2526 2224

DUPLICATES

21 PDI - SO - 003 - 1012 - D
21 PDI - SO - 004 - 0910 - D
21 PDI - SO - 013 - 0204 - D
27 PDI - SO - 015 - 0002 - D
27 PDI - SO - 018 - 0002 - D
25 PDI - SO - 001 - 0204 - D
25 PDI - SO - 002 - 0002 - D
25 PDI - SO - 004 - 0204 - D
26 PDI - SO - 001 - 0405 - D

RINSATE BLANKS

RB090910-01
RB090910-02

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112G02630

BOOK NO. 1333

THURSDAY 9/9/10

Work continued from Page

70° SUNNY

K. SIMPSON, C. WARNO

0700 C. WARNO, K. SIMPSON, DRILLERS ONSITE IN LOWER BASE CORRIDOR. SETTING UP ON ZIPDI-011 TO TRY 2ND ATTEMPT. FOOD DELIVERY TRUCK PULLED UP TO DROP OFF FOOD FOR SUBMARINE. MOVING TO ZIPDI-007 WHILE TRUCK IS UNLOADING.

0815 MOVING BACK TO ZIPDI-011. REACHED DESIRED DEPTH ON 2ND ATTEMPT. MOBILIZING TO ZONES 5 & 6.

0900 BEGINNING BORINGS IN ZONES 6 & 5.

1200 BORING 26PDI-003 IS LOCATED IN THE CONCRETE OVERHANG NEAR THE RIVER. THERE IS NO SOIL BELOW THIS OVERHANG, ONLY WATER.

1330 FINISHED BORINGS IN ZONES 5 & 6 ASIDE FROM 26PDI-003. DRILLERS PACKING UP, MOBILIZING OFFSITE.
C. WARNO, K. SIMPSON TO QUONSETT HUT TO PACK COOLERS, CHECK SAMPLES, COLLECT RINSATE BLANKS, AND COMPLETE COL'S FOR SHIPPING.

1600 OFFSITE TO FED EX. SHIPPING INFO ON PG 74.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/9/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

9/10/10

cw

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112602630

BOOK NO. 133B

FRI 9/10/10

Work continued from Page 75° SUNNY

C. WARNO, K. SIMPSON

0700 ONSITE, DISCUSSING THE PLAN FOR THE DAY. COMMENCING SOIL BORINGS IN ZONE 4. COLLECTING SAMPLES FROM ALL ACCESSIBLE LOCATIONS, SAVING HIGH TRAFFIC / PARKING AREAS FOR SATURDAY.

1000 ZONE 4 COMPLETED ASIDE FROM HIGH TRAFFIC / CORRIDOR LOCATIONS, MOVING TO ZONE 1. COLLECTING ALL ZONE 1 LOCATIONS ASIDE FROM HAND HOLD DPT LOCATION & CORRIDOR LOCATIONS.

1500 FINISHED SAMPLING FOR THE DAY, K. SIMPSON & C. WARNO TO BLDG 79 TO ~~CROSS~~ CHECK SAMPLE LABELS WITH LOGS, AND COMPLETE C.O.C.'S

COOLER WITH RINSATE BLANKS WAS NOT DELIVERED TO THE LAB. COREY RICK TRYING TO LOCATE THE COOLER.

1700 FINISHED C.O.C.'S AND PACKING SAMPLES. OFFSITE.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE DATE 9/10/10

DISCLOSED TO AND UNDERSTOOD BY DATE **WITNESS** DATE

9/11/10

CW

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112602630

BOOK NO. 1333

SAT 9/11/10

Work continued from Page 750 SUNNY

C. WARNO, K. SIMPSON

0700 ONSITE, REVIEW THE DAYS ACTIVITIES. SETTING UP TO FINISH THE ZONE 4 HIGH TRAFFIC AND CORRIDOR LOCATIONS.

0900 FINISHED WITH ALL ZONE 4 LOCATIONS UP TO PIER 6, IN THE CORRIDOR. MOVING TO HAND HELD LOCATION IN ZONE 1, NEAR POWER PLANT.

1000 REACHING REFUSAL @ 6.0' AFTER SEVERAL ATTEMPTS, NEED MARK SHULTZ TO APPROVE ANOTHER LOCATION. MOVING TO OTHER HANDHELD LOCATION BEHIND BLDG.

1030 REACHING 3.5' AND MEETING REFUSAL ON GRANITE FILL OR BEDROCK. MADE 10 ATTEMPTS ALONG BACK OF BUILDING. MOVING TO ZONE 7 LOCATIONS OUTSIDE OF CORRIDOR.

1500 FINISHED WITH ALL LOCATIONS IN ZONE 7. K. SIMPSON & C. WARNO TO QUONSETT HUT TO SORT SAMPLES, CROSS CHECK LABELS & LOGS, AND PACK COOLERS.

1600 FINISHED PACKING COOLERS & GEAR FOR TOMORROW. OFFSITE.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/11/10

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

CW 9/12/10

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112G02603D

BOOK NO. 1333

SUN 9/12/10

Work continued from Page 65° CLOUDY

C. WARNO, K. SIMPSON

0730 ONSITE, REVIEWING THE PLAN FOR THE DAY. GETTING SET UP TO FINISH LAST CLEARED LOCATIONS IN THE CORRIDOR - ZONES 3, 2, & 1.

0930 HITTING REFUSAL @ 0.5' @ LOCATION 23PDI-001. WILL HAVE TO MOVE IT AND CLEAR THE UTILITIES. 23 FINISHED UNTIL LOCATIONS IN FRONT OF PIER 6 CAN BE CLEARED. MOVING TO ZONE 2.

1015 2 LOCATIONS FINISHED IN ZONE 2. MOVING TO ZONE 1.

1130 ZONE 1 FINISHED ASIDE FROM POINT NEAR POWERHOUSE THAT NEEDS RE-LOCATED. MIKE LOADING UP RIG AND SEALING BOREHOLES.

1200 MIKE OFFSITE. K. SIMPSON & C. WARNO TO QUONSETT HUT TO PACK SAMPLES, COMPLETE C.O.C.'S, AND CROSS CHECK LABELS.

1400 C. WARNO & K. SIMPSON OFFSITE.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE **DATE** 9/12/10

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cw 9/13/10

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112602630

BOOK NO. 1833

MON 9/13/10

Work continued from Page

65° CLOUDY, DRIZZLE

C. WARNO, K. SIMP

0715 K. SIMPSON & C. WARNO ONSITE @ BLDG. 135 TO MEET WITH KEVIN BRANIFF AND MARK SHULTZ.

0730 C. WARNO TO QUONSETT HUT TO PACK COOLERS & PREP FOR SAMPLE SHIPMENT TODAY. KEVIN SET UP STEEL PLATE TO BE LIFTED FROM MANHOLE/CATCH BASIN @ 1030.

0800 K. SIMPSON & M. SHULTZ RE-MARKING LOCATIONS THAT NEED MOVED.

0900 BRYAN FROM HAGER-RICHTER ONSITE TO BEGIN UTILITY MARKOUTS ON RELOCATED LOCATIONS.

1025 C. WARNO COMPLETING MH/CB SURVEY AFTER P.W. LIFTS STEEL PLATE.

1045. K. SIMPSON & M. SHULTZ FINISHED. K. SIMPSON & C. WARNO HEADING TO QUONSETT HUT TO COMPLETE PACKING OF SAMPLE COOLERS.

1130 TAKING EMPTY COOLERS TO FEDEX.

1230 TAKING SOIL SAMPLES TO FEDEX FOR SHIPPING.
4 COOLERS TO KATAHDIN - TRACKING #s 8631-2526-2213
8378-5450-0851
8378-5450-0840
8387-5450-0830

1 COOLER TO TEST AMERICA - TRACKING # 8631-2526-2257

1400 MEETING WITH M. SHULTZ TO SET UP AFTERNOON WALK-THROUGH OF LOCATIONS COMPLETED BY HAGER-RICHTER

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/13/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

cw 9/13/10

TITLE NSB - NLON - LOWER BASE

PROJECT NO. 112G02630

BOOK NO. 1333

MON 9/13/10

Work continued from Page

1510 C. WARNO, K. SIMPSON, M. SHULTZ CONFIRMING LOCATIONS COMPLETED BY UTILITY CLEARANCE SUBCONTRACTOR.

1600 HAGER RICHTER FINISHING UTILITY CLEARANCE. IN ZONE 3, AND STILL HAS TO CLEAR ZONE 6 LOCATION
M. SHULTZ LEAVING FOR THE DAY, WILL GET LAST FEW LOCATIONS IN THE MORNING.

1615 C. WARNO & K. SIMPSON OFFSITE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE [signature] **DATE** 9/15/10

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

cw 9/14/10

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112G2630

BOOK NO. 1353

TUES 9/14/10

Work continued from Page 75° SUNNY

C. WARNO, K. SIMPSON

0730 K. SIMPSON & C. WARNO ONSITE, MEETING AT BLDG. 135 TO TAKE MARK SHULTZ OUT TO CLEAR MOVED LOCATIONS.

0745 SURVEYORS ONSITE, REVIEWING WHAT NEEDS TO BE SURVEYED, GIVING THEM MARKED FIGURES.

0800 DRILEX ONSITE, C. WARNO MEETING MIKE JOYCE FROM DRILEX ~~AT~~ FIRST LOCATION (21PDI-008). K. SIMPSON CLEARING MOVED LOCATIONS IN ZONES 3 AND 6 WITH M. SHULTZ.

0845 BEGIN COLLECTING FINAL SAMPLES

0930 MOBILIZING INTO CORRIDOR, CONTINUING TO COLLECT SAMPLES.

1200 C. WARNO OFFSITE TO PICK UP D.I. H_2O @ HOTEL, DRILEX SEALING BOREHOLES WITH CONCRETE, K. SIMPSON CALLING COREY RICH WITH AN UPDATE.

1300 MOVING TO ZONE 6 FOR FINAL LOCATION.

1330. FINISHED COLLECTING SAMPLES, MOBILIZING TO QUONSETT HUT TO PACK SAMPLES, DE-MOBE DRILLERS.

1400 DRILLER OFFSITE. K. SIMPSON & C. WARNO COLLECTING RINSATE BLANKS, AND PACKING SAMPLES.

1530 OFFSITE TO FED EX.

END

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9/13/03

TITLE NSB - NLON LOWER BASE

PROJECT NO. 112602630

BOOK NO. 1333

WED 9/15/10

Work continued from Page

75° SUNNY

K. SIMPSON, L. WARNO

0730 ONSITE, MEETING WITH KEVIN BRANIFF AND MARK SHULTZ TO DISCUSS PDI WRAP-UP.

0830 IDW SUBCONTRACTOR (NEDT) THROUGH SECURITY. TAKING HIM UP TO HAZ-WASTE TO SAMPLE 1 SOIL DRUM & 1 H2O DRUM.

0930 IDW SAMPLED, K. SIMPSON & C. WARNO PACKING UP GEAR, AND CLEANING OUT QUONSETT HUT.

1030 K. SIMPSON & L. WARNO TO FED-EX, THEN K. SIMPSON TO AIRPORT.

1230 L. WARNO REPAIRING MONITORING WELL BEHIND BLDG. 79. (WE4A) PUTTING RUBBER FENCE CAP OVER WELL, AND FILLING POT HOLE SURROUNDING WELL WITH SAND.

1330 SURVEYORS FINISHING UP SURVEY OF BORING LOCATIONS, MAN HOLES, AND CATCH BASINS.

1400 CHECKING BORING LOCATIONS FOR SURFACE COMPLETIONS.

1500 C.O. OFFSITE

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/15/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

APPENDIX A.7

CATCH BASIN AND MANHOLE SURVEY LOG SHEETS

ZONE 1

Tetra Tech NUS, Inc

Catch Basin Survey Log Sheet

Project: NSB NLON
Date: 9/14/10
Location: Lower Subase
Personnel: C. WARINO
Catch Basin #: C932
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
#1	8"	4.1	E	UNKNOWN TYPE
2	1"	2.8	S	STEEL > INSIDE 4" LINE - INVERT OF 4" IS 2.9'
3	1"	2.8	S	STEEL
				TD = 4.2'

ZONE 1

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C 502

Date: 8/28/10
Personnel: G. WAGNO / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	~24"	8.30	E	CONCRETE
2	36"	8.7	NW	CONCRETE
3	~6'-8"	7.2	SW	UNKNOWN
				T.D. = 8.7

ZONE 1

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C503

Date: 8/27/10
Personnel: C. WARNO / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	24"	7.3'	N	CONCRETE
2	24"	7.3'	SE	CONCRETE
3	6"	3.6'	W	STEEL
4	6"	NA	NE	TERRACOTTA
				↳ COMING FROM FIRE HOUSE

ZONE 2

Tetra Tech NUS, Inc

Catch Basin Survey Log Sheet

Project: NSB NLON

Location: Lower Subase

Catch Basin #: C-520 AB-Z2

Date: 8/27/10

Personnel: C. WARLOW / K. SIMPSON

Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
				JERSEY BARRIER OVER GRATE

ZONE 2

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C 520

Date: 8/27/10
Personnel: C. WARNE / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
				LID WELDED SHUT.

ZONE 3

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C521

Date: 8/27/10
Personnel: C. WARNO / M. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
				MANHOLE SIZED UP TO 2.2' FROM SURFACE. NO VISIBLE PIPES.

ZONE 4

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C 479

Date: 8/28/10
Personnel: C. WARLIND / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	10	3.0	W	TERRACOTTA
* 1	PLUGGED LINE GOING		N	
1	PLUGGED LINE GOING		S	
1	PLUGGED LINE GOING		E	T.D. = 3.0'

ZONE 4

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C479-1

Date: 8/27/10
Personnel: C. WARING / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	6"	3.3	SE	PVC - GREEN
				BOTTOM SILTED IN
				TO 5.8'. 7.3' TO SUMP? IN CENTER
				4.8' TO WATER IN MH
				4.7' TO WATER IN RIVER

ZONE 4

Tetra Tech NUS, Inc

Catch Basin Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Catch Basin #: C 586 - 3
ONLY 1 NEAR 586 & 587-1

Date: 8/27/10
Personnel: C. WARNO / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	4"	2.30	S	PLASTIC
2	6"	2.40	W	PLASTIC
3	8"	2.10	N	TERRA COTTA
				TD = 2.2'
				SILTED IN.

ZONE 7

Tetra Tech NUS, Inc

Manhole Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Manhole #: C 529

Date: 8/28/10
Personnel: C. WARINO / K. SIMPSON
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	14	4.80	W	TERRA COTTA
2	~12"	4.60	E	UNKNOWN TYPE
3	6"	2.70	N	TERRA COTTA
				T.D. = 5.0
				APPEARS TO BE A
				BURIED PIPE RUNNING
				N-S AT BOTTOM.

ZONE 7

Tetra Tech NUS, Inc

Catch Basin Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Catch Basin #: C 532

Date: 8/27/10
Personnel: C. WARND
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	6	1.5'	E	TERRALOTTA
				T.D. = 2.5'

ZONE 7

Tetra Tech NUS, Inc

Catch Basin Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Catch Basin #: C 535

Date: 8/27/10
Personnel: C. WARNO
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	6	2.3	W	TERRACOTTA
2	6	2.1	S	TERRACOTTA
3	10	2.3	NW	PVC
				T.D = 3.0'
				SILTED IN w/
				PLANTS GROWING.

ZONE 7

Tetra Tech NUS, Inc

Catch Basin Survey Log Sheet

Project: NSB NLON
Location: Lower Subase
Catch Basin #: C676

Date: 8/27/10
Personnel: L. WARNO
Project #: 112G02630

Pipe #	Diameter (in)	Invert Depth (ft)	Direction	Comments
1	6	1.85	E	GREEN PLASTIC
2	6	1.95	W	GREEN PLASTIC
				T.D. = 3.3'
				WATER = 1.95'

APPENDIX A.8

SURVEY INFORMATION

Project No. 2010039.2

Prepared for: TetraTech NUS

Soil Boring and Catch Basin/Manhole Survey Naval Submarine Base - New London (NSB-NLON) Groton, Connecticut

SOIL BORING SURVEY VALUES

State Plane Coordinates NAD83			Elevations NAVD88	Point Description
ID	Grid Northing	Grid Easting	Ground	
Z1PDI-001	705389.519	1180761.648	11.87	Soil Boring
Z1PDI-002	705328.883	1180627.399	10.87	Soil Boring
Z1PDI-003	705355.140	1180707.313	10.57	Soil Boring
Z1PDI-004	705450.735	1180668.077	9.99	Soil Boring
Z1PDI-005	705182.396	1180607.206	5.72	Soil Boring
Z1PDI-006	705449.267	1180843.187	11.62	Soil Boring
Z1PDI-007	705094.704	1180583.944	6.04	Soil Boring
Z1PDI-008	705459.198	1180569.383	8.54	Soil Boring
Z1PDI-009	705503.039	1180574.417	8.39	Soil Boring
Z1PDI-010	705473.512	1180430.195	5.41	Soil Boring
Z1PDI-011	705201.394	1180500.870	5.31	Soil Boring
Z1PDI-012	705295.104	1180446.318	5.40	Soil Boring
Z1PDI-013	705417.410	1180723.030	10.90	Soil Boring
Z1PDI-014	705253.614	1180644.510	10.39	Soil Boring
Z2PDI-001	704970.858	1180676.849	7.61	Soil Boring
Z2PDI-002	704689.662	1180751.910	5.83	Soil Boring
Z3PDI-001	704619.707	1180767.746	5.40	Soil Boring
Z3PDI-002	704597.713	1180780.272	5.27	Soil Boring
Z3PDI-003	704521.973	1180810.613	5.35	Soil Boring
Z3PDI-004	704555.739	1180814.861	5.76	Soil Boring
Z3PDI-005	704484.840	1180831.054	5.45	Soil Boring
Z4PDI-001	704391.042	1180978.435	6.09	Soil Boring
Z4PDI-002	704324.105	1181141.116	7.31	Soil Boring
Z4PDI-003	704262.197	1180971.581	5.99	Soil Boring
Z4PDI-004	704129.898	1181091.068	9.58	Soil Boring
Z4PDI-005	704086.980	1180999.588	5.37	Soil Boring
Z4PDI-006	704338.911	1181029.587	6.27	Soil Boring
Z4PDI-007	704440.636	1180994.871	7.06	Soil Boring
Z4PDI-008	704398.863	1180874.704	5.52	Soil Boring
Z4PDI-009	704234.258	1180983.291	5.89	Soil Boring

SOIL BORING SURVEY VALUES

State Plane Coordinates NAD83			Elevations NAVD88	Point Description
ID	Grid Northing	Grid Easting	Ground	
Z5PDI-001	708321.818	1180193.426	5.54	Soil Boring
Z5PDI-002	708365.474	1180162.408	5.01	Soil Boring
Z5PDI-003	708325.923	1180164.399	5.09	Soil Boring
Z5PDI-004	708337.280	1180135.803	5.34	Soil Boring
Z5PDI-005	708571.520	1180188.929	5.97	Soil Boring
Z6PDI-001	707843.490	1180167.357	4.91	Soil Boring
Z6PDI-002	707763.904	1180167.430	4.91	Soil Boring
Z6PDI-003	707800.184	1180149.539	5.03	Soil Boring
Z6PDI-004	707802.587	1180219.792	7.33	Soil Boring
Z7PDI-001	706668.831	1180356.396	7.68	Soil Boring
Z7PDI-002	706555.705	1180404.057	7.68	Soil Boring
Z7PDI-003	706358.946	1180442.326	6.89	Soil Boring
Z7PDI-004	706617.111	1180348.974	6.77	Soil Boring
Z7PDI-005	706597.113	1180479.468	8.83	Soil Boring
Z7PDI-006	706747.845	1180420.900	7.37	Soil Boring
Z7PDI-007	706470.064	1180439.012	7.39	Soil Boring
Z7PDI-008	706442.274	1180496.951	8.13	Soil Boring
Z7PDI-009	706545.369	1180332.174	5.91	Soil Boring
Z7PDI-010	706332.858	1180425.144	6.42	Soil Boring
Z7PDI-011	706374.602	1180508.872	7.41	Soil Boring
Z7PDI-012	706190.151	1180409.889	6.63	Soil Boring
Z7PDI-013	706239.967	1180511.486	6.90	Soil Boring
Z7PDI-014	706365.032	1180224.972	5.11	Soil Boring
Z7PDI-015	706322.726	1180184.495	4.86	Soil Boring
Z7PDI-016	706292.260	1180219.311	5.07	Soil Boring
Z7PDI-017	706416.613	1180380.500	6.51	Soil Boring
Z7PDI-018	706269.299	1180213.742	4.90	Soil Boring
Z7PDI-019	706136.490	1180223.846	4.69	Soil Boring
Z7PDI-020	706295.019	1180534.298	7.18	Soil Boring

SURVEY CONTROL MONUMENTS USED

State Plane Coordinates		Elevations	Control Identifier
Grid Northing	Grid Easting	NAVD88	Identifier
705148.6430	1180452.4030	4.953	Navy Disk w/DH #29
704016.1810	1180990.1480	5.175	Navy Disk w/DH #31
704155.9610	1181267.5230	17.51	Disk in Monument #33
709640.2600	1180130.2170	4.75	Brass Pin #221
708646.2900	1180185.0160	7.00	Navy Disk #222
706339.5690	1180305.5440	6.635	Navy Disk #260
707351.4000	1180134.0610	4.56	Navy Disk #950

Notes: Survey coordinates were derived though conventional methods from existing control monumentation within the Groton/New London Submarine Base (NSB-NLON) as established by David Stein, LS. Last revised December 18, 2006.

STATE OF CONNECTICUT
RICHARD H. STROUSE
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LAND SURVEYOR

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Southbridge, MA 01550
508.764.3500

CME

Richard H. Strouse, LS No. 9679 Dated: 9/21/10

Project No. 2010039.2

Prepared for: TetraTech NUS

Soil Boring and Catch Basin/Manhole Survey Naval Submarine Base - New London (NSB-NLON) Groton, Connecticut

CATCH BASIN AND MANHOLE SURVEY VALUES

State Plane Coordinates NAD83			Elevations NAVD88	Point Description
ID	Grid Northing	Grid Easting	Rim	
MH C502 EASTRIM	705368.416	1180798.079	12.15	EAST SIDE OF MANHOLE
MH C503 EASTRIM	705377.290	1180737.048	10.61	EAST SIDE OF MANHOLE
CL MH C503	705376.738	1180736.417	10.62	CENTER OF MANHOLE
STLPLT C932 EAST	705457.026	1180700.852	9.92	EAST SIDE OF STEEL PLATE
CL STEELPLATE	705455.690	1180697.969	9.96	CENTER OF STEEL PLATE
MH C529 EASTRIM	706244.711	1180515.473	6.90	EAST SIDE OF MANHOLE
CL MHC529	706244.282	1180514.593	6.88	CENTER OF MANHOLE
CLCB C535 EAST	706347.907	1180473.344	6.82	EAST SIDE OF TYPE "CL" CATCH BASIN
CL C535	706347.400	1180472.599	6.81	CENTER OF TYPE "CL" CATCH BASIN
CLCB C676 EAST	706334.274	1180439.110	6.03	EAST SIDE OF TYPE "CL" CATCH BASIN
CL C676	706333.858	1180438.345	6.03	CENTER OF TYPE "CL" CATCH BASIN
CLCB C532 EAST	706315.327	1180392.684	6.06	EAST SIDE OF TYPE "CL" CATCH BASIN
CL C532	706314.921	1180391.803	6.06	CENTER OF TYPE "CL" CATCH BASIN
CLCB C520-B-22 OBS	704700.165	1180774.352	5.98	EAST SIDE OF TYPE "CL" CATCH BASIN*
MH C520 EASTRIM	704683.518	1180822.521	6.97	EAST SIDE OF MANHOLE
CL MH C520	704682.980	1180821.632	6.93	CENTER OF MANHOLE
MH C521 EASTRIM	704642.712	1180827.586	6.53	EAST SIDE OF MANHOLE
CL MH C521	704642.274	1180826.790	6.56	CENTER OF MANHOLE
MH C749-1 EASTRIM	704370.899	1180889.423	5.57	EAST SIDE OF MANHOLE
CL MH C749-1	704370.382	1180888.496	5.55	CENTER OF MANHOLE
CLCB C586 EAST	704447.052	1180884.041	5.71	EAST SIDE OF TYPE "CL" CATCH BASIN
CL C586	704446.689	1180883.092	5.71	CENTER OF TYPE "CL" CATCH BASIN
STLPLT C479 EAST	704421.972	1181015.975	6.81	EAST SIDE OF STEEL PLATE
CL STEELPLATE	704421.594	1181014.906	6.79	CENTER OF STEEL PLATE

Notes

Survey coordinates were derived though conventional methods from existing control monumentation within the Groton/New London Submarine Base (NSB-NLON) as established by David Stein, LS. Last revised December 18, 2006.

Elevations of catch basins, manholes and steel plates taken on the east side of the structure at a painted location.

* The location of catch basin C520-B-22 was taken at the east side as close to the structure as possible. A jeresey barrier prevented a closer location.

Richard H. Strouse, LS No. 9679 Dated: 9/21/10

STATE OF CONNECTICUT RICHARD H. STROUSE No. 9679 REGISTERED LAND SURVEYOR

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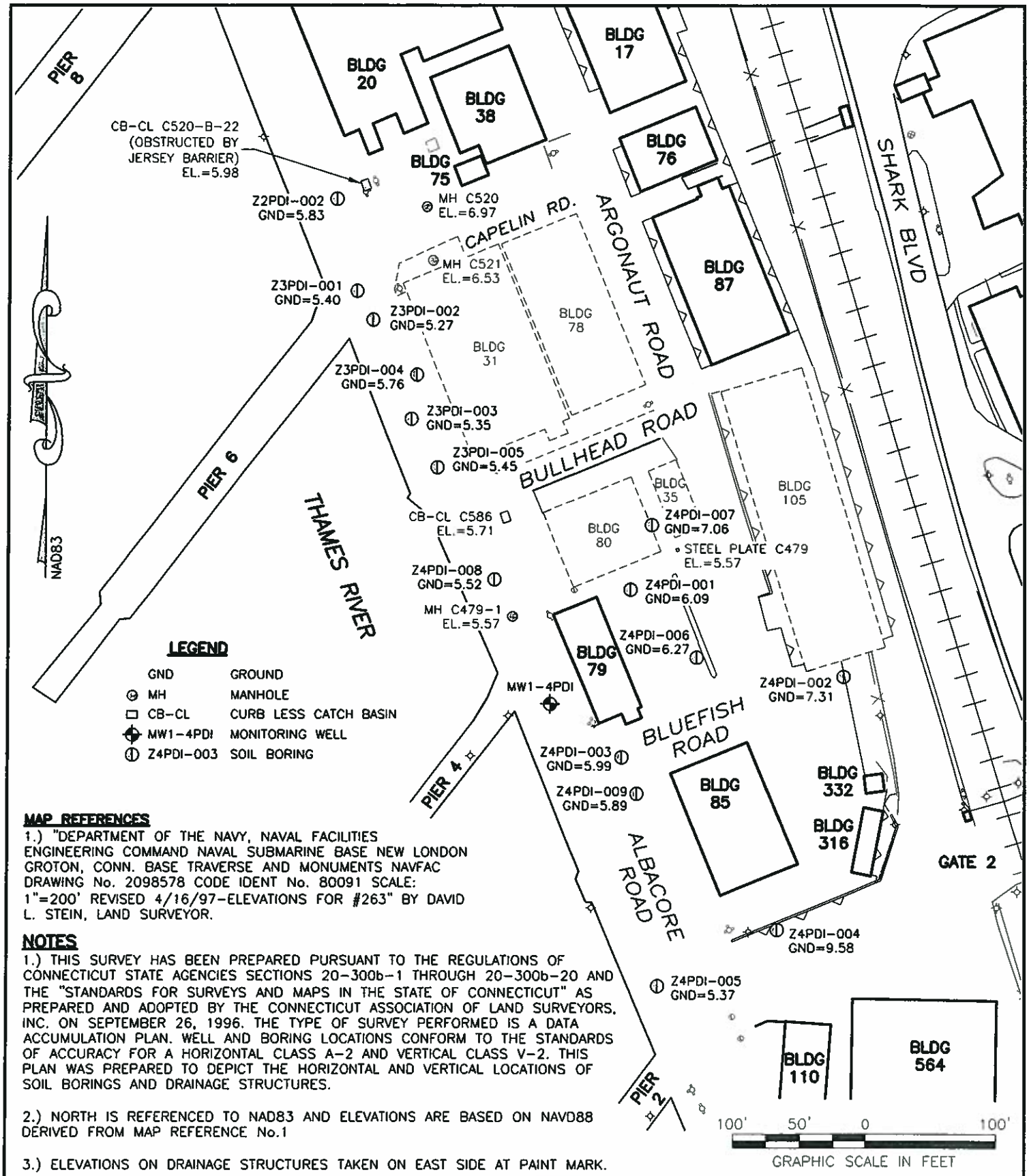

LEGEND

GND	GROUND
MH	MANHOLE
CB-CL	CURB LESS CATCH BASIN
MW1-4PDI	MONITORING WELL
Z4PDI-003	SOIL BORING

MAP REFERENCES

1.) "DEPARTMENT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND NAVAL SUBMARINE BASE NEW LONDON GROTON, CONN. BASE TRAVERSE AND MONUMENTS NAVFAC DRAWING No. 2098578 CODE IDENT No. 80091 SCALE: 1"=200' REVISED 4/16/97-ELEVATIONS FOR #263" BY DAVID L. STEIN, LAND SURVEYOR.

NOTES

1.) THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS PREPARED AND ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996. THE TYPE OF SURVEY PERFORMED IS A DATA ACCUMULATION PLAN. WELL AND BORING LOCATIONS CONFORM TO THE STANDARDS OF ACCURACY FOR A HORIZONTAL CLASS A-2 AND VERTICAL CLASS V-2. THIS PLAN WAS PREPARED TO DEPICT THE HORIZONTAL AND VERTICAL LOCATIONS OF SOIL BORINGS AND DRAINAGE STRUCTURES.

2.) NORTH IS REFERENCED TO NAD83 AND ELEVATIONS ARE BASED ON NAVD88 DERIVED FROM MAP REFERENCE No.1

3.) ELEVATIONS ON DRAINAGE STRUCTURES TAKEN ON EAST SIDE AT PAINT MARK.

SOIL BORING LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE – NEW LONDON
ALBACORE ROAD, GROTON, CONNECTICUT

DATE: 09/20/10	SCALE: 1" = 100'	SHEET: 1 OF 4

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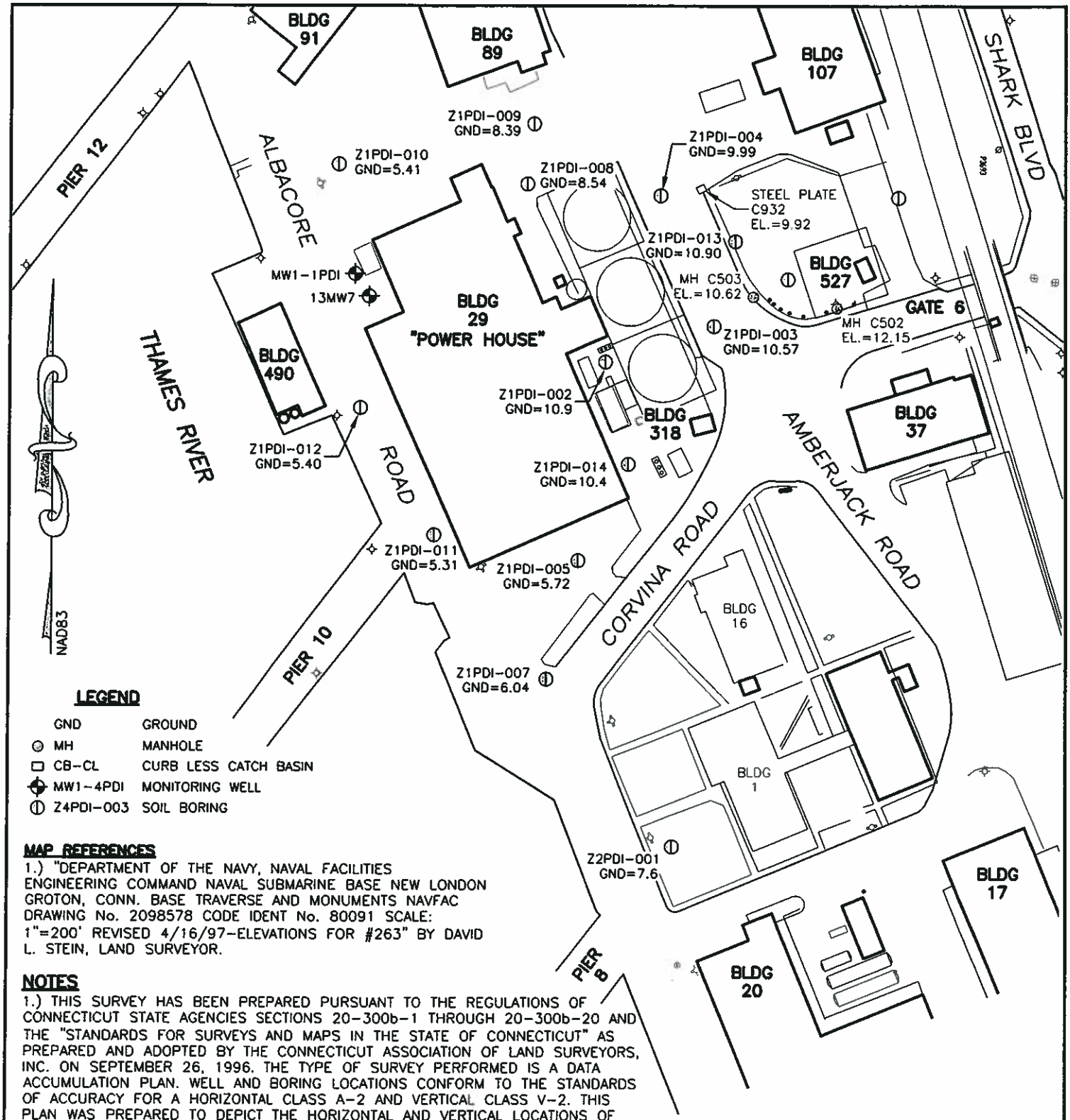

LEGEND

GND	GROUND
MH	MANHOLE
CB-CL	CURB LESS CATCH BASIN
MW1-4PDI	MONITORING WELL
Z4PDI-003	SOIL BORING

MAP REFERENCES

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3.) ELEVATIONS ON DRAINAGE STRUCTURES TAKEN ON EAST SIDE AT PAINT MARK.

100' 50' 0 100'
GRAPHIC SCALE IN FEET

SOIL BORING LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
ALBACORE ROAD, GROTON, CONNECTICUT

DATE: 09/20/10	SCALE: 1" = 100'	SHEET: 2 OF 4

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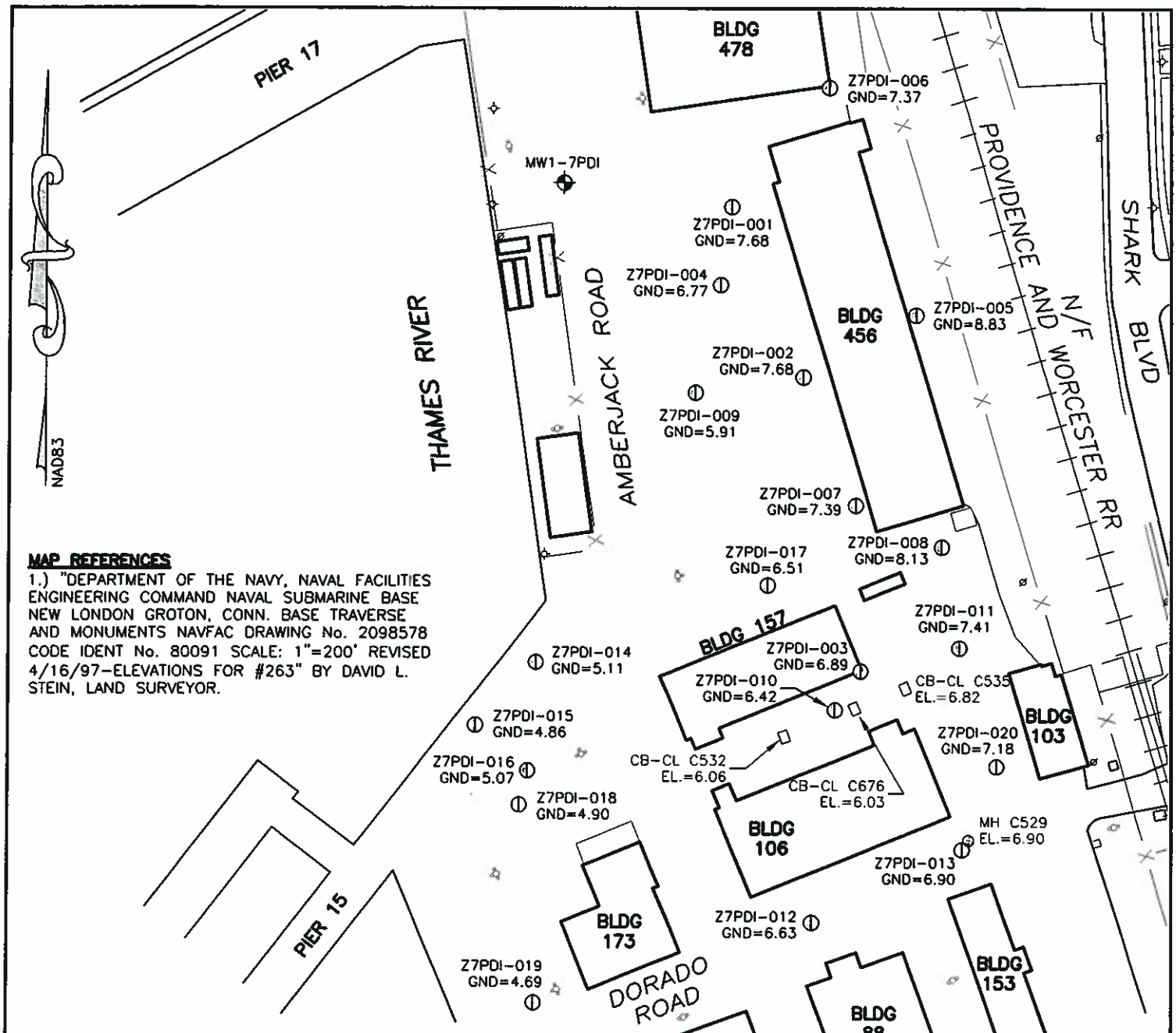

MAP REFERENCES

1.) "DEPARTMENT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND NAVAL SUBMARINE BASE NEW LONDON GROTON, CONN. BASE TRAVERSE AND MONUMENTS NAVFAC DRAWING No. 2098578 CODE IDENT No. 80091 SCALE: 1"=200' REVISED 4/16/97-ELEVATIONS FOR #263" BY DAVID L. STEIN, LAND SURVEYOR.

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3.) ELEVATIONS ON DRAINAGE STRUCTURES TAKEN ON EAST SIDE AT PAINT MARK.

LEGEND

GND	GROUND
MH	MANHOLE
CB-CL	CURB LESS CATCH BASIN
MW1-4PDI	MONITORING WELL
Z4PDI-003	SOIL BORING

100' 50' 0 100'

GRAPHIC SCALE IN FEET

SOIL BORING LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
AMBERJACK ROAD, GROTON, CONNECTICUT

DATE: 09/20/10	SCALE: 1" = 100'	SHEET: 3 OF 4

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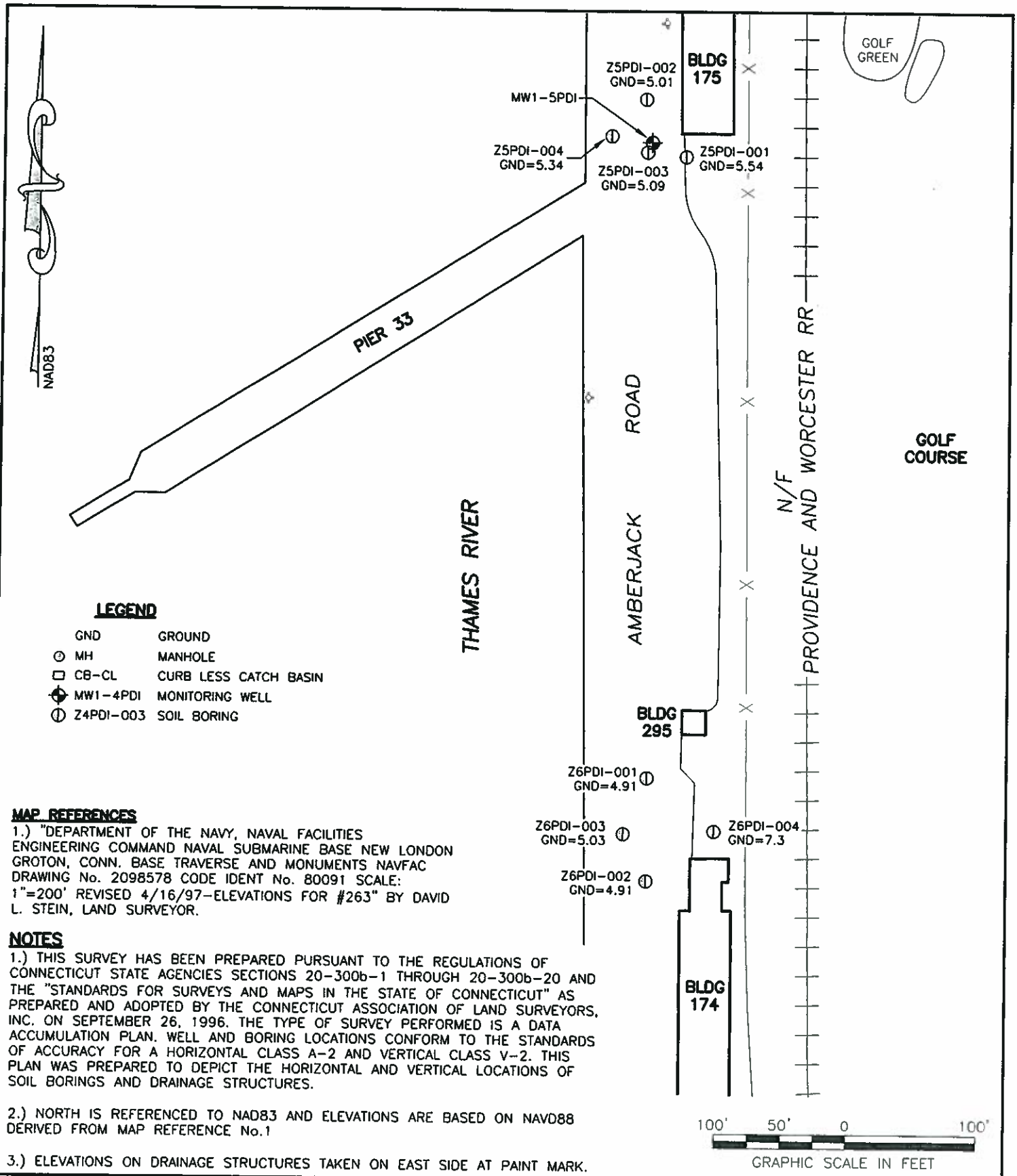

LEGEND

GND	GROUND
MH	MANHOLE
CB-CL	CURB LESS CATCH BASIN
MW1-4PDI	MONITORING WELL
Z4PDI-003	SOIL BORING

MAP REFERENCES

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3.) ELEVATIONS ON DRAINAGE STRUCTURES TAKEN ON EAST SIDE AT PAINT MARK.

SOIL BORING LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
AMBERJACK ROAD, GROTON, CONNECTICUT

DATE: 09/20/10	SCALE: 1" = 100'	SHEET: 4 OF 4

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APPENDIX B

GROUNDWATER PDI FIELD INFORMATION

B.1 ROUND 1

B.2 ROUND2

APPENDIX B.1

ROUND 1

B.1.1	SANITARY SEWER INCIDENT REPORT
B.1.2	BORING LOGS
B.1.3	WELL CONSTRUCTION LOGS
B.1.4	WELL DEVELOPMENT RECORDS
B.1.5	WATER LEVEL MEASUREMENTS
B.1.6	COPIES OF PROJECT LOG BOOKS
B.1.7	GROUNDWATER PURGE AND SAMPLE LOG SHEETS
B.1.8	EQUIPMENT CALIBRATION LOGS
B.1.9	CHAIN OF CUSTODIES
B.1.10	SURVEY INFORMATION
B.1.11	INVESTIGATIVE DERIVED WASTE INFORMATION

APPENDIX B.1.1

SANITARY SEWER INCIDENT REPORT

TETRA TECH, INC.
Safety Excellence

TETRA TECH, INC. INCIDENT REPORT

Report Date	Report Prepared By	Incident Report Number
4-23-10	Jim Ferguson	

INSTRUCTIONS:

All incidents (including those involving subcontractors under direct supervision of Tetra Tech personnel) must be documented on the IR Form.

Complete any additional parts to this form as indicated below for the type of incident selected.

TYPE OF INCIDENT (Check all that apply)	Additional Form(s) Required for this type of incident	
Near Miss (No losses, but could have resulted in injury, illness, or damage)	☐	Complete IR Form Only
Injury or Illness	☐	Complete Form IR-A; Injury or Illness
Property or Equipment Damage, Fire, Spill or Release	X	Complete Form IR-B; Damage, Fire, Spill or Release
Motor Vehicle	☐	Complete Form IR-C; Motor Vehicle

INFORMATION ABOUT THE INCIDENT

Description of Incident

Hit a 6" sanitary sewer line while drilling on April 22, 2010, at that time, NSB NL public works did not know the line was in the area Based on existing drawings, initially thought drilling encountered abandoned line. Following patch and backfill of borehole, returned to site the next day to find sanitary water on ground surface. After sanitary sewer personnel arrived, determination was made that a 6" forced main was encountered.

Date of Incident	Time of Incident
April 22/23, 2010	11:35 AM X PM ☐ *OR* Cannot be determined ☐
Weather conditions at the time of the incident	**Was there adequate lighting?**
Sunny 65 degrees	Yes X No ☐

Location of Incident

NSB New London, Ct — Was location of incident within the employer's work environment? Yes X No ☐

Street Address	City, State, Zip Code and Country
Amberjack Road	Groton Ct.
Project Name	**Client:**
Pre Design Groundwater Sampling at Lower Subase	Naval Facilities Engineering Command
Tt Supervisor or Project Manager	**Was supervisor on the scene?**
Corey Rich	FOL on seen Yes X No ☐

WITNESS INFORMATION (attach additional sheets if necessary)

Name	Company
James Ferguson (FOL)	TTNUS
Street Address	**City, State and Zip Code**
7985 Oxford Ct	Irwin, Pa 15642
Telephone Number(s)	
412-496-9283	

CORRECTIVE ACTIONS

Corrective action(s) immediately taken by unit reporting the incident:

Worked with NSB New London Public Works contact (K. Braniff) to mitigate any potential environmental impacts, also provide support as requested.

Initially since base engineering did not know what was hit, attempt patch in borehole with concrete and backfill boring..

Corrective action(s) still to be taken (by whom and when):

Following any activity with a sanitary discharge, apply bleach solution to parking surface to mitigate any potential areas impacted by sanitary water discharge

ROOT CAUSE ANALYSIS LEVEL REQUIRED

Root Cause Analysis Level Required: Level - 1 ☐ Level - 2 ☐ None X

Root Cause Analysis Level Definitions

Level - 1	**Definition:** A Level 1 RCA is conducted by an individual(s) with experience or training in root cause analysis techniques and will conduct or direct documentation reviews, site investigation, witness and affected employee interviews, and identify corrective actions. Activating a Level 1 RCA and identifying RCA team members will be at the discretion of the Corporate Administration office. The following events may trigger a Level 1 RCA: ▪ Work related fatality ▪ Hospitalization of one or more employee where injuries result in total or partial permanent disability ▪ Property damage in excess of $75,000 ▪ When requested by senior management
Level - 2	**Definition:** A Level 2 RCA is self performed within the operating unit by supervisory personnel with assistance of the operating unit HSR. Level 2 RCA will utilize the 5 Why RCA methodology and document the findings on the tools provided. The following events will require a Level 2 RCA: ▪ OSHA recordable lost time incident ▪ Near miss incident that could have triggered a Level 1 RCA ▪ When requested by senior management

Complete the Root Cause Analysis Worksheet and Corrective Action form. Identify a corrective action(s) for each root cause identified within each area of inquiry.

NOTIFICATIONS

Title	Printed Name	Signature	Telephone Number	Date
Project Manager or Supervisor	James Ferguson (FOL)		412-490-9283	4-23-10
Site Safety Coordinator or Office H&S Representative				
Operating Unit H&S Representative				
Other: PROJECT MANAGER	COREY RICH (PM)		412-921-8984	4-24-10

The signatures provided above indicate that appropriate personnel have been notified of the incident.

Rich, Corey

From: Schultz, Mark CIV NAVFAC MIDLANT, NWLN [mark.schultz1@navy.mil]
Sent: Monday, April 26, 2010 9:35 AM
To: Rich, Corey; Gravette, James CIV NAVFAC
Cc: Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Ferguson, James; Glenn, Garth; Stackpole, Andrew CIV NAVFAC MIDLANT; Conant, Richard CIV NAVFAC MIDLANT
Subject: RE: Sanitary Forced-Main Issue and Plan of Action

Rich: I agree that this report is accurate. I was the PWD rep who approved the dig permit. Another detail: the force main is located 18 ft farther west than was shown in the dig permit map. Use of ground penetrating radar is welcome since metal & electronic signal sensing devices do not locate plastic & concrete pipe. Vr Mark Schultz

-----Original Message-----
From: Conant, Richard CIV NAVFAC MIDLANT
Sent: Friday, April 23, 2010 12:33 PM
To: Rich, Corey; Gravette, James CIV NAVFAC
Cc: Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Ferguson, James; Schultz, Mark CIV NAVFAC MIDLANT, NWLN; Glenn, Garth; Stackpole, Andrew CIV NAVFAC MIDLANT
Subject: RE: Sanitary Forced-Main Issue and Plan of Action

Corey,
Thank you. I believe this is an accurate representation of the incident as I understand it.

Dick

-----Original Message-----
From: Rich, Corey [mailto:Corey.Rich@tetratech.com]
Sent: Friday, April 23, 2010 11:59 AM
To: Gravette, James CIV NAVFAC; Conant, Richard CIV NAVFAC MIDLANT
Cc: Braniff, Kevin P CIV NAVFAC, NAVFAC MIDLANT; Ferguson, James; Schultz, Mark CIV NAVFAC MIDLANT, NWLN; Glenn, Garth
Subject: Sanitary Forced-Main Issue and Plan of Action

Jim/Dick,

Tetra Tech plans to formally document the details of the subject issue, but has been in the process of addressing more time-critical issues. We hope to provide an incident report early next week. The details of the issue as I currently understand them are provided below:

(1) Tetra Tech worked with NSB-NLON PWD and a third-party utility clearance company (AccuMark) on 4/19/10 and 4/20/10 to clear 4 boring/well locations. Process included preparation/submittal of dig permit to PWD, review of utility drawings by PWD, field mark-outs of utilities by AccuMark via EM methods, site walk with PWD and Tetra Tech, and approval of locations by PWD through signature of dig permit.

(2) Tetra Tech and driller (Drilex) commenced drilling on 4/21/10 at location MW1-5PDI (former well 19MW4). After reaching a depth of approximately 5 feet, an obstruction was encountered and water filled the hole. The water surged but then receded. A piece of concrete was in the auger bit and it was assumed that a concrete pipe had been hit. The water did not seem to have a sanitary smell. M. Schultz and K. Braniff (NSB-NLON PWD) were

contacted and came to the site. Based on further review of drawings by NSB-NLON PWD and J. Ferguson (Tetra Tech FOL), it was decided that the pipe that was hit may be an abandoned concrete line and tidal surge may have been causing the water to surge in the hole. A plug was installed in the hole and a concrete/bentonite mixture was placed in the hole to seal the hole to the surface.

(3) Upon remobilization to the site on 4/22/10 around 6:30 AM, it was discovered that the sealing efforts of the hole had not worked and water had discharge onto the ground surface. M. Schultz and K. Braniff (NSB-NLON PWD) were contacted again and remobilized to the site. D. Conant at NSB-NLON PWD Environmental was also contacted about the issue. Additional mapping was reviewed and it was determined that the sanitary forced-main was the actual pipe that was hit. Available drawings showed it in a different location. The pipe was made out of extruded resin (plastic) and would not have been detected with standard utility clearance techniques. The previously encountered concrete was just part of the backfill used around the pipe.

(4) NSB-NLON PWD Environmental sent someone to the site to evaluate the problem. They asked that the site be sprayed down with chlorine bleach solution to disinfect the area where sewage had spilled. Tetra Tech obtained the proper equipment and conducted the disinfection as requested. Solids were contained per instructions received. Tetra Tech also informed everyone of the potential petroleum contamination in the soil. Stained soils and high PID readings had been encountered during the initial drilling efforts.

(5) NSB-NLON PWD mobilized a contractor to the site to fix the sewer around 2:00 PM on 4/22/10. Tetra Tech FOL stayed on site until repairs were completed at approximately 6:00 PM.

(6) All discussions with NSB-NLON PWD were that Tetra Tech followed adequate/proper procedures for conducting utility clearance. No one said that Tetra Tech acted inappropriately.

(7) Tetra Tech demobilized its driller until utility clearance issues can be resolved.

(8) Tetra Tech procured and will mobilize another utility clearance contractor (Hager-Richter) to the site on 4/27/10 to conduct a more thorough clearance of utilities at the remaining 3 boring locations. Ground penetrating radar, along with other methods, will be used to identify utilities. All activities will be discussed and coordinated with NSB-NLON PWD and Environmental. Drilling locations and dig permits will be modified as necessary based on the results of the additional clearance activities.

(9) Tetra Tech hopes to remobilize the driller to the site on 4/28/10 and complete installation of the remaining three wells. All locations will be hand dug to 4 to 5 feet to ensure no utilities are encountered. This approach along with the more extensive utility clearance process will hopefully eliminate utility impacts in the future.

This is my understanding of the incident. Tetra Tech will prepare a formal incident report and document additional details. The report will be available next week. Please contact me with any questions.

Corey Rich | Senior Project Manager/Civil Engineer
Direct: 412.921.8984 | Main: 412.921.7090 | Fax: 412.921.4040 Corey.Rich@tetratech.com

Tetra Tech NUS, Inc. | Technical Support Services Group

661 Andersen Drive Foster Plaza 7 | Pittsburgh, PA 15220

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APPENDIX B.1.2

BORING LOGS

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: PDI New London Subase
PROJECT NUMBER: 112G02630 CTO WE24
DRILLING COMPANY: DRILLER
DRILLING RIG: CME 55

BORING No.: MW1-1PDI
DATE: April 28, 2016
GEOLOGIST: J. Ferguson
DRILLER: L. Hagan

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**
	0-1				HARD	Black	ASPHALT 0-0.75', Gray Gm						
	1-2				Brown		fine - coarse Sand and	SP		0			
	2-3				Brown		f-c gravel, trace-little	SP					
	3-4				Brown		cobbles	SP		0			
S-1	4-5	4/6			Loose	Brown	Silty, medium-coarse sand	Sm					
	5-6	4/1	2.0			Brown	little silt, petroleum odor	Sm		20			
S-2	6-7	2/3			LOOSE	Brown-Black		Sm					
	7-8	4/3	2.0			Brown-Black		Sm		15			
S-3	8-9	4/3			LOOSE	Brown		Sm					
	9-10	2/2	2.0			Brown		Sm		25			
S-4	10-11	4/8			M. Dense	Gray	Silty, medium-coarse sand	Sm/SP					
	11-12	9/5	2.0			Gray	trace-little f-c gravel	Sm/SP		20			
S-5	12-13	2/8			M. Dense	Gray		Sm/SP					
	13-14	9/6	2.0			Gray		Sm/SP		0.7			
	14-15					Gray							

* When rock coring, enter rock brokeness.

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

Remarks:

Drilling Area Background (ppm):

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

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: PDI New London Subase
PROJECT NUMBER: 112G02630 CTO WE24
DRILLING COMPANY: Dallex
DRILLING RIG: CME 55

BORING No.: MW1-4PDI
DATE: April 28, 2010
GEOLOGIST: J. Ferguson
DRILLER: C. Hanan

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**
	0-1				Hand	Black	0-0.25 Black asphalt	GM	Augered through				
	1-2					Gray-Brn	0.25-1.5' Medium-coarse	GM	Asphalt, Hand	0			
	2-3					Dark Brn	limestone sub-base.	SP	Aug to 4.0' w/				
	3-4					Brn	MEDIUM-COARSE sand	SP	post hole digger	0			
	4-5					Brn	some cobbles (f,11)	SP					
S-1	5-6	10/9	0.30		M. Dense	Brn	↓	SP					
	6-7	8/10	2.0			Brn	↓	SP		0			
	7-8			WOOD			Auger through wood						
	8-9			V. O I D			plug falls through auger						
	9-10												
S-2	10-11	W/O	0.1		V. Loose	Black	Black, silt and org.	ml					
	11-12	R	2.0			Black	material wet	ml		0			
S-3	12-13	W/O	1.0		V. Loose	Green-Gry	Silt, trace fine-very	ml					
	13-14	R	2.0			Green-Gry	fine sand, wet	ml		0			

* When rock coring, enter rock brokeness.

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

Remarks: INSTALLED 2" Ø SCH 40 PVC Screen 3'-13'

Drilling Area Background (ppm): 0

Converted to Well: Yes x No ____ Well I.D. #: MW1-4PDI

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB New London GW PDI
PROJECT NUMBER: 112G02630
DRILLING COMPANY: Driller
DRILLING RIG: CME 55

BORING NUMBER: MW1-5PDI
DATE: April 21, 2010
GEOLOGIST: J. Ferguson
DRILLER: C. Hagan

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**
S-1	0-1	7 / 9	1.0		M. Dense	Black Brown	Medium sand, some fine-	SM	0-0.25 Black Asphalt	0			0
	1-2	14 / 12	2.0			Brown	coarse gravel, moist	SM					
S-2	2-3	8 / 15	1.3		M. Dense	Brown	↓	SW		1/1			0
	3-4	17 / 10	2.0			Brown	↓	SW					
S-3	4-5	3 / 8	1.3		M. Dense	Black-Brown	medium-coarse sand, trace-	SW		124			0
	5-6	11 / 35	2.0			Black-Brown	little fine-coarse gravel, wet,	SW					
	6-7						petroleum odor.						
							Bottom of Borg = 6.25'						

*When rock coring, enter rock brokeness.
**Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Remarks: 2" Ø ~~Sch~~ 40 PVC well 1'-6' BGS.
Sand to 0.5-6.25'
Seal 0.25' - 0.5 BGS.

Drilling Area Background (ppm): 0

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

ACAD: FORM_BORLOG.dwg 07/27/99 INL

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NSB New London
PROJECT NUMBER: 112G02630
DRILLING COMPANY: BAILLEY
DRILLING RIG: CME-90

BORING No.: MW1-7DDJ
DATE: April 28, 2016
GEOLOGIST: J. Ferguson
DRILLER: CHRIS HAGAN

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**
	0-1						0-0.5 Black Asphalt		Hand dig with				
	1-2					Brown	Silty, fine-medium sand,	SM	post hole digger				
	2-3					Brown	trace-little f-c gravel,	SM	wet @ 4.0'				
	3-4						↓	SM					
S-1	4-5	2 / 2	1.4		Loose	Gray	Medium Sand, wet	SP		0.6	0	0	
	5-6	2 / 4	2.0			Gray		SP					
	6-7												
	7-8						↓						
S-2	8-9	1 / 1	1.6		Loose	Gray	Medium-Coarse Sand,	SP	8:30	0	0	0	
	9-10	1 / 2	2.0			Gray	wet	SP					
S-3	10-11	2 / 2	2.0		Loose	Gray		SP	8:42	0	0	0	
	11-12	1 / 1	2.0			Gray		SP					
S-4	12-13	1 / 1	1.6		Loose	Gray		SP		0	0	0	
	13-14	2 / 1	2.0			Gray	↓	SP					
							Bottom of Borg.						

* When rock coring, enter rock brokeness.

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

Remarks: Replaces 20 MW7 (2.5-12.5)
New well 3'-13'

Drilling Area Background (ppm): 0

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

APPENDIX B.1.3

WELL CONSTRUCTION LOGS

Tetra Tech NUS, Inc.

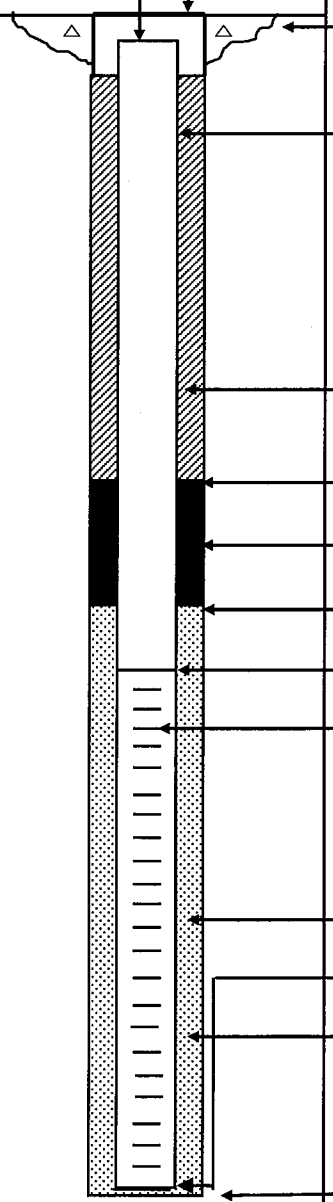
WELL No.: MW1-1PDI

MONITORING WELL SHEET

PERMIT No:

PROJECT:	NSB New London	DRILLING Co.:	Drillex	BORING No.:	MW1-1PDI
PROJECT No.:	112G02630	DRILLER:	Chris Hagan	DATE COMPLETED:	April 28, 2010
SITE:	Zone 1	DRILLING METHOD:	Hollow stem auger	NORTHING:	705393.439
GEOLOGIST:	J. Ferguson	DEV. METHOD:	Surge / Sub. Pump	EASTING:	1180442.314

Ground Elevation Datum: 5.90



Not to Scale

Elevation / Depth of Top of Riser:	5.46 / 0.44	
Elevation / Depth of Top of Surface Casing:	5.89 / 0.01'	
I.D. of Surface Casing:	8"	
Type of Surface Casing:	Flush - Steel	
Type of Surface Seal:	CONCRETE	
I.D. of Riser:	2"	
Type of Riser:	Sch. 40 PVC	
Borehole Diameter:	8.25"	
Note: MW1-1PDI is replacement well for 13MW7.		
Type of Backfill:	Bentonite pellet.	
Elevation / Depth of Seal:	4.90 / 1.0	
Type of Seal:	Bentonite pellet	
Elevation / Depth of Top of Filter Pack:	3.90 / 2.0	
Elevation / Depth of Top of Screen:	1.90 / 4.0	
Type of Screen:	Sch. 40 PVC	
Slot Size x Length:	0.010 SLOT 10'	
I.D. of Screen:	2"	
Type of Filter Pack:	No. 1 silica sand	
Elevation / Depth of Bottom of Screen:	-8.10 / 14.0	
Elevation / Depth of Bottom of filter pack	-8.10 / 14.0	
Type of Backfill Below Well:	No. 1 silica sand	
Elevation / Total Depth of Borehole:	-8.10 / 14.0	

Note:
1. Monitoring well survey completed by CME Associates, Inc. of Norwich Connecticut.
2. Monitoring well horizontal location based on Connecticut State Planar Coordinates (NAD83).
3. Monitoring well vertical locations based on NAVD88.

Tetra Tech NUS, Inc.

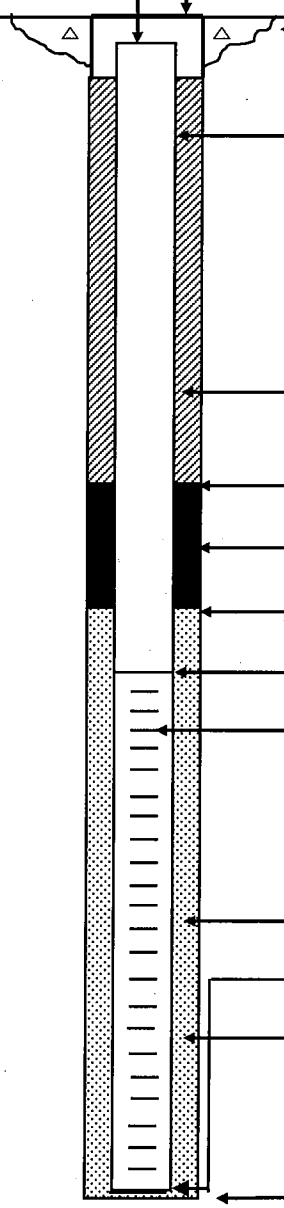
WELL No.: MW1-4PDI

MONITORING WELL SHEET

PERMIT No:

PROJECT:	NSB New London	DRILLING Co.:	Drillex	BORING No.:	MW1-4PDI
PROJECT No.:	112G02630	DRILLER:	Chris Hagan	DATE COMPLETED:	April 28, 2010
SITE:	Zone 4	DRILLING METHOD:	Hollow stem auger	NORTHING:	704303.210
GEOLOGIST:	J. Ferguson	DEV. METHOD:	Surge / Sub. Pump	EASTING:	1180917.204

Ground Elevation Datum: 5.60



Not to Scale

Elevation / Depth of Top of Riser: 5.06 / 0.54

Elevation / Height of Top of Surface Casing: 5.61 / 0.01

I.D. of Surface Casing: 8"

Type of Surface Casing: Flush - Steel

Type of Surface Seal: Concrete

I.D. of Riser: 2"

Type of Riser: Sch. 40 PVC

Borehole Diameter: 8.25"

Note: MW1-4PDI replaces well 13MW15.

Type of Backfill: Bentonite pellet.

Elevation / Depth of Seal: 4.60 / 1.0

Type of Seal: Bentonite pellet.

Elevation / Depth of Top of Filter Pack: 3.60 / 2.0

Elevation / Depth of Top of Screen: 2.60 / 3.0

Type of Screen: Sch. 40 PVC

Slot Size x Length: 0.010 SLOT 10'

I.D. of Screen: 2"

Type of Filter Pack: No. 1 silica sand.

Elevation / Depth of Bottom of Screen: -7.40 / 13.0

Elevation / Depth of Bottom of filter pack -8.40 / 14.0 /

Type of Backfill Below Well: No. 1 silica sand.

Elevation / Total Depth of Borehole: -8.40 / 14.0

Note:
1. Monitoring well survey completed by CME Associates, Inc. of Norwich Connecticut.
2. Monitoring well horizontal location based on Connecticut State Planar Coordinates (NAD83).
3. Monitoring well vertical locations based on NAVD88.

Tetra Tech NUS, Inc.

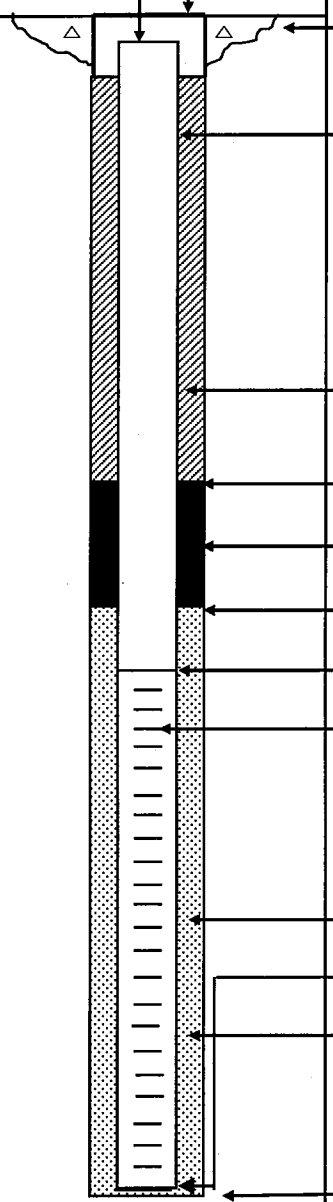
WELL No.: MW1-5PDI

MONITORING WELL SHEET

PERMIT No:

PROJECT:	NSB New London	DRILLING Co.:	Drillex	BORING No.:	MW1-5PDI
PROJECT No.:	112G01489	DRILLER:	Chris Hagan	DATE COMPLETED:	April 28, 2010
SITE:	Zone 5	DRILLING METHOD:	Hollow stem auger	NORTHING:	708330.130
GEOLOGIST:	J. Ferguson	DEV. METHOD:	Surge / Sub. Pump	EASTING:	1180166.318

Ground Elevation Datum: 5.10



Not to Scale

Elevation / Depth of Top of Riser:		4.68 / 0.57'
Elevation / Height of Top of Surface Casing:		5.05 / 0.0'
I.D. of Surface Casing:	8"	
Type of Surface Casing:	Flush - Steel	
Type of Surface Seal:	CONCRETE	
I.D. of Riser:	2"	
Type of Riser:	Sch. 40 PVC	
Borehole Diameter:	8.25"	
Note: MW1-5PDI replaces well 19MW4.		
Type of Backfill:	Bentonite pellet.	
Elevation / Depth of Seal:		4.85 / 0.25
Type of Seal:	Bentonite pellet.	
Elevation / Depth of Top of Filter Pack:		4.35 / 0.75
Elevation / Depth of Top of Screen:		4.10 / 1.00
Type of Screen:	PVC	
Slot Size x Length:	0.010 SLOT 10'	
I.D. of Screen:	2"	
Type of Filter Pack:	No. 4 Global Silica	
Elevation / Depth of Bottom of Screen:		-0.90 / 6.00
Elevation / Depth of Bottom of filter pack		-1.15 / 6.25
Type of Backfill Below Well:	NA	/
Elevation / Total Depth of Borehole:		-1.15 / 6.25

Note:
1. Monitoring well survey completed by CME Associates, Inc. of Norwich Connecticut.
2. Monitoring well horizontal location based on Connecticut State Planar Coordinates (NAD83).
3. Monitoring well vertical locations based on NAVD88.

Tetra Tech NUS, Inc.

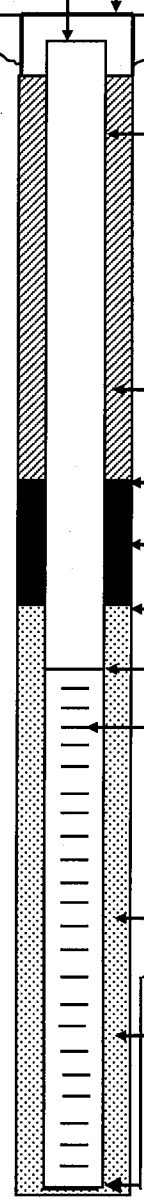
WELL No.: MW1-7PDI

MONITORING WELL SHEET

PERMIT No:

PROJECT:	NSB New London	DRILLING Co.:	Drillex	BORING No.:	MW1-7PDI
PROJECT No.:	112G02630	DRILLER:	Chris Hagan	DATE COMPLETED:	04/28/10
SITE:	Zone 7	DRILLING METHOD:	H S A	NORTHING:	706684.822
GEOLOGIST:	J. Ferguson	DEV. METHOD:	Surge / Sub. Pump	EASTING:	1180243.449

Ground Elevation Datum: 4.10



Not to Scale

Elevation / Depth of Top of Riser:	3.84 / 0.26	
Elevation / Height of Top of Surface Casing:	4.16 / +0.06'	
I.D. of Surface Casing:	8"	
Type of Surface Casing:	Flush - Steel	
Type of Surface Seal:	Concrete	
I.D. of Riser:	2"	
Type of Riser:	Sch. 40 PVC	
Borehole Diameter:	8.25"	

Note: MW1-7PDI replacement well for 20MW7.

Type of Backfill:	Bentonite pellet.	
Elevation / Depth of Seal:	3.10 / 1.0	
Type of Seal:	Bentonite pellet.	
Elevation / Depth of Top of Filter Pack:	2.10 / 2.0	
Elevation / Depth of Top of Screen:	1.10 / 3.0	
Type of Screen:	Sch. 40 PVC	
Slot Size x Length:	0.010 SLOT 10'	
I.D. of Screen:	2"	
Type of Filter Pack:	No. 1 silica sand	
Elevation / Depth of Bottom of Screen:	-8.90 / 13.0	
Elevation / Depth of Bottom of filter pack:	-9.90 / 14.0	
Type of Backfill Below Well:	No. 1 silica sand.	
Elevation / Total Depth of Borehole:	-9.90 / 14.0	

Note:
1. Monitoring well survey completed by CME Associates, Inc. of Norwich Connecticut.
2. Monitoring well horizontal location based on Connecticut State Planar Coordinates (NAD83).
3. Monitoring well vertical locations based on NAVD88.

APPENDIX B.1.4

WELL DEVELOPMENT RECORDS

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: NES010
Site: ZONE
Date Installed: NA
Date Developed: 4-20-10
Dev. Method: Surge / Pump
Pump Type: Submersible

Depth to Bottom (ft.): 9.20
Static Water Level Before (ft.): 5.61 / 1400 HRS
Static Water Level After (ft.): 5.8
Screen Length (ft.): 5.0
Specific Capacity: NA
Casing ID (in.): ~3 IN

Responsible Personnel: FRED W. RAMSER
Drilling Co.: NA
Project Name: NSB New London GW PDI
Project Number: 112G02630

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units µS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1630	~.5'	8	5.40	15.57	6.91	2.411		HARD BOTTOM, ~~NO SLOUGH~~ CLEAN
1635	.5'	8.2	5.32	14.87	7.07	1.368	20	~~ON~~ PROBE, PUMP HIT OB-
1640	.5	8.5	5.28	14.63	7.12	2.396	20	STRUCTION ~6', PUMP
1645	.5	9.0		14.70	7.05	2.386	20	@ 6' RUN DRY, INSERTED
1650	.5	14.0		14.78	7.11	2.443	29	SURGE BLK CONTINUE TO
1715	.5	15.00	5.18	14.82	7.10	2.450	29	BREAK THROUGH OBS. BOTTOM
								~~FEL~~ LIKE PLANT MATL. SOFT
								BOTTOM.
								COMPLETED

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 13MW13
Site: NSB New London
Date Installed: NA
Date Developed: 4-21-10
Dev. Method: Surge + Pump
Pump Type: Sub. 12VDC

Depth to Bottom (ft.): 14.3 TPVC
Static Water Level Before (ft.): 5.70 @ 814HRS
Static Water Level After (ft.): 9.98
Screen Length (ft.):
Specific Capacity:
Casing ID (in.): 2" PVC

Responsible Personnel: FRED WRAMSK
Drilling Co.: NA
Project Name: NSB New London
Project Number: 112602630

EXSITING WELL RE-DEVELOPMENT

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
0830	0	6	5.70	14.78	6.66	0.309	50	
0850	0	12	6.50	15.09	6.75	0.598	40	
0853	0	18	8.92	15.13	6.79	0.603	10	
0856	0	24	9.50	15.23	6.73	0.608	7.4	
0858	0	30	9.98	15.27	6.75	0.602	5	COMPLETED DEV.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 13MW20
Site: NSB New London
Date Installed: NA
Date Developed: 4-21-2016
Dev. Method: SURGE + PUMP
Pump Type: 12VDC SUB

Depth to Bottom (ft.): 14.55 TPVC
Static Water Level Before (ft.): 6.45
Static Water Level After (ft.): 6.58
Screen Length (ft.): 10.0'
Specific Capacity: NA
Casing ID (in.): 2" Ø SCH 40

Responsible Personnel: FRED WRAYSER
Drilling Co.: NA
Project Name: NSB NEW LONDON
Project Number: 112602630

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1325	0	6	6.58	16.12	8.63	1.036	60	
1330	0	9	6.58	15.66	8.00	1.026	15	
1335	0	12	6.58	15.67	7.95	1.021	8	FINNISH DEV.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 13MW21
Site: NSB NEW LONDON
Date Installed: NA
Date Developed: 4-21-10
Dev. Method: SURGE/PUMP
Pump Type: Submersible

Depth to Bottom (ft.): 12.55
Static Water Level Before (ft.): 4.20
Static Water Level After (ft.): 4.95'
Screen Length (ft.): 10.0'
Specific Capacity: NA
Casing ID (in.): 2IN

Responsible Personnel: FRED WRAMSER
Drilling Co.: NA
Project Name: NSB NEW LONDON
Project Number: 112602630

RE-DEVELOPMENT EXSITING WELL

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ~~mho/cm~~)	Turbidity (NTU)	Remarks (odor, color, etc.)
1238		5	4.90	15.06	8.34	0.579	15	
1245		10	4.95	14.80	8.23	1.001	8	
1250		16	4.95	14.75	8.22	1.009	2	COMPLETED

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: FOMW 14
Site: NSB NEW LONDON
Date Installed: NA
Date Developed: 4-21-10
Dev. Method: Surge/Pump
Pump Type: Submersible

Depth to Bottom (ft.): 10.0
Static Water Level Before (ft.): 8.62
Static Water Level After (ft.): 8.65
Screen Length (ft.): 7.0
Specific Capacity: NC
Casing ID (in.): 2" Ø Sch 40

Responsible Personnel: FRED W RAMSEK
Drilling Co.: NA
Project Name: NSB NEW LONDON GW PDI
Project Number: 112602630

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mg/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1427	0	2	8.65	12.84	7.34	2.429	3	
1429	0	4	8.65	12.19	7.14	2.341	3	
1431	0	6	8.65	12.09	7.12	2.347	3	
1432	0	8	8.65	12.05	7.09	2.335	4	COMPLETED DEV.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: NES011
Site: NSB New London
Date Installed: N/A
Date Developed: 4-21-10
Dev. Method: SURGE + PUMP
Pump Type: SUB, 12VDC 2"

Depth to Bottom (ft.): 8.8' BTPVC
Static Water Level Before (ft.): 4.85
Static Water Level After (ft.): 5.90
Screen Length (ft.): 5.0
Specific Capacity: NA
Casing ID (in.): 3 IN PVC

Responsible Personnel: FRED W RAMSEUR
Drilling Co.: NA
Project Name: NSB New London GW PDI
Project Number: 112602630
~~REDEVELOP~~ REDEVELOPED EXISTING WELL

STARTED PUMP @ 0832 HRS

Time (RM 0936)	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
~~0836~~	0	3	4.85	16.60	6.72	1.384	4.0	DK BRN TO BLK OFF BTM,
~~0840~~	0	6	5.90	16.65	6.76	0.982	2	BEGINS TO CLEAR @ 835
0940 / ~~0945~~	0	9	5.90	16.64	6.69	1.449	5	
0955	0	12	5.90	16.90	6.68	1.460	2	
1000	0	14	5.90	16.96	6.68	1.404	2	COMPLETED DEV.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW4-7RI
Site: NSB NEW LONDON
Date Installed: NA
Date Developed: 4-21-10
Dev. Method: SURGE+PUMP
Pump Type: 12VDC SUB.

Depth to Bottom (ft.): 9.80
Static Water Level Before (ft.): 4.35
Static Water Level After (ft.): 5.5
Screen Length (ft.):
Specific Capacity:
Casing ID (in.):

Responsible Personnel: FRED W. RAMSEUR
Drilling Co.: NA
Project Name: NSB NEW LONDON
Project Number: 112602630

Time 1555	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
~~1455~~	0	1.5	5.5	14.93	8.03	0.489	25	
~~1458~~ 1558	0	4.5	5.5	14.12	7.79	0.466	17	
~~1500~~ 1600	0	5.5	5.5	14.02	7.47	0.788	7	
~~1502~~ 1602	0	7.5	5.5	13.95	7.50	0.791	4	COMPLETED DEVELOPMENT

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW1-5PDI
Site: NSB NEW LONDON
Date Installed: 4-21-2010
Date Developed: 4-24-2010 (CAD)
Dev. Method: SURGE / PUMP
Pump Type: 2" submersible

Depth to Bottom (ft.): 6.0
Static Water Level Before (ft.): 3.61
Static Water Level After (ft.): 3.55
Screen Length (ft.): 5.0'
Specific Capacity: —
Casing ID (in.): 2"Ø

Responsible Personnel: J. Ferguson
Drilling Co.: NA
Project Name: NSB NEW LONDON GW PDI
Project Number: 112G02630

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
15:25	—	1.5	3.66	15.33	6.47	5.619	325	Brown, turbid
15:34	—	3.0	3.59	14.49	6.54	7.186	30	Lt Brown, cloudy
15:55	—	5.0	3.57	14.34	6.47	7.389	38	
16:03	—	7.00	3.57	14.26	6.34	6.432	120	
16:23	—	9.0	3.58	14.04	6.44	6.149	38	
16:33	—	11.0	3.56	14.12	6.43	5.954	10	clear
16:46	—	13.0	3.55	14.23	6.44	5.951	8	clear

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: MW3-7RI
Site: NSB New London
Date Installed: NA
Date Developed: 4-22-10
Dev. Method: Surge / Pump
Pump Type: Submersible

Depth to Bottom (ft.): 8.20
Static Water Level Before (ft.): 3.09
Static Water Level After (ft.): 3.25'
Screen Length (ft.): 5.0'
Specific Capacity: NA
Casing ID (in.): 2" SCH 40 PVC

Responsible Personnel: FRED W RAMSER
Drilling Co.: NA
Project Name: NSB New London GW PDI
Project Number: 112G02630
STARTED PUMPING @ 1400 HR

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1405	0	1.5	3.25	14.57	8.11	1.527	59	
1408	0	2.5	3.25	14.27	7.37	1.458	38	
1410	0	4.5	3.25	14.17	7.34	1.442	15	
1413		5.5	3.25	14.15	7.39	1.447	4	COMPLETED
								DRY ~6 GAL

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 19MW3
Site: NSB New London
Date Installed: NA
Date Developed: 4-22-10
Dev. Method: Surge/Pump
Pump Type: Submersible

Depth to Bottom (ft.): 5.30 TPVC
Static Water Level Before (ft.): 3.65 TPVC
Static Water Level After (ft.):
Screen Length (ft.): 4.0'
Specific Capacity: NA
Casing ID (in.): 2" SCH 40 PVC

Responsible Personnel: FRED W. RAMSER
Drilling Co.: NA
Project Name: NSB New London
Project Number: 112602630
STARTED PUMPING @ 0908

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
919	—	3	3.65	13.50	7.71	0.488	13	
922	—	5	—	13.55	7.73	0.496	10	
924	—	6	—	13.62	7.75	0.501	10	COMPLETED DEV.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 13MW14
Site: NSB New London
Date Installed: NA
Date Developed: 4-22-10
Dev. Method: SURGE + PUMP
Pump Type: 12VDC SUB.

Depth to Bottom (ft.): 14.2 TPVC
Static Water Level Before (ft.): 4.80
Static Water Level After (ft.): 4.80
Screen Length (ft.): 10.0'
Specific Capacity: NA
Casing ID (in.): 2"

Responsible Personnel: FRED WRAMSKER
Drilling Co.: NA
Project Name: NSB New London
Project Number: 112602630

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units µS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1551	0	3.5	4.8	18.86	7.61	9.819		
1554	0	5	4.8	18.75	7.21	10.01	29	SAL = 6.51
1558	0	6.5	4.8	18.51	7.08	9.810	12	
1602	0	8.0	4.8	18.41	7.01	9.794	4	
1606	0	10.0	4.8	18.41	6.97	9.819	3	FINISH DEV.

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Well: 13MW19
Site: ZONE 9
Date Installed: NA
Date Developed: 4-22-10
Dev. Method: PERISTALTIC PUMP
Pump Type: PERISTALTIC

Depth to Bottom (ft.): 14.6
Static Water Level Before (ft.): 3.86
Static Water Level After (ft.): 4.78
Screen Length (ft.): 10.0
Specific Capacity: NA
Casing ID (in.): 2" Ø SCH 40 PVC

Responsible Personnel: FRED W. RAMSEUR
Drilling Co.: NA
Project Name: NSB New London
Project Number: 112602630

RE-DEVELOPMENT EXISTING WELL
STARTED PUMP @ 1248 HRS @ 1 L/MIN

48 Gal
x3

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume ~~(Gal.)~~ L	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
1256	0	7 L	3.86	22.28	8.09	0.536	15	RISER IS SLIGHTLY BENT
1301	0	12 L	4.78	22.22	8.01	1.348	11	CAN NOT INSERT
1308	0	19 L	4.78	22.31	8.01	1.360	5	SURGE BLK, PUMP
1316	0	27 L	4.78	22.29	8.10	1.382	5	WILL NOT GO IN
1325	0	36 L	4.78	22.19	8.19	1.395	5	TO WELL NEED TO
								USE PERISTALTIC PUMP
								(4/21)
								COMPLETED DEV @
								1325

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Site: NSB NEW LONDON
Well: MW1-7PD1
Date Installed: 4/28/10
Date Developed: 4/29/10
Dev. Method: SURGE/PUMP
Pump Type: 2" SUBMERSIBLE

Depth to Bottom (ft.): 13.0
Static Water Level Before (ft.): 2.45
Static Water Level After (ft.): 2.51
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 2" ϕ

Project Name: ~~J. Ferguson~~ NSB NEWLONDON GW PDI
Project Number: 112602630
Site Geologist: J. FERGUSON
Drilling Co.: NA

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units mS/cm)	Turbidity (NTU)	Remarks (odor, color, etc.)
11:10	—	↓	2.45	12.96	6.87	0.270	71000	SURGED PRIOR TO PUMPING
11:15	—			13.13	7.08	0.288	37	PETRO. ODOR
11:20	—			13.03	7.19	0.312	4.9	
11:25	—			13.19	7.25	0.318	4.0	
11:30	—	25 gals	2.51	13.11	7.27	0.319	3.8	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Site: NSB NEW LONDON
Well: MW1-4PD1
Date Installed: 4/28/10
Date Developed: 4/29/10
Dev. Method: SURGE / PUMP
Pump Type: 2" SUBMERSIBLE

Depth to Bottom (ft.): 14.0
Static Water Level Before (ft.): 6.26'
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 2" Ø

Project Name: NSB NEW LONDON GW PDI
Project Number: 112G02630
Site Geologist: J. FERGUSON
Drilling Co.: NA

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units ____)	Turbidity (NTU)	Remarks (odor, color, etc.)
16:36	—	↓	6.26	~~12.80~~	—	—	—	
16:40	—		—	12.80	6.70	16.60	100	
16:50	—		—	12.66	6.70	16.34	4.7	
~~16~~ 17:00	—	±30 gals	—	12.60	6.73	16.05	3.8	

Tetra Tech NUS, Inc.

MONITORING WELL DEVELOPMENT RECORD

Site: NSB NEWLONDON
Well: MW1-1 PDI
Date Installed: 4/28/10
Date Developed: 4/29/10
Dev. Method: SURGE/ PUMP
Pump Type: 2" SUBMERSIBLE

Depth to Bottom (ft.): 14.0
Static Water Level Before (ft.): 4.38
Static Water Level After (ft.):
Screen Length (ft.): 10
Specific Capacity: —
Casing ID (in.): 2" Ø

Project Name: NSB NEW LONDON GW PDI
Project Number: 112G02630
Site Geologist: J. FERGUSON
Drilling Co.: NA

Time	Estimated Sediment Thickness (Ft.)	Cumulative Water Volume (Gal.)	Water Level Readings (Ft. below TOC)	Temperature (Degrees C)	pH	Specific Conductance (Units _____)	Turbidity (NTU)	Remarks (odor, color, etc.)
11:55	—		4.38	17.76	7.86	4.589	71000	
12:00	—			17.38	8.22	4.752	700	OILY ODOR
12:05	—			17.19	8.38	4.677	110	
12:10	—			17.41	8.48	4.709	100	
12:15	—			17.41	8.49	4.710	100	
12:30	—			17.31	8.53	4.639	140	
12:40	—			17.15	8.55	4.674	90	
12:50	—			17.26	8.52	4.668	80	
13:00	—	80 gals		17.20	8.53	4.655	45	

APPENDIX B.1.5

WATER LEVEL MEASUREMENTS

TITLE NSD New Canton [illegible]

PROJECT NO. 11260263C

BOOK 2625

Friday April 30, 2010

Work continued from Page

WATER levels / well survey @ Lower Bench

4.14/11:12

BUDG 175

3.78/11:09

3.58/11:05

3.09/11:22

3.03/11:28

BUDG 174

2.42/11:37

11:55	MW4 - 7RI	4.48	
11:58	MW2 - 7PDI	2.63	
12:00	MW3 - 7RI	2.99	New Cap
	20MW5	Filled w/ Cement	
	20MW8	Bolts stripped / Paved over	

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 5-30-10

DATE

TITLE

PROJECT NO. 11260263C

BOOK 2625

Friday April 30, 2010

Work continued from Page

	20MW3	Covered by Asphalt	
12:34	MW5 7RI	Paved over	
12:30	MW1 7RI	4.81	Needs New pad/cover
12:23	MW2 7R1	4.38	
13:08	13 MW1	9.62	Broken Casting 8" OD
13:11	13 MW20	8.84	
13:53	FO MW16	8.68	Damaged Top Seal unsure
13:05	FO MW14	8.74	
13:00	FO MW15	8.75	Stripped 9/16" Bolts
—	FO MW13	—	Abandoned
—	13 MW2	—	
13:20	13 MW3	8.97	
13:33	13 MW18	14.05	HNAL 5.50 8.55 viscous,
13:50	13 MW19	4.01	
13:54	MW1-19D1	4.58	
13:41	13 MW20	6.52	
13:45	13 MW21	4.80	
14:26	NES010	5.36	3" NO CAP
14:30	MW1 4RDI	5.02	
14:34	13MW14	5.45	
14:48	QW1	—	Screws gone Compression Cap broken
14:50	QW2	—	PAD Broken No ACCESS
			Screw locks in place data

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 5-30-10

DATE

TITLE NSB New London GW PDI

PROJECT NO. 11260263

BOOK 2625

FRIDAY April 30, 2010

Work continued from Page

			TD	
14:50	WG 1	5.26	5.75	No pro cover / cap
14:53	BMW17	4.91		
14:55	NES01	4.88		3" SCH 80 No cap
14:58	MW2 4"	4.44		Stripped 9/16" Bolts
15:04	QW5	—		Top Rusted over
15:10	QW4	—		Top welded Riveted over

15:30 Left site to prep GW samples for shipment to Columbia Analytical
Fed Ex AB# 863125267042.
Samples prepared for shipping delivery.
Called sample receiving to make them aware of incoming shipment

16:30 Fed Ex arrives to pick up coolers of GW Samples

17:00 Continue prep for demobilization from site

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE 5-30-2010

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

EP_A_BESCHIGER_OFFICE_MARKINGS_YELLOW_W_CAP_BINDING_MATERIAL_TAGS_AND_PAINT_OF_TAPE

TABLE 5-3

GROUNDWATER PDI ROUND 1 WATER LEVEL MEASUREMENTS
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

Well Number	Northing (NAD 83)	Easting (NAD 83)	Installation Date	Ground Elevation (feet, NAVD 1988)	Top of Riser Elevation (feet, NAVD 1988)	Water Level Information 4/30/2010		Well Details						
						DTW (feet)	El. (feet, NAVD 1988)	Well Completion	Hole Diameter (inches)	Casing Material	Log Total Depth (1) (ft RP)	Screen Material	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)
ZONE 1														
13MW1	705452.600	1180818.100	11/5/1990	11.34	10.97	9.62	1.35	FM	2	PVC	17.00	PVC	7.49	17.49
13MW2	705419.900	1180831.200	11/5/1990	10.84	10.41	8.84	1.57	FM	2	PVC	17.00	PVC	7.67	17.67
13MW3	705396.100	1180734.500	11/7/1990	10.76	10.50	8.97	1.53	FM	2	PVC	17.00	PVC	7.36	17.36
FOMW14	705477.500	1180721.100	6/28/1989	10.56	10.29	8.74	1.55	FM	2	PVC	10.00	PVC	3.20	10.20
FOMW15	705514.100	1180739.100	6/28/1989	10.94	10.29	8.75	1.54	FM	2	PVC	10.00	PVC	3.40	10.40
FOMW16	705499.400	1180712.000	6/28/1989	10.50	10.23	8.68	1.55	FM	2	PVC	10.00	PVC	2.90	9.90
13MW19	705449.900	1180513.800	1/25/1994	5.95	5.66	4.01	1.65	FM	2	PVC	15.00	PVC	5.00	15.00
13MW20	705513.300	1180578.400	1/25/1994	8.32	8.06	6.52	1.54	FM	2	PVC	13.00	PVC	3.00	13.00
13MW21	705485.900	1180525.600	1/25/1994	6.64	6.31	4.80	1.51	FM	2	PVC	15.00	PVC	5.00	15.00
MW1-1PDI	705393.439	1180442.314	4/28/2010	5.90	5.46	4.58	0.88	FM	2	PVC	14.00	PVC	4.00	14.00
ZONE 4														
13MW13	704363.700	1181030.600	11/13/1990	6.55	6.11	4.91	1.20	FM	2	PVC	14.00	PVC	4.60	14.60
13MW14	704343.400	1180927.200	11/13/1990	6.09	5.59	5.45	0.14	FM	2	PVC	14.00	PVC	4.80	14.80
MW2-4RI	704205.240	1181147.560	9/26/1997	6.96	6.46	4.44	2.02	FM	2	PVC	8.00	PVC	3.00	8.00
NESO10	704284.400	1180956.400	1979	6.03	5.71	5.36	0.35	FM	3	other	9.00	PVC	4.30	9.30
NESO11	704286.800	1181077.600	1979	6.50	6.39	4.88	1.51	FM	2	PVC	8.00	PVC	3.60	8.60
WE1	704427.100	1181035.100	7/16/1986	7.23	7.03	5.26	1.77	FM	2	PVC	15.00	PVC	5.30	15.30
MW1-4PDI	704303.210	1180917.204	4/28/2010	5.60	5.06	5.02	0.04	FM	2	PVC	14.00	PVC	3.00	13.00
ZONE 5														
19MW2	708546.100	1180159.400	3/24/1993	4.89	4.59	4.14	0.45	FM	2	PVC	5.00	PVC	1.78	5.78
19MW3	708438.100	1180160.400	3/25/1993	4.79	4.50	3.78	0.72	FM	2	PVC	6.00	PVC	2.30	6.30
MW1-5PDI	708330.130	1180166.318	4/28/2010	5.10	4.68	3.58	1.10	FM	2	PVC	6.25	PVC	1.00	6.00
ZONE 7														
MW1-7RI	706203.780	1180331.320	9/27/1997	6.13	5.72	4.81	0.91	FM	2	PVC	9.00	PVC	5.00	9.00
MW2-7RI	706342.540	1180271.120	9/27/1997	5.81	5.43	4.38	1.05	FM	2	PVC	9.00	PVC	4.50	9.50
MW3-7RI	706602.500	1180250.840	9/27/1997	4.67	4.27	2.97	1.30	FM	2	PVC	8.00	PVC	3.00	8.00
MW4-7RI	706758.130	1180277.230	9/25/1997	6.03	5.67	4.48	1.19	FM	2	PVC	8.00	PVC	3.00	8.00
MW1-7PDI	706684.822	1180243.449	4/28/2010	4.10	3.84	2.63	1.21	FM	2	PVC	14.00	PVC	3.00	13.00

(1) Total well depth based on well construction logs.
All water level measurements taken from top of riser pipe.
DTW - Depth to water.
El. - Elevation
FM - Flush Mount
NA - Not applicable.
NAVD - North American Vertical Datum.
RP - Reference Point

APPENDIX B.1.6

COPIES OF PROJECT LOG BOOKS

TITLE

PROJECT NO.

BOOK

Work continued from Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE

TUESDAY 4/20/10

PROJECT NO.

BOOK

Work continued from Page

0700 PWR - ATTEND RADCON
- BLDG 135 MT w/KEVIN BRANEFF
+ WEAPONS ARCH
- MOVING WEAPONS

0800 PWR GOES TO FIELD OFFICE
+ CALIBRATE YST:
MOD YSI 556 FEI# U57099X
S/N 08H100780

1) CALIBRATED COND TO 1409 umhos
⇒ 1.409 mS/cm (UNITS USED ON PURGE SHEET)
⇒ pH ONE PT 7.00 pH
SOL. FEI12380-1

0930 PWR GOES TO LOWER SUBASE TO LOCATE NEW WELL LOCATIONS FOR UTILITIES CLEARANCE.

1130 PWR GOES TO CONTRACTOR GATE TO GET PASS FOR THE CONTROLLED AREA IN THE LOWER SUBBASE.
- CORRIDOR PASS ONLY GOOD FOR ONE DAY
- MUST PROCEED DIRECTLY TO LOWER SUBBASE
- TURN IN PASS WHEN YOU LEAVE.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-20-10 SUNNY 60'S WINDY

PROJECT NO.

BOOK

Work continued from Page

1230 RETURN TO SUBBASE w/ GPS + CORIDOR PASS
- COMPLETED LOCATING ALL FOUR NEW MW PTS
- JF (JIM FERGUSON) CONTINUES WORKING w/ CONTRACTOR TO MARK LOCATIONS.

1345 FWR GOES TO DICK COMAND OFFICE TO PICK UP SUPPLIES SHIPPED FROM PITTS. OFFICE.

1400 FWR RETURNS TO LOWER SUBBASE
- BEGIN TO DEVELOP NES010 WELL

1715 FINNISH @ NES010
- DECON PUMP
~~- SEAL 55-GAL DRUM LABELED w/ TEMUS GARBAGE 2/3 FULL~~ 4/21/10

VOID

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-21-10

PROJECT NO.

BOOK

Work continued from Page

0700 FWR ARR @ HAZ MATL. AREA
- REQUESTED TO BORROW 55 GAL DRUM
- EMPTYIED ~15 GALS H_2O IN DRUM ON 2nd CONTAINMENT

0800 ARR AT LOWER SUBBASE w/ 1-55 GAL DRUM
- PLAN TO START @ 13MW13

0827 START PUMPING @
- SURGED FOR 10 MINS BEFORE PUMPING.

0900 FINNISH DEV. PUMPED ~30 gals MOVE TO NES011
- DECON PUMP

0931 BEGIN PUMPING @ NES011
- BLK SILT MUD OFF BTM
- CLEARS @ 0936

1000 COMPLETED DEVELOPMENT @ NES011 PUMP OUT ~15 GALS
- DECON PUMP
- SEALED 55-GAL DRUM 2/3 FULL LABELLED LOCATED NEAR 13MW13

1100 GO TO SECURITY TO OBTAIN CORIDOR PASS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE SUNNY 50 -60s PROJECT NO.
4-21-10 BOOK

Work continued from Page

1135 ARR AT WELL 13MW19
+ RISER BENT @ ~3' BGS WL METER
PROBE GOT TO WL + TD
- PUMP + SURGE BLK CANNOT GO
ANY FURTHER THAN BEND @ 3' WILL
NEED TO USE PERISTALTIC PUMP
1200 CLEAN UP/LOAD SUPPLIES INTO
CAR
MOVE TO 13MW21

1230 SURGED W/ BLOCK FOR 5 MINS
- SOLID BTM
- CLEAN BLK
- BEGIN TO PUMP
1256 FINNISH DEV. @ 13MW21
- PUMP OUT ~16 GALS
- TURB < 10 NTU.
- MAKES ALOT OF WATER

1305 MOVE TO 13MW20

1320 + SURGED WELL FOR ~5 MINS
- SOLID BTM
- LITTLE TO NO MUD ON BLK
+ BEGIN TO PUMP
DISCHARGE BLK

SIGNATURE DATE
WITNESS DATE

TITLE SUNNY PROJECT NO.
4-21-10 BOOK

Work continued from Page

1325 BEGINS TO CLEAR ~3 GALS W/D

1335 FINNISH DEV. @ 13MW20, W/D ~12 GALS
- TURB ≤ 10

1415 MOVE TO FOMW14
- ONLY ~2' OF STANDING WATER
~ HIGH TIDE?
- WILL PUMP ONLY NO SURGE BLK.

1425 BEGIN PUMPING FOMW14

1445 FINNISHED DEV. @ FOMW14
- W/D ~ 10 GALS
- CLEARED QUICKLY
- NTU < 5
1510 FARG + DRILLERS SUPPLIED ANOTHER
DRUM.

DRUM #2 CONTAINS 2/3s H_2O
STORED NEXT TO 13MW19

1545 ARR AT MW4-7RI

1550 BEGIN TO PUMP @ MW4-7RI
SURGED FOR ~2 MIN

SIGNATURE DATE
WITNESS DATE

SUNNY

TITLE 4-21-10 WED.

PROJECT NO.

BOOK

Work continued from Page

1605 FINISH DEV @ MW4-7RI
- TURB < 10
- REMOVED ~ 8 GALS
- DECON PUMP

1645 WELLS TO-DATE RE-DEV.

NES010	4-20
NES011	4-21
13MW13	4-21
MW4-7RI	4-21-10
FOMW14	4-21-10
13MW20	4-21-10
13MW21	4-21-10
13MW19	~~4-21-10~~ NEED TO USE PERISTALTIC PUMP

1700 PUR LV SITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-22-10 THURS.

PROJECT NO.

BOOK

Work continued from Page

0700 PUR AIR AT FIELD STORAGE
- CALIBRATED YSI & LAMOTT
- LOAD GW SPL SUPPLIES & DISCUSS JDW W/LINDA/CLAY/MARK
- CALL LINDA TO PICK UP JDW DRUMS

0800 DEPT. FOR LOWER SUBASE
- GET CORRIDOR VEH. PASS

0830 ARR @ BLDG 175, LOOK FOR WELL 19MW3

0909 BEGIN TO DEV. 19MW3

0930 FINISH DEV.
- W/D 6 GALS
- TURB. = 10 NTU
- DECON PUMP
- PREP TO SPL WELL(S)

1000 GO TO WELL 13MW13

1010 BEGIN TO PURGE 13MW13 TO SPL

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-22-10

PROJECT NO.

BOOK

Work continued from Page

1042 COLLECTED SPL @ 13MW13
- TIDE TABLE
LO TIDE @ 1105 AM

1115 LV BASE TO PROCURE
~~CROX CLH~~ - CHLOROX BLEACH
- PUMP SPRAYER
FOR FERGY.

1230 RETURN TO BLDG 175
- FERG/DRILLERS ENCOUNTERED
- GAVE FERG SUPPLIES
- FER GOTO 13MW19 TO
DEV. USING PERISTALTIC PUMP

1330 COMPLETED DEV @ 13MW19
- W/D - 36 liter
- TURB = 5 NTU

1355 MOVE TO MW3-7RI

1400 STARTED PUMPING AFTER SURGING
WELL FOR A FEW MINUTES
- DARK BRN

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-22-10

PROJECT NO.

BOOK

Work continued from Page

1415 FINISHED DEV. @ MW3-7RI
- W/D ~6 GAL
- TURB < 5 NTU

WELLS COMPLETED TO
THIS TIME

ZONE 1: 13MW19 (PP) 4/22
(COMPLETED) 13MW20 (SUB) 4/21
13MW21 SUB 4/21
FOMW14 SUB 4/21

ZONE 4: 13MW13 SUB 4/21
NES010 SUB 4/20
NES011 SUB 4/21

ZONE 5: 19MW3 SU 4/22

ZONE 7: MW4-7RI 4/21
MW3-7RI 4/22

NEED TO DO 13MW14 AND
ALL REPLACEMENT WELLS
NOT YET INSTALLED

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

1500 FERC ASK ME TO GET THE BAILERS SHIPPED TO D.C.

1520 BAILERS HAVE NOT ARR.

1530 PUR ARR @ 13MW14
- SOFT BOTTM
- SURGED WELL WITH BLK FOR A FEW MINUTES
- TURN ON PUMP @ 1542
- PUMPED ~ 2.0 GALLONS OF DK BRN THICK CLOUDY H_2O

1550 BEGINS TO CLEAR @ 3 GALS

1610 FINISH DEV. @ 13MW14
- W/D 10 gal
- < 5 NTUS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-23-10

PROJECT NO.

BOOK

Work continued from Page

0700 ARR AT FIELD STORAGE
- LOAD SUPPLIES TO SPL
- CALIBRATE EQUIP

0845 DEPART STORAGE FOR LOWER SUBASE

0900 INSTALL SPL TUBING IN WELLS ZONE 1
BMW19, 13MW21, 13MW20
+ FOMW14
LO
~~HT~~ TIDE IS PREDICTED TO BE 1159 ADD 10min AS PER PROTOCOL 1209 -
BEGIN @ FOMW14 @ 1009

0940 SET UP ON FOMW14
- PLAN TO BEGIN PURGE @ 1009

1039 COLLECTED LSI-GW-FOMW14-10-01
COLLECTED DUP LSI-GW-FOMW14-10-01 @ 1070HPS

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-23-10

PROJECT NO.

BOOK

Work continued from Page

FWR GO TO GET CORRIDOR PASS TO SPL 13MW19 IN THE RESTRICTED AREA

1210 COLLECTED LSI-GW-13MW19-100

- PLACE TUBING INTO 6 - REMAIN WELLS

- FERC ~~COLLE~~ SPL TWO WELLS IN LSI

1530 FWR GOES TO HOTEL TO PROCESS SPL'S TO SHIP

1630 FED EX READY, CALL FOR PICK UP

FWR

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE 4-24-10

PROJECT NO.

BOOK

Work continued from Page

0700 FWR AT HAZ MAT AREA
- CALIBRATED LSI + TURB METER

- DISCUSS SPL STRATEGY W/ FERC (FOL)

+ LOAD SUPPLIES NEEDED TO SPL SIX WELLS

+ 3 WELLS PER CREW
- FWR TO SPL INSIDE RESTRICTED AREA
MW3-7RI
19MW3
13MW14

+ LO TIDE IS 1302 HRS
∴ BEGIN PURGE @ 1102
SPL B/W 1202 → 1402

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

TITLE NSB New London GW PDI

PROJECT NO. 112602630

Friday April 30, 2010

BOOK 2625

Work continued from Page

WATER levels / well survey @ Lower Bound

4.14/11:12

3.78/11:09

BLDG 175

3.58/11:05

3.09/11:22

3.03/11:28

BLDG 174

2.42/11:33

11:55	MW4 - 7RI	4.48
11:58	MW2 - 7PDI	2.63
12:00	MW3 - 7RI	2.97 New Cap
	20MW5	Filled w/ Concrete
	20MW8	Bolts stripped / Paved over

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 5-30-10

DATE

TITLE NSB New London GW PDI

PROJECT NO. 112602630

Friday April 30, 2010

BOOK 2625

Work continued from Page

	20MW3	Covered by Asphalt	
12:34	MW5 7RI	Paved over	
12:30	MW1 7RI	4.81	Needs New pad / cover
12:23	MW2 7RI	4.38	
13:08	13MW1	9.62	Broken Casting 8" OD
13:11	13MW2	8.84	
12:53	FOMW16	8.68	Damaged top sed wasl
13:05	FOMW14	8.74	
13:00	FOMW15	8.75	Stripped 9/16" Bolts
—	FOMW13	—	Abandoned
—	~~13MW2~~	—	
13:20	13MW3	8.97	
13:33	13MW18	14.05	MMPL 5.50 8.55 viscous
13:50	13MW19	4.61	
13:54	MW1-1PDI	4.58	
13:41	13MW20	6.52	
13:45	13MW21	4.80	
14:26	NBS010	5.36	3" NO CAP
14:30	MW14PDI	5.02	
14:34	13MW14	5.45	
14:48	QW1	—	Screws gone Compressor Cap broken
14:50	QW2	—	Pad Broken No Access
			Screw locker in place data

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

WITNESS

DATE 5-30-10

DATE

TITLE NSB New London GW PDT

PROJECT NO. 12602630

FRIDAY April 30, 2010

BOOK 2635

Work continued from Page

			TD	
14:50	WG 1	5.26	5.75	No pro cover / cap
14:53	BMW17	4.91		
14:55	NES011	4.88		3" SCH 80 No cap
14:58	MW2 4RT	4.44		Stripped 9/16" Bolts
15:04	QW5	—		Top Rusted on
15:10	QW4	—		Top welded Riveted on

15:30 Left site to prep GW samples for shipment to Columbia Analytical FED EX AB# 863125267042.
Samples prepared for shipping during. Added sample receiving to make them aware of incoming shipments

16:30 FED EX arrived to pick up coolers of GW Samples

17:00 Continued prep for demobilization from site

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE 5-30-2010

WITNESS

DATE

TITLE

PROJECT NO.

BOOK

Work continued from Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

DATE

WITNESS

DATE

PRE-DESIGN Groundwater Sampling AT LOWER SUBMARINE BASE 112602630

26 THURSDAY APRIL 15, 2010 PREMOBILIZATION ACTIVITIES

SUBCONTRACTORS

DRILEX ENVIRONMENTAL	508 835 6724 (P)	BRAD BROCK	bbrock@drilexenv.com
127 HARTWELL STREET	800 650 0004 (P)	JOE HAMILTON	jhamilton@drilexenv.com
WEST BOYLSTON MA 01583	508 835 6734 (F)		

NEDT	508 234 4440 (P)	MICHAEL ROBERTSON
~~NORTHWEST~~ NEW ENGLAND DISPOSAL TECHNOLOGIES	508 234 4441 (F)	LON COHEN
83 GILMORE DRIVE		
SUTTON, MA 01590		
USEPA ID# MAL300008059		

ACUMARK UTILITY LOCATING	860-559-5836 (BELL)	MICHAEL FRANCIS
	860-872-4638 (P)	

BASE CONTACTS

KEVIN BRANIFF	ENGINEERING TECH	860-694-4617
DEBRA JACOBS	" "	860-694-3453
DICK CONANT		860-694-5649 (P)
		860 625 7386 (C)

TTHUS CONTACTS

COREY RICH	Project Mngr.	412-952-2159 (cell)
		412-921-8984 (office)
FRED RAMSEY	FIELD GEOLOGIST	412-951-7460 (cell)

TITLE NSB New London GW PDI

THURSDAY APRIL 15, 2010

PROJECT NO. 11960 2630

BOOK NO. 1333

Work continued from Page

WELL #	NORTHING	EASTING
MW1-1PD1	705377.10	1180452.60
MW1-4PD1	704310.30	1180916.90
MW1-5PD1	708333.00	1180178.20
MW1-7PD1	706694.80	1180254.90

TABLE B-1
MONITORING WELL CONSTRUCTION INFORMATION
NSB-NLON
GROTON, CONNECTICUT

Field Verified During 2007 Monitoring Well Inventory											Well Log Documentation							
Zone	Well Number	Northing (NAD 83)	Easting (NAD 83)	Well Completion	Hole Dia. (in)	Casing Material	Well Outer Casing	Depth to Water (ft)	Field Depth of Well (ft RP)	Log Depth Minus Field Depth (rounded whole ft)	Log Total Depth (ft RP)	Ground Surface Elevation (NAVD 88)	Top Of Casing Elevation (NAVD 88)	Top Of Riser Elevation (NAVD 88)	Screened Aquifer	Screen Material	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)
1	FOMW14	705477.50	1180721.10	Flush-mount	2	PVC	12"	9.71	10.02	0	10	10.56		10.29	overburden(fill/alluvium)	PVC	3.20	10.20
1	13MW2	705377.10	1180452.60	Flush-mount	2	PVC	12"			0	14	5.80		5.46	overburden (fill)	PVC	4.34	14.34
1	13MW21	705485.90	1180525.60	Flush-mount	2	PVC	8" Diameter	5.60	12.60	2	15	6.64	6.64	6.31	overburden (fill)	PVC	5.00	15.00
1	13MW19	705449.90	1180513.80	Flush-mount	2	PVC	8" Diameter	4.84	14.62	0	15	5.95	5.95	5.66	overburden (fill)	PVC	5.00	15.00
1	13MW20	705513.30	1180578.40	Flush-mount	2	PVC	8" Diameter	7.47	14.60	-2	13	8.32	8.32	8.06	overburden (fill)	PVC	3.00	13.00
4	13MW13	704363.70	1181030.60	Flush-mount	2	PVC	10"	6.03	14.33	0	14	6.55		6.11	overburden (fill/dredge)	PVC	4.60	14.60
4	13MW14	704343.40	1180927.20	Flush-mount	2	PVC	8" Diameter	5.16	14.15	0	14	6.09		5.59	overburden (fill)	PVC	4.80	14.80
4	13MW15	704310.30	1180916.90	Flush-mount	2	PVC					12	5.31		4.86	overburden (fill)	PVC	2.60	12.60
4	NESO10	704284.40	1180956.40	Flush-mount	3	Other	10"	6.21	9.25	0	9	6.03		5.71	overburden (alluvium)	PVC	4.30	9.30
4	NESO11	704286.80	1181077.60	Flush-mount	2	PVC	10"	6.04	8.77	-1	8	6.50		6.39	overburden (alluvium)	PVC	3.60	8.60
5	19MW3	708438.10	1180160.40	Flush-mount	2	PVC	6" Diameter	5.19	5.22	1	6	4.79		4.50	overburden (alluvium)	PVC	2.30	6.30
5	19MW4	708333.00	1180178.20	Flush-mount	2	PVC					5	4.94		4.70	overburden (alluvium)	PVC	1.70	5.70
7	MW3-7RI	706602.50	1180250.84	Flush-mount	2	PVC	8" Diameter	3.86	8.35	0	8	4.67	4.67	4.27	overburden(fill)	PVC	3.00	8.00
7	MW4-7RI	706758.13	1180277.23	Flush-mount	2	PVC	8" Diameter	6.31	9.90	-2	8	6.03	6.03	5.67	overburden(fill)	PVC	3.00	8.00
7	20MW7	706694.80	1180254.90	Flush-mount	2	PVC					12	3.79		3.57	overburden (alluvium)	PVC	2.50	12.50

Work continued to Page

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

SIGNATURE **DATE**

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

Pre-Design Investigation Groundwater Sampling at Lower Sub base

28 Monday April 19, 2010

06:45 Arrived on site at Pass and ID.

07:15 D. Conant Environmental PM for Base arrives at Pass and ID to sign paperwork for Lower Sub Base Pass

07:40 Left Pass and ID for Dick Conant's office to pick up containers from laboratory for groundwater samples

08:10 Left office to meet with Linda Tirell, contact for waste disposal activities. Linda provided an area that we could stage equipment and supplies. L. Tirell also could provide us with a drum to start development activities

08:30 Went to engineering building for Lower Base. Met with Kevin Brahiff (Civil Engineering Tech) and Lt. Hoffman to review SOW and coordination necessary. Started RADCON survey

09:00 Went to Lower Base to look at all of the drilling and sampling locations to determine if any additional coordination will be required. Met with General Dynamics L. Brody to clear locations

11:15 Completed Lower Base survey of locations returned to Engineering met with Debra Jacobs Eng Tech regarding permits for upcoming soil PDI. Provided Debra with Northing and Easting locations for all points currently. Also advised her that the plan is preliminary and that some of the points may change based on regulatory input.

12:00 Met Engineering Manager Mashuite and began to review final dig permits. Mark also wanted to go to dig locations to verify locations for himself. Advised him that Lt Hoffman had identified an area near NR-1 for drill pad.
· Mark Shulte breaks for lunch. Went to vehicle to perform administrative activities.

13:00 Returned to Engineering Bldg. Met with Mark Shulte and Deb Jacobs to look at drilling locations.

14:30 Completed review of dig locations with Mark Shulte
Left Engineering Building with Fred Ramser to get supplies organized at equipment storage area near Linda Tirrell's office
Met with Linda and her staff (Lenny - David) regarding new hand dug, unloaded equipment in storage area.

16:00 Left storage area went back to hotel. Contacted Corey Allen to brief him on activities to this point in time.
Completed miscellaneous project paperwork

17:00 Finished work related activities for the day

4-19-2010

TITLE NSB NEW LONDON Pre Design Investigation Groundwater sampling and well installation lower sub base

PROJECT NO. 11260 2630

BOOK NO. 1333

TUESDAY April 20, 2010

Work continued from Page

06:45 LEFT HOTEL FOR NSB NEW LONDON

07:00 Arrived on SITE AT PASS and ID. CALLED M. FRANCIS of ACUMARK. CONTACTED Mike Francis of ACUMARK. MIKE WILL ARRIVE AT PASS and ID AT 07:30

FRED RAMSER ON SITE and goes to engineering bldg for RADCON TRAINING.

07:20 Completed one call for DRILLING work TICKET # 2010 100 443 UTILITIES NOTIFIED website

Comcast	Groton Dept of Utilities	METROCAST Communications	SBC
Yankee Gas	Veolia WATER	DOT	Thames Valley
Ledgard WPCA	CON Light		

07:45 MIKE FRANCIS of ACUMARK ARRIVES on Site. However he was in a vehicle inspection line at the wrong gate and would likely be delayed since he had to get out of line.

08:20 Finished getting through PASS & ID WITH MIKE FRANCIS. WENT TO SEE M. Shultz for RADCON training with MARK. GOT training with MARK. GOT Dig Permits from MARK and went to Lower base to locate MW1-4PDI

09:15 WHILE LOCATING AT MW1-4PDI KEVIN BRANIFF STOPPED by the site and was observing location of utilities. KEVIN expressed a concern that using the equipment we had that we would not be able to determine if there were deeper utilities 10'-20' range. He thought that use of a GPR may be more appropriate for location of utilities. I expressed my respect for his opinion and requested that if he felt it was necessary to contact S. Conant and Cory Rich to make modifications

09:45 LEFT LOWER BASE AREA TO GET A CORRIDOR PASS FOR MIKE Francis's vehicle. Vehicle searched, corridor pass issued

10:15 LEFT the Lower BASE AREA TO CONTINUE UTILITY LOCATION. WENT TO BLDG 175 TO LOCATE MW1-5PDI

13:00 Completed location @ Bldg 175 WENT TO BLDG 478 TO LOCATE UTILITIES FOR 7PDI

Contacted C. Rich since location from GPS was in between communication cables and Electric cables. Offset is likely

15:00 Moved to Bldg 29 - Powerhouse to locate 1PDI

16:00 Locations of utilities marked M. Shultz and K. Braniff of public works came down to lower base to approve locations

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Work continued to Page

GNATURE

DATE 4-20-2010

ISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

NSB NEW LONDON WELL INSTALLATION Groundwater Sampling PDT N2602630

30 ~~Tuesday~~ April 20, 2010 PAGE 2 of 2

17:30 K. Briniff and M. Shulte have completed inspection of drill areas and final WALK THROUGH. K. Briniff contacts base security police department to have them look at locations for traffic issue approvals.

18:00 ASSISTED FRED RAMSER WITH BREAKDOWN of WELL DEVELOPMENT EQUIPMENT AT ZONE 4 WELL LOCATION.

17:15 MIKE FRANCIS of ALL MARK LEAVES SITE FOLLOWING approval of ALL DRILLING LOCATIONS BY MARK SHULTE

4-20-2010

2010 1700 943

Kevin Briniff
x 860.694.4617
c 860.234.0265

Kevin.briniff@navy.mil

Comcast
Yankee Gas
Con Light.
NEOLIN water
METRO EAST Com
DOT SBC
Groton Dept of UTIL
Groton WPC
Ledyard WPCA
Thames Valley Com

Work continued from Page

06:20 Arrived at Pass and ID AWAITING ARRIVAL OF Drillex Drilling Crew.

07:30 Received call from Driller, Drill crew would arrive soon as per Brad Brock.

07:45 Driller call from Commercial vehicle gate and we in line to be inspects for access to lower base, however driller were to report to pass and ID First as per my communication on 4/20 with office staff.

08:30 Driller never cleared through Pass and ID since they could not find their vehicle registrations. Went off base to meet them at U-HAUL facility on Route 12.

09:00 Driller finally locate their vehicle registration. Took driller to pass and ID to get Lower base passes. Driller began paperwork

09:30 Called D. Conant to stop down to sign drillers in to the site, Dick stops down and signs necessary paperwork for driller to obtain access to the site.

10:00 Went to commercial vehicle inspection to have trucks inspected.

10:40 Completed inspection of vehicles obtained lower base consider passes. (requires direct reporting to lower base within 10 mins) Went to Building 175. Called Kevin Braniff regarding getting RADCON training for driller

11:00 Kevin Braniff is on site at Bldg 175. Driller set up their equipment at 175 in anticipation of start. Crew goes to engineering to obtain RADCON Training.

11:35 Completed training, returned to building 175 to START Drilling of MW1-SPDI AS per work plan. See boring log on Page 32

12:00 Following encountering obstruction in hole placed driller on standby with 1 Hr for lunch. So K. Braniff and I could review drawings and meet with M. Shulte regarding possible utilities.

13:10 Contacted Cory Rick regarding issue with hitting obstruction in borehole conferenced Cory Rick, K. Braniff, K. Braniff and my self on call to discuss observations and plans moving forward. Decided to apply concrete patch in bottom of borehole and then offset +/- 3' to the west

13:30 Returned to Building 175 to Resume drilling operations

Work continued to Page

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

NSB New London Well Installation Groundwater Sampling PDI 112602630

32 WEDNESDAY April 21, 2010 Book # 1333

19MW4 MW1-5PDI

11:35 0-0.25' BLACK, ASPHALT

11:40 0.25'-2.25' 12-16-9-10 1.2/1.5 Brown, medium sand, trace-little m-coarse gravel, moist

11:45 2.25'-4.25' 8-5-7-7 1.2/1.5 Brown, medium-coarse sand, trace-little gravel

12:0 4.25'-4.35' HIT concrete and sampler broke through and dropped 6". WATER was in HOLE and SURGED AT 15:00 intervals

---

14:00 BEGAN TO ABANDON INITIAL BORING FOR MW1-5PDI.

- ADVANCED CLEAN SPILL PAD TO PENETRATION IN CONCRETE.
- BACKFILLED ABOVE patch with 1' OF BENTONITE
- BACKFILLED remaining borehole with bentonite cement slurry
- TOP of borehole patched with asphalt patch.

15:06 Driller prep to begin drilling again.

15:15 RESUMED AT OFFSET DRILLING LOCATION 3' WEST OF INITIAL BOREHOLE FOR AMW4 - MW1-5PDI

15:15	0.25 - 2.25	7-9-14-12	BROWN, MEDIUM SAND, SOME F-C gravel, SM, MOIST (PID=0)	1.0/2.0
15:20	2.25 - 4.25	14-15-17-10	Brown, MEDIUM sand, Some F-C gravel, MOIST PID=41	1.3/2.0
15:30	4.25 - 6.25	3-8-11-35	Brown-Black, medium to COARSE sand, trace-little fine-coarse gravel, moist-wet PID=124	1.3/2.0

15:45 BEGAN WELL INSTALLATION AT MW1-5PDI. INSTALLED 2" Ø SCHEDULE 40 PVC WELL SCREEN (1'-6' BGS.). INSTALLED SAND PACK from 0.5'-6' BGS. INSTALLED BENTONITE BILLET SEAL from 0.25-0.50' BGS.

16:30 Following Removal of auger from hole Driller Began to saw cut pavement for installation of well cover. Driller cut Asphalt Around well with SAW, Removed Asphalt and began installation of concrete pad

17:30 Drill crew completed installation of concrete pad driller have all soil contained in drum, drum labelled for pickup by NSBF. SWEPT AREA Around borehole to clean up any sediment / soil in area and placed into drum

18:00 LEFT SITE for evening

[signature] 4-21-2010

Thursday April 22, 2010

Work continued from Page

06:40 Arrived on site at TSDF facility to begin review of plans for upcoming activities today

07:30 TSDF employees arrive. Stopped in office to talk with Clay regarding MICIC runs through corridor and pick up of IDW. Linda Tirrell TSDF Manager approved pick up of IDW by their vehicle when they completed runs through lower base

· Drillers arrive on site. Chris Hogan and Travis Hastings obtained corridor pass and proceed to lower base corridor. Upon arrival C. Hogan contacts me and tells me know thrp plug in initial borehole was unsuccessful and water was on ground surface with a sanitary odor. Had drillers get a few drums and told them we would pump

07:40 · I contacted F. Ramsey to have him bring sump pump, hose and extension cord to BLDG 175 to handle water at surface

· Contacted Kevin Braniff. Kevin requested that we re plug. He stated to use hydraulic cement for patch and he would come to site.

08:00 Kevin was on site we began to handle water and contain in drum.

· Spoke with Kevin about water and issue. Water had a sanitary odor. We would contain water in drums using sump pump / hose until we could confirm whether to hold or discharge to sanitary sewer. Kevin still requested that I leave site to get hydraulic cement. Left site for Home Depot.

08:00 While en route to Home Depot. Kevin called via cell phone and stated that he had contacted office and we were handling issue as a spill.

08:40 Got the supplies from Home Depot and returned to site.

10:00 Arrived back on site. Met with K. Braniff. K. Braniff stated while I was off base, sanitary lift station operator stopped by site and showed him a drawing with a 6" sanitary forced main in the vicinity of the bung.

10:20 Operator (Clarence) left site to shut down lift station just north of our drilling location to stop any discharge from the hole.

· Kevin Braniff stated he would have to be fixed to get impacted pieces back in sewers.

· Began making calls to office to get a hold of Cory Rich to brief him of ongoing situation at the site.

11:00 · Got in contact with C. Rich and conferenced him in on call with K. Braniff. K. Braniff asked about our capabilities to implement a spcm. C. Rich stated that we not contracted for emergency response. K. Braniff was to explore

Work continued to Page

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

USB New London Groundwater PDI — Project No 112602636
Thursday April 22, 2010 — Book # 1333

other officers. Cory requested that I support in any way possible. Rich Mousad (Base Environmental) was on site to evaluate spill response issue. Rich was pleased with efforts to contain any sanitary water on ground. Rich requested that TTNUS place lime or a bleach solution on areas of spill to mitigate any potential bacterial issues

11:20 Contacted E. Ramsey to have him procure a chem sprayer and several gallons of bleach.

11:45 Pettini contracting arrives on site. (Public Works contractor) to assess situation and make plans for repair of sanitary line

12:10 E. Ramsey returns to site with supplies. Mixed a 15-20% bleach solution in sprayer and began to apply solution over areas impacted by sanitary water spill. Completed three applications of bleach solution to impacted areas.

13:00 M. Shultz of Engineering on site to survey situation. Mark had remarked that TTNUS not responsible since he gave clearance and identified location to drill after extensive review of engineering drawings on file.

14:00 Pettini contractors begin to saw cut concrete around 1st MW-5 PDI location to begin excavation

14:30 Pettini contractors stage plastic adjacent to borehole and begin to excavate to broken sanitary line.

15:45 Line exposed. 6" open sanitary line with sand/gravel backfill saw cuttings in backfill material. Crews measure line for splice

16:30 Pettini crew members arrive with pipe to repair and couplings for line. Crew cuts damaged portion of sanitary line. Office work in process. Pettini crew member use sump pump to handle sanitary water direct to sewer line via a portable filter bag.

17:10 Splice in place on line K. Bamff contacts chemicals (sanitary left operator) to charge/pressurize line prior to backfilling. Mark Shutz and D. Jacobs on site from Public Works. Again mark reiterated that TTNUS not at fault. D. Jacobs stated that sanitary sewer line should have been 18' to the west of the location the line was encountered.

17:40 Pettini begins to backfill line. Following backfilling of line I one hour began to spray down area with bleach solution x2. Rinsed all hose lines, equipment with bleach solution

18:00 Hole for sanitary line excavation was backfilled. Sprayed area once again with bleach solution

18:30 Left site for the evening

D. Ray — Thursday April 22, 2010

FRIDAY APRIL 23, 2010

Work continued from Page

06:30 Arrived on site went through commercial vehicle inspection to get a corridor pass. Following obtaining commercial pass/corridor pass. went to BLDG 175 to load empty drums to move to staging area.

06:40 Arrived at Bldg 175 and loaded out drums. Two drums onsite 175-1 and 175-2

06:50 Staged drums in LAYDOWN AREA AT TSDF. FRED Ramsen at TSDF area prepping equipment for the day.

07:00 MET WITH TSDF Employees (DAVE and LEAH) Coordinated with them regarding pickup of drums

07:30 F. Ramsen and I BEGIN TO get equipment calibrated for upcoming sampling activities. See Calibration Log sheets for details

08:00 K. Barnoff of Public works contacts me via phone to establish timeline of upcoming work events / post utility issue. He also has copies of all dig permits for me for upcoming drilling and planned GPR work.

08:30 WENT TO PUBLIC WORKS TO GET COPY OF PERMITS. S. Conant Bob Jacobs and M. Shulte were in hallway discussing utility (forced sanitary issue) locations in lower base and upcoming soil PDI permit requirements. M. Shulte and S. Conant were discussing prioritization of dig locations in the sense the level of scrutiny required (STANDard Locate, GPR Services required). M. Shulte again reiterated that drawings are in error with respect to forced sanitary location. Design drawing had forced sanitary line 18' west of location cleared for drilling. Also remarked locator could not identify this line due to composition. Briefed Dick Conant of activities moving forward until GPR contractor arrives on site

09:30 WENT TO commercial vehicle inspection to get corridor pass TO GO TO Lower base for groundwater sampling. Fred Ramsen had all wells prepped to sample (tubing installation) So we can START purging 2 hrs before mid-Low tide cycle. BEGAN SETTING UP TO Purge and sample at 13MW20, SEE Groundwater sample purge and log sheet for details.

11:10 Collected groundwater sample at 13MW20. Broke down equipment and began to move equipment to 13MW21

11:45 BEGAN purging groundwater at 13MW21 See groundwater sample purge and log sheet for details pertaining to ground water quality

12:15 Completed purging, collected groundwater sample from 13MW21. Following completion of sample aquisition, F. Ramsen and I went to remaining

Work continued to Page

SIGNATURE [signature] DATE 4/23/2010

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

NSB NEW LONDON. GROUNDWATER PDI 112602630

36 FRIDAY April 23, 2010 Book #: 1333

WELLS TO INSTALL TUBING IN PREPARATION FOR Groundwater Sampling ON 4-23-2010.

13:00 . COMPLETED Array for GW sampling. K. Braniff called regarding work permit for LOWER BASE sampling for SATURDAY. K.B. WOULD prepare for pickup this afternoon. Vehicle Permit Blew out of window on way WENT to SECURITY to deal with obtaining new permit.

14:00 WENT TO ISAF TO COORDINATE WITH PERSONNEL there regarding PICK up of GW IDW from purging and sampling today in VICINITY of fire STATION and power generation building. DAVE WAS ON HIS WAY TO IRAN AREA And would pick up the drum since he had to get another in that AREA. DAVE LEFT FOR PICKUP.

14:30 WENT TO ENGINEERING office MET WITH K.B. K.B prepared permit ERIC Richter CPR OPERATOR called. Discussed requirements for his arrival on base. provided him details of where to go ① PASS / ID (Registration, proof of INS, 2 FORMS ID) ② commercial vehicle inspection (consider pass)

15:45 K.B. finalizes lower BASE work Permit. Called Tony Rich to brief him of site activities completed

16:00 Fred Ramsey LEAVES SITE TO SHIP GROUNDWATER samples to LABORATORY. SHIPMENT WILL BE FOR SATURDAY DELIVERY

16:30 LEFT SITE FOR THE DAY

4-23-2010

TITLE NSB New London Groundwater PDT

PROJECT NO. 112602636

BOOK NO. 1333

SATURDAY April 24, 2010

Work continued from Page

06:30 Arrived AT SITE. OBTAINED Vehicle PASS and corridor pass.

06:45 WENT TO TSDF FACILITY TO BEGIN preparing equipment for gw sampling today.

07:00 Applied charges to batteries for peristaltic pump. BEGAN CALIBRATION of YSI WATER Quality meter and Myron L. SEE CALIBRATION LOG SHEETS FOR DETAILS.

08:00 Following calibration discussed H&S DETAILS for day. Discussed SOW, Reviewed paperwork and pre-designated sampling locations.

08:30 Gud Ramser leaves to get corridor pass for his vehicle prior to sampling.

09:30 WENT TO commercial inspection area to get vehicle inspected

10:10 Have corridor pass went to lower base to begin gw sampling

10:45 AT MW4-TRI BEGAN purging @ 11:02 See GW sample data sheet for gw quality parameter data.

12:02 Collected GW sample from MW4 TRI. Placed samples in coolers with Ice.

12:15 Moved equipment to MES011 to begin purging at well prior to sampling. See gw quality parameter on field data sheet. START purge @ 12:25

12:53 Completed purging @ MES011. Collected GW sample from this location.

13:05 Moved equipment to MES010 to begin purging and GW

Work continued to Page

SIGNATURE

DATE 4-24-2010

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

NSB New London GW PDI 12602630

38 Saturday April 24, 2010 1333

sampling. See gw sample log sheet for well data

14:00 Collected GW sample from MW3010. Placed GW sample in cooler with ICE. Secured IDW Containers / labelled.

15:00 Finished sampling ultrasonic to TSDF Break down equipment and plant equipment on storage bldg. Discussed plans moving forward with K. Ramsey. Ended Ramsey to Derek following today's efforts. I would complete sampling of MW15PDI on monday. TAKE tomorrow off.

16:00 LEFT SITE for Rmy.

Monday April 26, 2010

Work continued from Page

06:30 Forwarded Incident Report from sanitary line incident to ~~M. Scotti~~ Corey Rich

06:45 Arrived on site at Pass and ID. Had vehicle pass re-issued.

07:00 WENT TO TSDF AREA TO MEET with Linda ~~Forward~~ Dave Carter Let them know that we had one down at lower base and we would be adding additional water to it today.

07:30 WENT TO D. Conants office to meet with him for an update of todays planned activity and future activities.

- GW Sampling MW1-5PDI
- Shipping samples.
- GPR Contractor to arrive onsite tomorrow
- Inspect power plant area for access and sampling.
- Re-clearing of utilities for well installation. (WED)
- Well Development (THURSDAY)
- GW Sampling Friday.

07:40 Conference call with Corey Rich to review the above activities.

08:00 LEFT D. Conants office. Low tide forecast for today AT 2:34 PM purging able to begin 2 hrs before (12:34), sampling permitted within 1 hr (1:34).

WENT TO MEET WITH K. Bramff (Public works contact). Obtained memorandum of traffic/Parking disruptions for lower base

09:00 WENT TO PEACE FCE on groundwater samples. Contacted office regarding other project obligations

10:00 Returned to pass & ID TO have Pass extended through 5-1-10

10:20 went through commercial vehicle inspection to get consider pass

10:40 Stopped by BSDF to get Bottle wave

11:06 AT MW-1 5PDI TO BEGIN purging and sampling. K. Bramff onsite. Asked if I could move sandbags to Area H. No problem after sampling will move Began calibration of YSI 556 MPS

pH initial 7.04 recalibrated to 7.00
cond " 2.542 mS/cm 1.409 mS/cm
turbidity INITIAL 20.00 NTU No adjustment

Work continued to Page

SIGNATURE DATE

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

NSB New London Groundwater PDI Project No. 112602630

40 Monday April 26, 2010 Book No 1333

11:40 Began purging at MW-5PDI
Static 3.31' BTPVC No Product
Total Depth 6.0'

Time	Temp	Cond	Sal	DO	pH	Turbidity	DTW
1440 Initial 12:40	14.54	3.169 mS/cm	2.12	2.48	6.18	7.0	3.31
12:00	14.99	3.243 mS/cm	2.14	0.58	6.26	4.8	3.32
12:10	15.11	3.162	2.07	0.35	6.31	4.2	3.32
12:20	15.12	3.140	2.05	0.25	6.33	4.1	3.32
12:30	15.11	3.119	2.04	0.25	6.35	4.0	3.32
12:40	15.61	3.110	2.04	0.20	6.37	3.8	3.32
12:50	14.98	3.101	2.04	0.17	6.37	3.8	3.32
13:00	15.01	3.109	2.04	0.17	6.37	3.8	3.33

13:00 Collected groundwater sample MW1-5PDI. Following all sample collection began to break down equipment.

13:45 Moved purge water to drum located at Building 89

14:15 Went to FSDF and met with Dave Larter to let him know the drum at Building 89 was ready for pick-up. Began to pack up some of the sampling equipment at the site for shipment back to Field Environmental Equipment

15:30 Re-filed ground water samples and began to repackage samples for shipment to: Columbia Analytical Services
1317 South 13th Avenue
Kelso, Washington 98626
360-577 7222
Attn Pradeep Dinvela AB# 8631 2526 2010

16:00 Called Pradeep Dinvela to let him know samples would arrive tomorrow

16:30 Packaged 1 peristaltic pump, 1 YSI and 1 Lamotte turbidity meter for shipment to Field Environmental
301 Brighton Ave
Pittsburgh PA 15221
1-800-373 4009 AB# 8631 2526 2020

16:30 Federal Express picked up equipment at Hotel @ 16:30

RS
4-26-2010

TITLE NSB New London Groundwater PDF **PROJECT NO.** 112602630 **41**

BOOK NO. 1333

Tuesday April 27, 2010

Work continued from Page

07:00 Arrived at Pass and Identification. Waiting for manual of Eric Richter, subcontractor for geophysics (GPR) to be performed at locations in the lower base

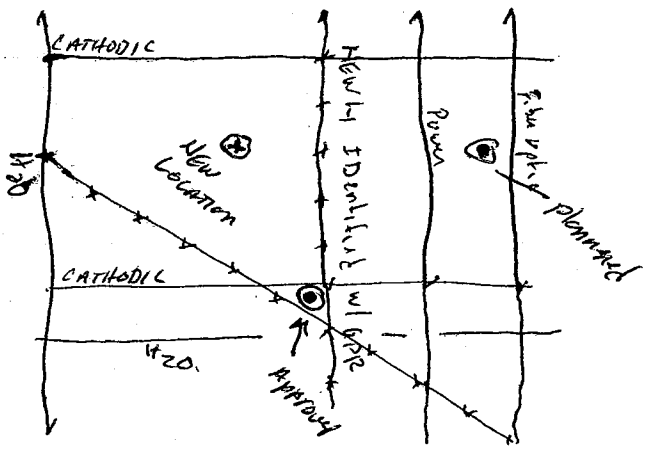
07:15 Called Corey Rich in Pittsburgh Office, not in yet.

08:00 Eric Rickert of Hagen Richert is on site at Pass and ID. Took him into get i-war base access

08:45 Completed pass and ID state of process left for commercial vehicle inspection

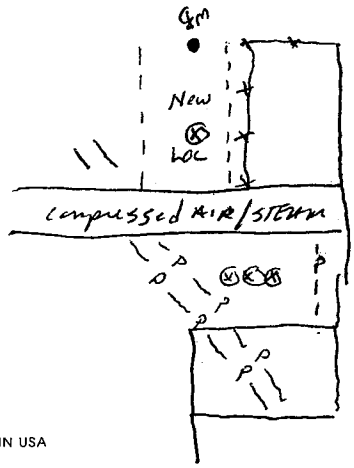
09:15 Got through commercial vehicle inspection and went to Lower base called K. Brauff to let him know we would be performing GPR work

09:30 Went to Bldg 478 Drill location MW1-7DDI



ANOMALY IDENTIFIED by GPR

11:30 Completed scan of MW1-7DDI, loaded truck with equipment and went to Power Plant building



New Anomaly Found by GPR

Work continued to Page

SIGNATURE [signature] **DATE** 4.27.2010

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

HSB New London CW PDF 112602630

42 TUESDAY April 27, 2010 BLDG 1333

13:45 WENT TO MWI-4PDI TO PERFORM GPR SURVEY in THIS AREA

15:00 Completed survey of the area some minor anomalies were identified and marked.

15:30 WENT TO POWER PLANT BLDG WITH ERIC / KEVIN to view proposed / tentative drilling locations, to give Eric Rater an idea of up coming work in the area.

16:00 ERIC RICHTER completed survey activities at site.

MET WITH K. Brooff regarding restart of work tomorrow am.

17:00 LEFT SITE for day

TITLE NSB New London CT GW PDT

WEDNESDAY April 28, 2010

PROJECT NO. 112602630

BOOK NO. 1333

Work continued from Page

06:15 Arrived on site went to TSDF facility to get drums

06:30 Left site. Exited and re-entered at commercial vehicle inspection facility

06:50 Through vehicle inspection obtained corridor pass. Drillers at site and go through inspection

07:00 Arrived at lower base went to bldg 478 MW1-7PDI Drillers through inspection and come to lower base
- Had tailgate H&S safety briefing. discussed traffic issues, visibility, utilities. Discussed SOW for day
- K. Brandt calls and lets us know that he would be to area soon

07:30 Drillers set up drill on MW1-7PDI See Boring log for lithologic details.

07:37 Finished well installation at MW1-7PDI TSDF picked up drum # from 478-1 drilling location drillers begin to complete installation of concrete pad.

- Called Lon Coleman of NEDT to coordinate sampling of IDW at site.
- K. Brandt returns to office to get jacket.
- Called C. Rich to brief him on progress.

10:35 Moved Equipment To power generator building. K. Brandt on site.

10:45 Drill Rig set up on hole, crew begins to saw cut concrete for MW1-1PDI

12:30 Drillers complete well installation at MW1-1PDI. Well screen set from 4'-14' B.G.S. Sandpack #1 Silica set from 3'-14' BGS Bentonite pellet seal set from 1'-3' BGS.

13:30 Drillers begin to set concrete protective cover for MW1-1PDI. Called C. Rich to speak with him regarding findings.

14:00 Completed Pad at MW1-1PDI TSDF arrives and picks up drum of IDW. Walked to building 79 to look over next drilling

Work continued to Page

SIGNATURE **DATE**

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

NSB New London Groundwater PDI Project No 112602630

44 Wednesday April 28, 2010 Book No 1333

Location with Chris Hagan of Driller. Upon return went to Power House to look at proposed drilling locations in pit and near gas turbine.

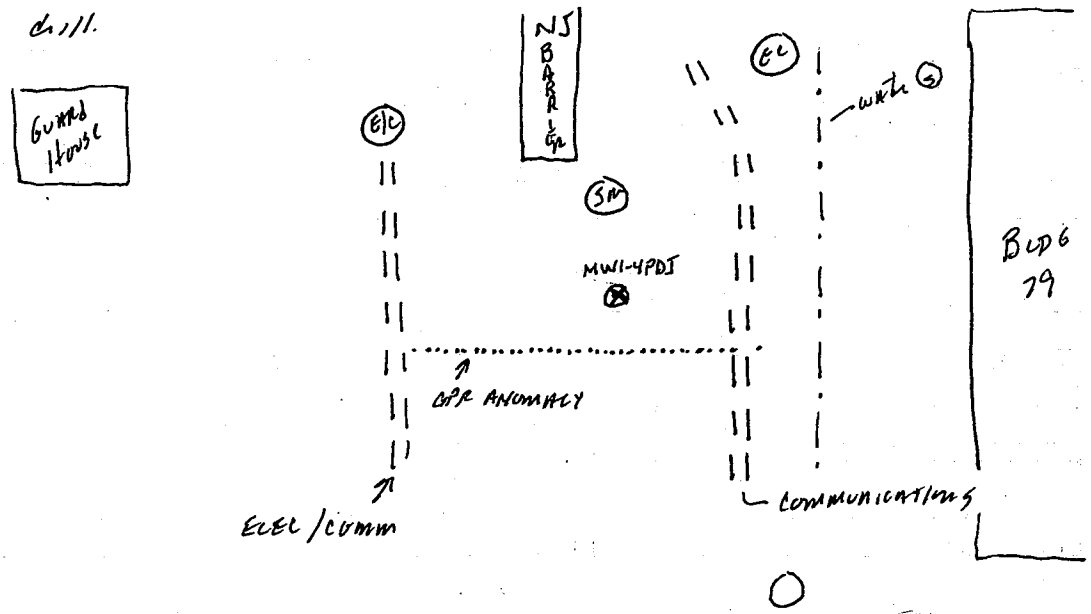
14:45 Called C. Rich to discuss potential issues with pit.

1. Below water table
2. Hole collapse
3. Water discharging into pit.
4. Sealing hole issues. hydraulic cement, salinity etc.

Also looked at access around turbine concrete 1-2' thick, supported by new pilings.

15:00 Chris Hagan returns to NRI area when decon is taking place for augur.

15:30 Went to MW1-4PDI location prior to mobilizing equipment to drill.



16:00 Mobilized all equipment to MW1-4PDI to begin drilling new monitoring well

18:06 Begin installing screen and risers pipe @ MW1-4PDI

18:40 Completed installation of MW1-4PDI See well construction Diagram for details.

· Following well construction drillers drillers install concrete pad and clean up around borehole.

19:30 · Left site for day

4-28-2010

Thursday April 29, 2010

Work continued from Page

08:00 Arrived on site at Engineering building met with K. Braniff.
08:30 Went to meet with D. Lenant to discuss sampling during early tide sampling tomorrow @ 5:42 AM
09:15 Went to ISDF to meet with Linda Tirel regarding IDW pickup on lower base
09:30 Met drillers at Bldg 79 with K. Braniff for demobilization All equipment clean and in order, drum water contained in drum
10:00 Went to pick up barrel for development
10:15 Went through commercial vehicle inspection at frontgate obtained lower base pass.
10:25 Arrived @ lower base and went to bldg 478 to begin well development.

STATIC = 2.45 TD = 13.0 LNAPL - None

11:10	Temp	Cond	SAL	DO	pH	Turb	
I	12.96	0.270	0.17	6.81	6.87	>1000	Surged prior to pumping petr.
11:15	13.13	0.288	0.18	3.84	7.08	37	odor
11:20	13.03	0.312	0.20	3.55	7.19	4.9	25 gals
11:25	13.19	0.318	0.20	2.99	7.25	4.8	submersible pump for development.
11:30	13.11	0.319	0.20	2.84	7.27	3.8	

Completed development of MW1-7 PDI
Post Development water level @ 2.51' BTPVC

11:45 Mobilized to MW1-1 PDI to begin development

STATIC WATER LEVEL = 4.38' TD = 14' BTPVC

INITIAL	Temp	Cond	SAL	DO	pH	TURB	
11:55	17.26	4.589	2.89	10.98	7.86	>1000	Probe in gen.
12:00	17.38	4.752	3.06	1.98	8.22	700	Only odor
12:05	17.19	4.677	2.99	1.24	8.38	110	

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE DATE 4-29-2010

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NSB New London Groundwater PDI — Project No 112602630

46 Thursday April 29, 2010 — Book No 1333

	TEMP	COND	SAL	DO	pH	TURB	
12:10	17.41	4.709	2.99	1.66	8.48	100	
12:15	17.41	4.710	2.98	1.65	8.49	100	NEW DRUM
12:30	17.31	4.639	2.95	1.64	8.53	140	
12:40	17.15	4.674	2.99	1.66	8.55	90	
12:50	17.26	4.668	2.98	0.89	8.57	80	
13:00	17.20	4.655	2.97	1.15	8.53	45	

Finished purging pumped 80 gallons of H_2O. Labeled drums of development water PB-2 and PB-3. Secured lids

13:45 Drove to TSDF with two 55 gallon drums of Development water from staging

14:00 At TSDF, awaiting arrival of Dave Carter to offload water drums.

15:00 Completed off loading of drum of development water from Lower Base. Returned to Lower base to continue development @ MW1-4PDI

Static I @ 6.26' BTPVC see data below for gw quality data from development.

	TEMP	COND	SAL	DO	pH	TURB	
16:36							
16:40	12.80	16.60	13.05	9.84	6.70	500	
16:50	12.66	16.34	12.64	6.91	6.70	4.7	25 Gallons
17:00	12.66	16.65	12.60	6.78	6.73	3.8	

- Development complete @ MW1-4PDI Generated +/- 30 gals of H_2O from surging and pumping.

17:40 - Secured and labelled drum for pick up by TSDF.
- Decomned equipment stored outside.

18:30 LEFT SITE

4-29-2010

TITLE NSB New London GW PDI
Friday April 30, 2010

PROJECT NO. 112602630
BOOK NO. 1333

Work continued from Page

03:30 AM. Arrived on site @ NSB New London, Guards did not issue lower base pass on entrance vehicle search and directed me directly to lower base

03:35 · Contacted YSI and Lamotte meters prior to purging.

03:44 Began purging @ MW1-1PDI. See GW Sample log sheets for details pertaining to gw quality parameters.

04:55 Collected sample from MW1-1PDI. Placed sample in cooler w/ice.

05:10 Moved to MW1-4PDI to begin purging and sampling. See groundwater sample data sheet for details. START Purge @ 05:15 AM.

05:50 Collected gw sample from MW1-4PDI

06:00 Moved to MW1-7PDI to begin purging and sampling. See gw quality data sheet for details

06:45 Completed purging sampled MW1-7PDI. Sorted drum samples placed in cooler.

· Sorted all drum of purge water for pick up by TSDF

07:00 IDW Contractor at P.S. TO. Began filling out paperwork

07:30 WENT TO TSDF TO meet Dr. Cantor to let him know about IDW down from sampling this am

· K. Bruff @ PASS & ID to sign in contractor for IDW characterization

08:30 Began to pack equipment in storage area.

WENT TO Brief K. Bruff regarding completion of sampling and removal of IDW.

· IDW Contractor @ TSDF to characterize waste see P. 48 for inv.

10:00 Begin loading truck with equipment

10:45 Went to perform round of ⊥ levels at well mps. See book 2625 for details.

Work continued to Page

SIGNATURE RT DATE 4-30-2010

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

48

NSB New London GW PDI
FRIDAY April 30, 2010

112662630
1333

Drum #	CONTENTS
79-2	SOIL/MUD
79-3	DEVELOPMENT PURGE WATER
1126	DEVELOPMENT WATER
2	DEVELOPMENT WATER
3	DEVELOPMENT WATER
PB 2	DEVELOPMENT / PURGE WATER
PB 3	DEVELOPMENT / PURGE WATER
79-1	SOIL
478-1	~~AGITATOR~~ SOIL
PGB-1	SOIL
1-175	SOIL
2-175	SOIL

HEPT CONTRACTOR OFF SITE +/- 12:30 following collection of composite soil / WASTE WATER FDW samples. ALL CONTAINERS IN WASTE LOCKER SECURED IN FENCED IN TSDF AREA.
TWO REMAINING empty CONTAINERS STAGED IN AREA designated by D. CARTER FOR RE-USE during soil PDI

4-30-2010

APPENDIX B.1.7

GROUNDWATER PURGE AND SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS4-GW-13MW13-10-01
Sample Location: 13MW13
Sampled By: FWR
C.O.C. No.: 028262
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-22-10	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Sal %
Time: 1042								
Method: Low Flow	CRL	6.83	0.621	16.02	4	0.22	—	0.37

PURGE DATA:

Date: 4-22-10	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump								
Monitor Reading (ppm): NA								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 14.3								
Static Water Level (WL): 4.88								
One Casing Volume(gal/L):								
Start Purge (hrs): 1010								
End Purge (hrs): 1042								
Total Purge Time (min): 32								
Total Vol. Purged (gal/L): 6.6 l								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

LO TIDE PREDICTION ~ 1105 + 10 min = 1115

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
NO	NO	Fred W Rause

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: 13MW13
DATE: 4-22-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1019	4.82	200	7.34	0.591	15	6.10	16.24	0.36	
1024	4.82	200	6.90	0.610	8	0.37	16.06	0.37	
1029	4.82	200	6.86	0.615	7	0.28	15.97	0.37	
1034	4.82	200	6.85	0.618	6	0.25	16.01	0.37	
1038	4.82	200	6.84	0.620	4	0.23	16.05	0.37	
1042	4.82	200	6.83	0.621	4	0.22	16.02	0.37	BEGIN TO FILL CONTAINERS
									FINISH FILLING @ 1052

SIGNATURE(S): Greg W Ramsey

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS1-GW-FOMW14-10-01
Sample Location: FOMW14
Sampled By: FWR
C.O.C. No.: 028262
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Sal %
Date: 4-23-10								
Time: 1039								
Method: Low Flow	CLR	6.75	2.173	12.36	1	0.34	—	1.50

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Date: 4-23-10								
Method: Peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 9.95								
Static Water Level (WL): 8.65								
One Casing Volume(gal/L): ~~1.95~~ (0.7 l)								
Start Purge (hrs): 1009								
End Purge (hrs): 1039								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 6 l								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

LO TIDE PREDICTED TO BE ~~1209~~ 1159 + 10 min = 1209
∴ BEGIN PURGE @ 1009

9.95
- 8.65
1.30 ⇒ PLACE INTAKE @ ~.65' OFF BTM

Circle if Applicable:

MS/MSD	Duplicate ID No.: LS1-GW-FOMW14-10-01-D 1040 HRS

Signature(s): Fred W Ramser

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: FOMW14
DATE: 4-23-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1011	8.65	200	6.83	2.660	8.4	1.70	12.74	1.83	
1017	8.65	200	6.78	2.410	3	0.46	12.50	1.68	
1024	8.65	200	6.76	2.240	1	0.40	12.51	1.54	
1029	8.65	200	6.76	2.203	1	0.36	12.42	1.51	DO=0.36
1034	8.65	200	6.75	2.173	1	0.36	12.40	1.50	
1039	8.65	200	6.75	2.173	1	0.34	12.36	1.50	COMPLETED
									PURGE BEGIN
									TO FILL
									CONT.
									1058 HR
									COMPLETE
									FILLING

SIGNATURE(S): Fred W Ramser

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS1-GW-13MW19-10-01
Sample Location: 13MW19
Sampled By: FWR
C.O.C. No.: 028262
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-23-10	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1210	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	%
Method: Low Flow	CLR	8.11	2.097	21.01	2	0.95	—	1.19

PURGE DATA:

Date: 4-23-10	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD):								
Static Water Level (WL): 4.10								
One Casing Volume(gal/L):								
Start Purge (hrs): 1140								
End Purge (hrs): 1210								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 7 l								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

LO TIDE PREDICTED TO BE 1159 + 10 MIN = 1209

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	NO

Signature(s): Fred W Ramsey

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: 13MW19
DATE: 4-23-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1145	4.20	200	8.27	2.987	11	0.81	20.31	1.73	
1150	4.20	200	8.36	2.651	9	0.80	20.56	1.51	(1150 HRS)
1155	4.21	200	8.34	2.572	6	0.82	20.74	1.46	
1200	4.23	200	8.24	2.372	4	0.78	20.84	1.33	
1205	4.24	200	8.14	2.145	2	0.83	20.90	1.20	
1210	4.24	200	8.11	2.097	2	0.95	21.01	1.19	COMPLETED PURGE. BEGIN TO FILL CONT. FINNISH FILLING CONT @ 1229

SIGNATURE(S): Fred M Ramer

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS1-GW-13MW20-10-01
Sample Location: 13MW20
Sampled By:
C.O.C. No.: 029263
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-23-2010	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Sal %
Time: 10:15								
Method: Low Flow	clear	7.19	0.997	16.95	4.90	0.71	—	0.59

PURGE DATA:

Date: 4-23-2010	Volume	pH	µS/cm S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump	INITIAL	7.07	0.842	15.22	23	4.10	0.51	
Monitor Reading (ppm): 0	10:25	7.07	0.846	16.07	17	1.66	0.50	
Well Casing Diameter & Material	10:30	7.08	0.852	16.01	15	1.45	0.51	
Type: 2-inch PVC	10:40	7.06	0.887	16.16	13	1.29	0.53	
Total Well Depth (TD): 14.56	10:45	7.12	0.926	16.50	4.1	1.10	0.55	
Static Water Level (WL): 6.50	11:00	7.18	0.986	16.99	5.0	0.77	0.58	
One Casing Volume(gal/L):	11:05	7.18	0.991	16.94	4.8	0.76	0.59	
Start Purge (hrs): 10:15	11:10	7.19	0.997	16.95	4.9	0.71	0.59	
End Purge (hrs): 11:10								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): +/- 3gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS1-GW-13MW21-10-01
Sample Location: 13MW21
Sampled By: J. Ferguson
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-23-2010	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 12:15	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	clear	8.78	1.077	14.42	4.30	0.63	—	0.63

PURGE DATA:

Date:	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump	Initial	8.76	1.094	14.96	4.8	1.56	0.68	
Monitor Reading (ppm): 0 ppm	11:55	8.77	1.085	14.71	4.81	0.84	0.68	
Well Casing Diameter & Material	12:00	8.76	1.082	14.54	4.9	0.65	0.68	
Type: 2-inch PVC	12:05	8.76	1.079	14.40	4.60	0.61	0.61	
Total Well Depth (TD): 12.52	12:10	8.78	1.076	14.41	4.80	0.63	0.63	
Static Water Level (WL): 4.69	12:15	8.78	1.077	14.42	4.30	0.63	0.63	
One Casing Volume(gal/L):								
Start Purge (hrs): 11:45								
End Purge (hrs): 12:15								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): +/- 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS4-GW-13MW14-10-01
Sample Location: 13MW14
Sampled By: RWR
C.O.C. No.: 27325
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	ORP mV	Sal %
Date: 4-24-10								
Time: 1350								
Method: Low Flow	CLR	6.63	12.36	20.45	1	0.95	—	7.81

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Date: 4-24-10								
Method: Peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD):								
Static Water Level (WL): 6.79								
One Casing Volume(gal/L):								
Start Purge (hrs): 1320								
End Purge (hrs): 1350								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 16 l								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

BEGIN TO FILL CONT. @ 1350
FINISH FILLING @ 1400

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	NO

Signature(s): Fred W Ramser

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: 13MW14
DATE: 4-24-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1325	6.80	200	6.56	12.65	3	1.30	20.23	8.06	
1330	6.80	200	6.62	12.62	2	0.93	20.42	8.02	
1335	6.80	200	6.63	12.56	2	0.90	20.37	7.98	
1340	6.80	200	6.63	12.49	2	0.96	20.40	7.92	
1345	6.79	200	6.63	12.39	2	0.92	20.41	7.89	
1350	6.79	200	6.63	12.36	1	0.95	20.45	7.81	COMPLETED PURGE BEGIN TO FILL CONT.

SIGNATURE(S): Fred W Ramer

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS4-GW-NESO10-10-01
Sample Location: NESO10
Sampled By: J Ferguson
C.O.C. No.: 27325
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-24-10	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 14:00	Visual	Standard	mS/cm	^{0}C	NTU	mg/l	mV	%
Method: Low Flow	Clear	6.94	4.330	14.20	9.4	1.10	—	3.30

PURGE DATA:

Date: 4-24-10	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 9.30								
Static Water Level (WL): 6.26'								
One Casing Volume(gal/L): 0.48								
Start Purge (hrs): 13:15								
End Purge (hrs): 1400								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): +/- 2L								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter (dissolved)

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
NO	NO	[illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: L34-GW-NES010-10-01
DATE: 4-24-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
13:15	6.26	180	6.81	3.776	30	2.94	16.73	2.44	
13:20	6.26	180	6.88	3.834	27	0.74	16.06	2.51	
13:25	6.27	180	6.90	4.031	22	0.94	15.93	2.64	
13:30	6.27	180	6.94	4.101	15	0.99	16.33	2.84	
13:35	6.24	180	6.93	4.145	12	0.98	16.81	2.90	
13:40	6.24	180	6.94	4.210	10	1.01	16.89	3.10	
13:45	6.25	180	6.93	4.313	12	1.03	17.09	3.21	
13:50	6.26	180	6.95	4.324	10	1.04	17.10	3.24	
13:55	6.26	180	6.93	4.314	9.8	1.09	17.14	3.28	
14:00	6.26	180	6.94	4.330	9.4	1.10	14.70	3.30	

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS4-GW-NESO11-10-01
Sample Location: NESO11
Sampled By: J. Ferguson
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-24-2010	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 12:55	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	Clear	6.63	4.452	17.46	3.5	1.40	—	1.56

PURGE DATA:

Date: 4-24-10 12:25	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 8.78								
Static Water Level (WL): 5.03								
One Casing Volume (gal/L): 0.6								
Start Purge (hrs): 12:25								
End Purge (hrs): 1255								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 1.4 l								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter (dissolved)

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: 254-GW-NES011-10-01
DATE: 4-24-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
12:25	5.03	200	6.94	2.177	2.3	5.54	17.48	1.29	cellm sm
12:30	5.04	200	6.75	2.220	5.4	3.01	17.44	1.36	
12:35	5.04	200	6.71	2.336	4.8	1.43	17.46	1.44	
12:40	5.05	200	6.69	2.381	3.6	1.40	17.52	1.50	
12:45	5.04	200	6.65	2.401	3.6	1.41	17.46	1.54	
12:50	5.05	200	6.64	2.441	3.4	1.41	17.44	1.55	
12:55	5.06	200	6.63	2.452	3.5	1.40	17.46	1.56	

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS5-GW-19MW3-10-01
Sample Location: 19MW3
Sampled By: FUR
C.O.C. No.: 27325
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	ORP mV	Sal %
Date: 4-24-10								
Time: 1250								
Method: Low Flow	CLR	6.21	0.604	14.48	2	0.36	—	0.37

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Date: 4-24-10								
Method: Peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 5.1								
Static Water Level (WL): 3.65								
One Casing Volume(gal/L): ~1.2 l								
Start Purge (hrs): 1210								
End Purge (hrs): 1250								
Total Purge Time (min): 40								
Total Vol. Purged (gal/l): 48 l								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

BEGIN FILLING @ 1250
FINISH " @ 1305

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
No	NO	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: 19MW3
DATE: 4-24-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1215	3.78	200	6.26	0.602	18	0.97	14.72	0.37	
1220	3.79	200	6.12	0.597	8	0.55	14.33	0.37	
1225	3.79	200	6.14	0.601	6	0.46	14.46	0.37	
1230	3.81	200	6.16	0.603	3	0.44	14.50	0.37	
1235	3.83	200	6.19	0.604	3	0.37	14.47	0.37	
1240	3.83	200	6.20	0.604	2	0.33	14.44	0.37	
1245	3.84	200	6.20	0.605	2	0.34	14.42	0.37	
1250	3.85	200	6.21	0.604	2	0.36	14.48	0.37	COMPLETED
									PURGE BEGIN TO
									FILL CONT.

SIGNATURE(S): Fred W Paine

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS7-GW-MW3-7RI-10-01
Sample Location: MW3-7RI
Sampled By: FUR
C.O.C. No.: 27325
Type of Sample:
[X] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-24-10	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 1130	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	CLR	6.94	1.586	14.79	2	1.25	—	1.01

PURGE DATA:

Date: 4-24-10	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 8.20								
Static Water Level (WL): 2.98								
One Casing Volume (gal/L): 0.8								
Start Purge (hrs): 1102								
End Purge (hrs): 1130								
Total Purge Time (min): 28								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

LOW FLOW ⇒ 1302HRS

BEGIN FILLING @ 1130
FINISHED FILLING @ 1155

Circle if Applicable:

MS/MSD	Duplicate ID No.:
NO	LS7-GW-MW3-7RI-10-01-D (1130 HR)

Signature(s): [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: MW3-7R1
DATE: 4-24-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
1105	3.02	200	6.96	1.608	3	0.97	14.93	1.01	
1110	3.02	200	6.93	1.584	2	0.79	14.76	1.01	
1115	3.03	200	6.94	1.581	2	1.39	14.66	1.01	
1120	3.04	200	6.95	1.580	2	1.26	14.70	1.01	
1125	3.05	200	6.94	1.582	2	1.24	14.75	1.01	
1130	3.06	200	6.94	1.586	2	1.25	14.79	1.01	COMPLETE PURGE
									BEGIN TO FILL
									CONT.

SIGNATURE(S): Fred M Ramser

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS7-GW-MW4-7RI-10-01
Sample Location: MW4-7RI
Sampled By: J. Ferguson
C.O.C. No.: 27325
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-24-2016	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 12:02	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	clear	7.15	1.789	17.81	3.9	0.83	—	1.07

PURGE DATA:

Date: 4-24-2016	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump								
Monitor Reading (ppm): 0								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 9.83								
Static Water Level (WL): 4.51								
One Casing Volume(gal/L): 0.85								
Start Purge (hrs): 11:02								
End Purge (hrs): 12:02								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): +/- 2gal								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter (dissolved)

Circle if Applicable:

MS/MSD	Duplicate ID No.:
YES	NO

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: 257-GW-MW47RI-10-01
DATE: 4-24-2010

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
11:02	4.51	180	7.10	1.662	5.6	3.50	15.50	1.04	
11:07	4.62	190	7.08	1.683	5.1	1.49	15.51	1.06	2 HR Before mean low tide
11:12	4.66	190	7.08	1.704	3.5	1.12	16.03	1.06	Cellular sun
11:22	4.60	190	7.11	1.734	2.9	0.98	16.53	1.06	" " "
11:32	4.61	190	7.12	1.774	4.0	0.83	17.19	1.07	" " "
11:42	4.67	190	7.14	1.783	4.0	0.83	17.43	1.07	" " "
11:52	4.62	190	7.15	1.794	4.1	0.84	17.80	1.07	" " "
12:02	4.62	190	7.15	1.789	3.9	0.83	17.91	1.07	" " "

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS1-GW-MW1-5PDI-10-01
Sample Location: MW1-5PDI
Sampled By: J. Ferguson
C.O.C. No.: 27325
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity (%)	Other
Date: 4-26-2010								
Time: 1300								
Method: Low Flow	clear	6.37	3.109	15.01	3.8	0.17	2.04	

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 4-26-10								
Method: Peristaltic Pump								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2-inch PVC								
Total Well Depth (TD): 6.0'								
Static Water Level (WL): 3.31'								
One Casing Volume (gal/L): .44								
Start Purge (hrs): 1140								
End Purge (hrs): 1300								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s):

Jim Ferguson (signed by Emily Glick)

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: MW1-5 PDI
DATE: April 26, 2010

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
11:40	3.31	200	6.18	3.169	7.0	2.48	14.54	2.12	No free product
12:00	3.32	200	6.26	3.243	4.8	0.53	14.99	2.14	
12:10	3.32	200	6.31	3.162	4.2	0.35	15.11	2.07	
12:20	3.32	200	6.33	3.140	4.1	0.25	15.12	2.05	
12:30	3.32	200	6.35	3.119	4.0	0.25	15.11	2.04	
12:40	3.33	200	6.37	3.110	3.8	0.20	15.01	2.04	
12:50	3.32	200	6.37	3.101	3.8	0.17	14.98	2.04	
13:00	3.33	200	6.37	3.109	3.8	0.17	15.01	2.04	

SIGNATURE(S):

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS7-GW-MW1-7~~RI~~ PDI-10-01
Sample Location: MW1-7RI JAF
Sampled By:
C.O.C. No.: 27326
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-30-2010	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 06:45	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	CLEAR	7.22	0.191	12.63	3.8	0.65	—	0.120

PURGE DATA:

Date: 4-30-2010	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump	INITIAL	7.52	0.516	12.11	25	5.91	0.320	
Monitor Reading (ppm): 0	06:15	7.40	0.372	12.56	18.5	1.65	0.355	
Well Casing Diameter & Material	06:20	7.32	0.284	12.50	8.44	1.00	0.180	
Type: 2-inch PVC	06:25	7.30	0.233	12.48	5.08	0.90	0.150	
Total Well Depth (TD):	06:30	7.28	0.210	12.47	4.45	0.86	0.130	
Static Water Level (WL): 2.82	06:35	7.25	0.194	12.55	4.40	0.74	0.120	
One Casing Volume(gal/L):	06:40	7.24	0.193	12.60	4.10	0.68	0.120	
Start Purge (hrs): 06:05								
End Purge (hrs): 06:45								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

MW1-7~~RI~~ PDI (formerly 20MW7)

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS4-GW-MW1-4PDI-10-01
Sample Location: MW1-4PDI
Sampled By: J. Ingram
C.O.C. No.: 27326
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Sal %
Date: 4-30-2010								
Time: 05:50								
Method: Low Flow	clear	6.73	14.74	10.10	4.8	5.90	—	12.34

PURGE DATA:

	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Date: 4-30-2010								
Method: Peristaltic pump	Initial	6.85	15.73	10.15	8.6	11.50	13.10	
Monitor Reading (ppm): 0	05:30	6.78	15.05	10.21	5.2	5.98	12.63	
Well Casing Diameter & Material	05:35	6.75	14.83	10.14	5.0	5.98	12.41	
Type: 2-inch PVC	05:40	6.74	14.79	10.16	4.8	5.87	12.34	
Total Well Depth (TD): 13.0'	05:45	6.73	14.75	10.09	4.9	5.82	12.34	
Static Water Level (WL): 6.61								
One Casing Volume (gal/L): 1.02								
Start Purge (hrs): 05:15								
End Purge (hrs): 05:50								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 7.98								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

MW1-4PDI (formerly 13MW15)

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NLON PDI Groundwater Sampling
PROJECT NUMBER: 112G02630 CTO WE24

WELL ID.: MW1-4PDI
DATE: 4-30-2010

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	Sal. (%)	Comments
05:15 AM	6.61	+/-200	6.85	15.73	8.6	11.50	10.15	13.10	
05:30	6.62		6.78	15.05	5.2	5.98	10.21	12.63	
05:35	6.62		6.75	14.83	5.0	5.98	10.14	12.41	
05:40	6.63		6.74	14.79	4.8	5.87	10.16	12.34	
05:45	6.63		6.73	14.75	4.8	5.82	10.09	12.34	
05:50	6.64		6.73	14.74	4.8	5.80	10.10	12.34	

SIGNATURE(S):

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: PD Groundwater Sampling at Lower Subase
Project No.: 112G02630 CTO WE24

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

Sample ID No.: LS1-GW-MW1-1PDI-10-01
Sample Location: MW1-1PDI
Sampled By: J. Ferguson
C.O.C. No.: 27326
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 4-30-2010	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Sal
Time: 04:55	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	%
Method: Low Flow	[illegible]	8.46	2.306	15.17	9	1.20	—	1.48

PURGE DATA:

Date: 4-30-2010	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	TDS
Method: Peristaltic pump	INITIAL	7.66	2.539	15.63	31	3.05	1.62	
Monitor Reading (ppm): 0	04:00	7.94	2.537	15.51	27	2.76	1.63	
Well Casing Diameter & Material	04:10	8.39	2.462	15.26	26	2.07	1.59	
Type: 2-inch PVC	04:20	8.41	2.446	15.21	19	1.35	1.58	
Total Well Depth (TD): 3.55'	04:30	8.45	2.412	15.20	15	1.34	1.55	
Static Water Level (WL):	04:40	8.45	2.366	15.16	10	1.31	1.53	
One Casing Volume(gal/L):	04:50	8.46	2.306	15.17	9	1.20	1.48	
Start Purge (hrs): 03:44 am								
End Purge (hrs): 04:55 pm								
Total Purge Time (min): 1 hr 11 min								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Metals Arsenic, Copper, and Lead	HNO3 4°	1 liter HDPE plastic container	yes
(1)Dissolved Metals Arsenic, Copper, and Lead	4°	1 liter HDPE plastic container	yes

OBSERVATIONS / NOTES:

(1) Samples field filtered with .45 um in-line filter

MW1-1PDI (formerly 13MW7)

Low tide 5:42 am Sample working 4:42 - 6:42 Time period

Flow = 180 ml/min

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

2.055
1.404 7.81 1.00

APPENDIX B.1.8

EQUIPMENT CALIBRATION LOGS

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : PDI Groundwater Sampling

SITE NAME: New London Subase

PROJECT No.: 112G02630 CTO WE24

INSTRUMENT NAME/MODEL: Water Quality Meter

MANUFACTURER: YSI

SERIAL NUMBER: 08H100780

Date of Calibration	Person Performing Calibration	PRE-CALIBRATION READINGS			POST-CALIBRATION READINGS			Calibration Standard (Lot No.)	Remarks and Comments
		pH (Standard)	Cond. (mS/cm)	DO (mg/L)	pH (Standard)	Cond. (mS/cm)	DO (mg/L)		
4-20-10	FWR	7.07	1.461	7.62	7.00	1.409	~~7.62~~ 12.06		
4-21-10	FWR	7.12	1.441	8.12	7.01	1.409	11.95		
4-22-10	FWR	7.01	1.456	7.95	7.00	1.410	12.07		
4-23-10	FWR	7.07	1.467	6.98	7.00	1.409	12.15		
4-24-10	FWR	6.93	1.249	6.88	7.00	1.409	12.02		

Tetra Tech NUS, Inc.

EQUIPMENT CALIBRATION LOG

PROJECT NAME : PDI Groundwater Sampling

SITE NAME: New London Subase

PROJECT No.: 112G02630 CTO WE24

INSTRUMENT NAME/MODEL: Water Quality Meter YSI / MYRON L

MANUFACTURER: YSI / MYRON L a Motte

SERIAL NUMBER: 02H1304AC / 3542-3302

Date of Calibration	Person Performing Calibration	PRE-CALIBRATION READINGS			POST-CALIBRATION READINGS			Calibration Standard (Lot No.)	Remarks and Comments
		pH (Standard)	Cond. (mS/cm)	DO (mg/L)	pH (Standard)	Cond. (mS/cm)	DO (mg/L)		
4/23/2010	JRF	7.032	1.037	—	7.00	1.404	—	FEI 18780-1 FEI 12380-1	
4/23/2010	JRF	TURBIDITY 0.00 - 0.00 10.00 - 9.60	—	—	0.00 10.00	—	—	8184-P891441 8184-P890791	
4/24/2010	JRF	7.04	0.897	—	7.00	1.404	—	FEI 18780-1 FEI 12380-1	
4/24/2010	JRF	TURBIDITY 0.00 - 0.00 10.00 - 10.06	—	—	TURBIDITY 1.00 10.00	—	—	8184-P891441 8184 P890791	

APPENDIX B.1.9

CHAIN OF CUSTODIES

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER № 028262

PAGE ____ OF _____

PROJECT NO: 112G02630	FACILITY: NLON SUBASE	PROJECT MANAGER C. RICH	PHONE NUMBER 412-921-7090	LABORATORY NAME AND CONTACT: L. HUCKESTEIN COLUMBIA ANALY SERVICES, INC
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER J. FERG	PHONE NUMBER 412-921-7090	ADDRESS 1317 S. 13th AVE
		CARRIER/WAYBILL NUMBER FEDEX 8631 2526 7053		CITY, STATE KELSO, WA 98626

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P

PRESERVATIVE USED: HNO3 HNO3

TYPE OF ANALYSIS: DISSOLVED ARSENIC Cu + Pb; TOTAL ARSENIC Cu + Pb

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	DISSOLVED ARSENIC Cu + Pb	TOTAL ARSENIC Cu + Pb							COMMENTS
4/22	1042	LS4-GW-13MW13-10-01	13 MW13	—	—	GW	G	2	1	1							
4/23	1039	LS1-GW-F0MW14-10-01	F0 MW14	—	—	GW	G	2	1	1							
4/23	1040	LS1-GW-F0MW14-10-01-D	—	—	—	GW	G	2	1	1							
	1210	LS1-GW-13MW19-10-01	13 MW19	—	—	GW	G	2	1	1							
	1110	LS1-GW-13MW20-10-01	13 MW20	—	—	GW	G	2	1	1							
4/23	1215	LS1-GW-13MW21-10-01	13 MW21	—	—	GW	G	2	1	1							

1. RELINQUISHED BY	DATE 4-23-10	TIME 1630	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 27325 | PAGE 1 OF 1

PROJECT NO: 112G02630	FACILITY: NSB NLON	PROJECT MANAGER C. RICH	PHONE NUMBER 412-921-7090	LABORATORY NAME AND CONTACT: L. Hampton Columbia Analy. Services Inc
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER J. FERGUSON	PHONE NUMBER 412-921-7090	ADDRESS 1317 S. 13th Ave
		CARRIER/WAYBILL NUMBER FED EX		CITY, STATE KELSO, WA 98626

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

CONTAINER TYPE PLASTIC (P) or GLASS (G): P P
PRESERVATIVE USED: HNO3 HNO3

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TOTAL ARSENIC Cu+Pb	DISSOLVED ARSENIC Cu+Pb							COMMENTS
4/24	1130	LS7-GW-MW3-7RI-10-01	MW3 7RI	—	—	GW	G	2	1	1							
	1130	LS7-GW-MW3-7RI-10-01-D	—	—	—	GW	G	2	1	1							
	1250	LS5-GW-19MW3-10-01	19 MW3	—	—	GW	G	2	1	1							
	1350	LS4-GW-13MW14-10-01	13 MW14	—	—	GW	G	2	1	1							
	1202	LS7-GW-MW4-7RI-10-01	MW3 7RI	—	—	GW	G	4	2	2							RUN MS
	1255	LS4-GW-NES011-10-01	NES 011	—	—	GW	G	2	1	1							
4/24	1400	LS4-GW-NES010-10-01	NES 010	—	—	GW	G	2	1	1							Continuous Supply #
6/26	13:00	MW1-5PDI	DPD 75	—	—	GW	G	2	1	1							17519

1. RELINQUISHED BY	DATE 6/26/10	TIME 16:00	1. RECEIVED BY Federal Express AB# 8631 2526 7010	DATE 6/26/10	TIME 16:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER 27326

PAGE ____ OF _____

PROJECT NO: 112602630	FACILITY: NSB New London	PROJECT MANAGER Cory Rich	PHONE NUMBER 412 921 7090	LABORATORY NAME AND CONTACT: Columbia Analytical Philadelphia
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER Jim Ferguson	PHONE NUMBER 412-920-7022	ADDRESS 1317 South 13TH Ave
		CARRIER/WAYBILL NUMBER 8631 2526 7042		CITY, STATE Kelso WA

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

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	Dissolved Metals	Total Metals							COMMENTS
		CONTAINER TYPE PLASTIC (P) or GLASS (G)							P	P							
		PRESERVATIVE USED							HNO3	HNO3							
4/30	08:45	L57 GW MW1-7PDI-10-01	7PDI	—	—	GW	G	2	X	X							
4/30	05:50	L51 GW MW1 4PDI-10-01	4PDI	—	—	GW	G	2	X	X							
4/30	04:55	L51 GW MW1 1PDI-10-01	1PDI	—	—	GW	G	2	X	X							

1. RELINQUISHED BY	DATE 4/30/2010	TIME 16:30	1. RECEIVED BY Federal Express AB# 8631 2526 7042	DATE 4/30/10	TIME 16:30
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME
COMMENTS					

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

4/02R
FORM NO. TtNUS-001

APPENDIX B.1.10

SURVEY INFORMATION

Project No. 2010039 - TetraTech NUS

Naval Submarine Base - New London (NSB-NLON)

MONITOR WELL SURVEY VALUES

State Plane Coordinates NAD83			Geodetic Coordinates (NAD 83/96)		Elevations NAVD88			Point Description
Well ID	Grid Northing	Grid Easting	Latitude	Longitude	Top of Frame	PVC Rim	Ground	
MW1-4PDI	704303.210	1180917.204	N 41° 23' 31.7562"	W 72° 05' 26.3169"	5.61	5.06	5.6	Monitoring Well
MW1-1PDI	705393.439	1180442.314	N 41° 23' 42.5633"	W 72° 05' 32.4385"	5.89	5.46	5.9	Monitoring Well
MW1-7PDI	706684.822	1180243.449	N 41° 23' 55.3368"	W 72° 05' 34.9188"	4.16	3.84	4.1	Monitoring Well
MW1-5PDI	708330.130	1180166.318	N 41° 24' 11.5979"	W 72° 05' 35.7668"	5.05	4.68	5.1	Monitoring Well

SURVEY CONTROL VALUES

State Plane Coordinates		Elevations	Control Identifier
Grid Northing	Grid Easting	NAVD88	Identifier
705148.6430	1180452.4030	4.953	Navy Disk w/DH #29
704016.1810	1180990.1480	5.175	Navy Disk w/DH #31
704155.9610	1181267.5230	17.51	Disk in Monument #33
709640.2600	1180130.2170	4.75	Brass Pin #221
708646.2900	1180185.0160	7.00	Navy Disk #222
706339.5690	1180305.5440	6.635	Navy Disk #260
707351.4000	1180134.0610	4.56	Navy Disk #950

Notes: Survey coordinates were derived from existing control monumentation within the Groton/New London Submarine Base as established by David Stein, LS. Last revised December 18, 2006.

STATE OF CONNECTICUT
RICHARD H. STROUSE
No. 9679
REGISTERED
LAND SURVEYOR

Richard H. Strouse, LS No. 9679

Dated: 5/11/10

CME Associates, Inc.

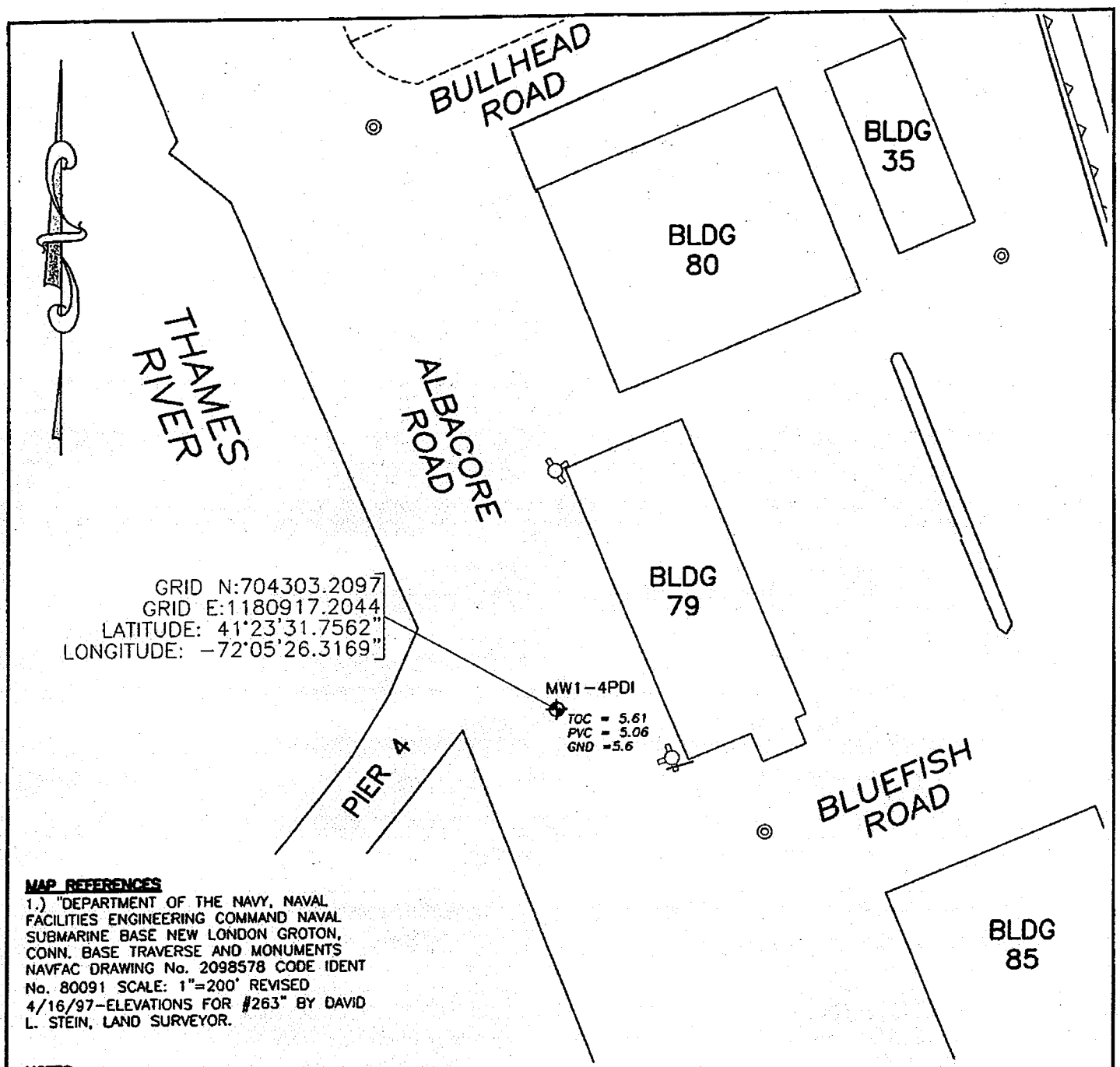
Architecture, Engineering, Environmental Science, & Surveying

SE Connecticut:
The Mercantile Exchange Building
55 Main Street, Suite 340
Norwich, CT 06360
Tel: 860-889-3397
Fax: 860-886-7801

NE Connecticut:
32 Crabtree Lane, PO Box 849
Woodstock, CT 06281
Tel: 860-928-7848
Fax: 860-928-7846

Central Connecticut:
333 East River Drive, Suite 400
East Hartford, CT 06108
Tel: 860-291-4100
Fax: 860-291-4114

Massachusetts:
50 Elm Street
Southbridge, MA 01550
Tel: 508-764-3500
Fax: 508-765-5969



MAP REFERENCES

1.) "DEPARTMENT OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND NAVAL SUBMARINE BASE NEW LONDON GROTON, CONN. BASE TRAVERSE AND MONUMENTS NAVFAC DRAWING No. 2098578 CODE IDENT No. 80091 SCALE: 1"=200' REVISED 4/16/97-ELEVATIONS FOR #263" BY DAVID L. STEIN, LAND SURVEYOR.

NOTES

1.) THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS PREPARED AND ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.THE TYPE OF SURVEY PERFORMED IS AN IMPROVEMENT LOCATION SURVEY CONFORMING TO THE STANDARDS OF ACCURACY FOR A HORIZONTAL CLASS A-2 AND VERTICAL CLASS T-2

2.) COORDINATES DEPICTED HEREON ARE REFERENCED TO NAD83 AND ELEVATIONS ARE BASED ON NAVD88 DERIVED FROM MAP REFERENCE No.1

40 20 0 40

GRAPHIC SCALE IN FEET

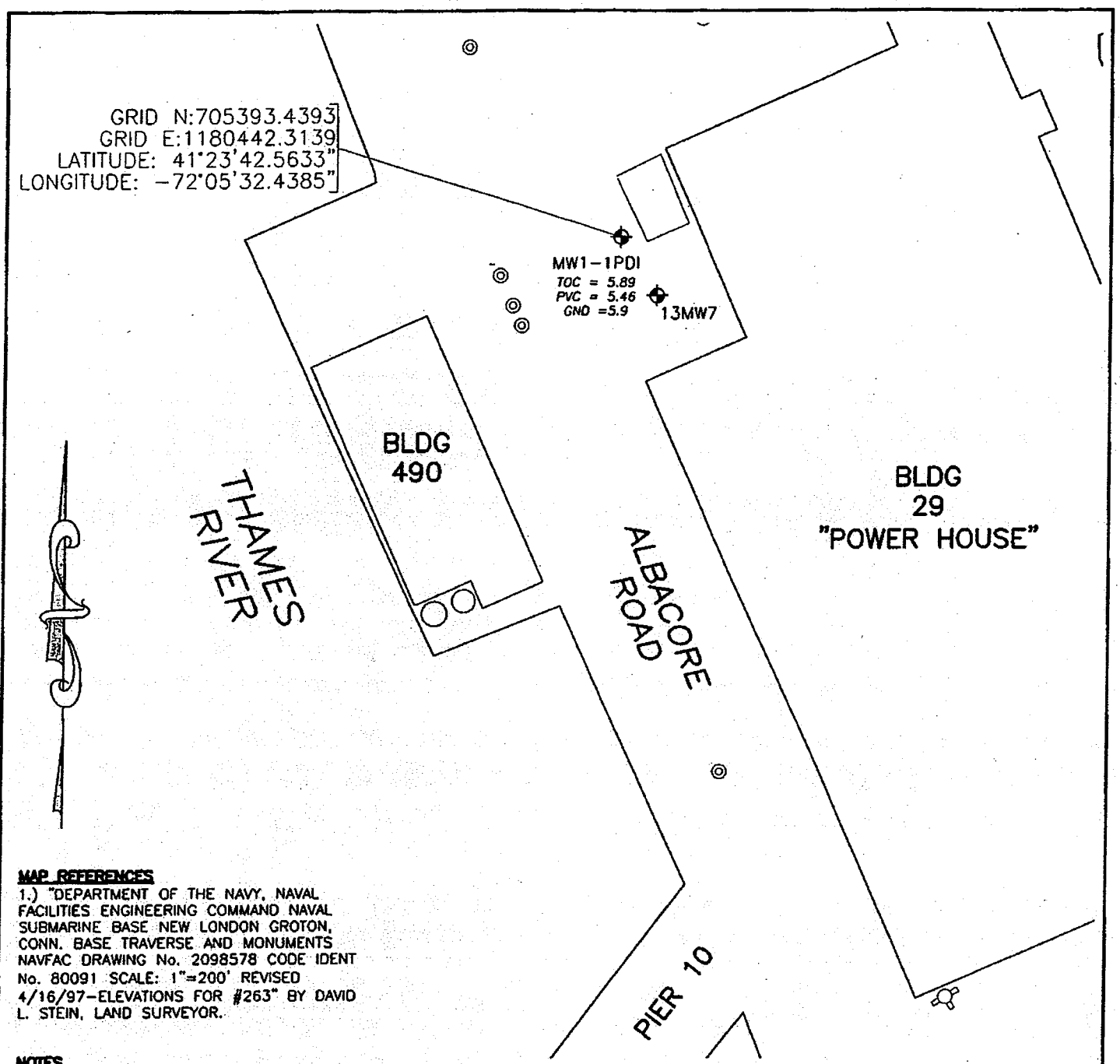
MONITORING WELL LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
ALBACORE ROAD, GROTON, CONNECTICUT

DATE: 05/10/10	SCALE: 1" = 40'	SHEET: 1 OF 4

CME Associates, Inc.
32 Crabtree Lane, Woodstock, CT 06281
55 Main Street, Suite 340 Norwich, CT 06360
333 East River Drive, East Hartford, CT 06108 Phone 888-291-3227
50 Elm Street, Southbridge, MA 01550 www.cmeengineering.com



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GRAPHIC SCALE IN FEET

MONITORING WELL LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
ALBACORE ROAD, GROTON, CONNECTICUT

DATE: 05/10/10	SCALE: 1" = 40'	SHEET: 2 OF 4

CME

CME Associates, Inc.

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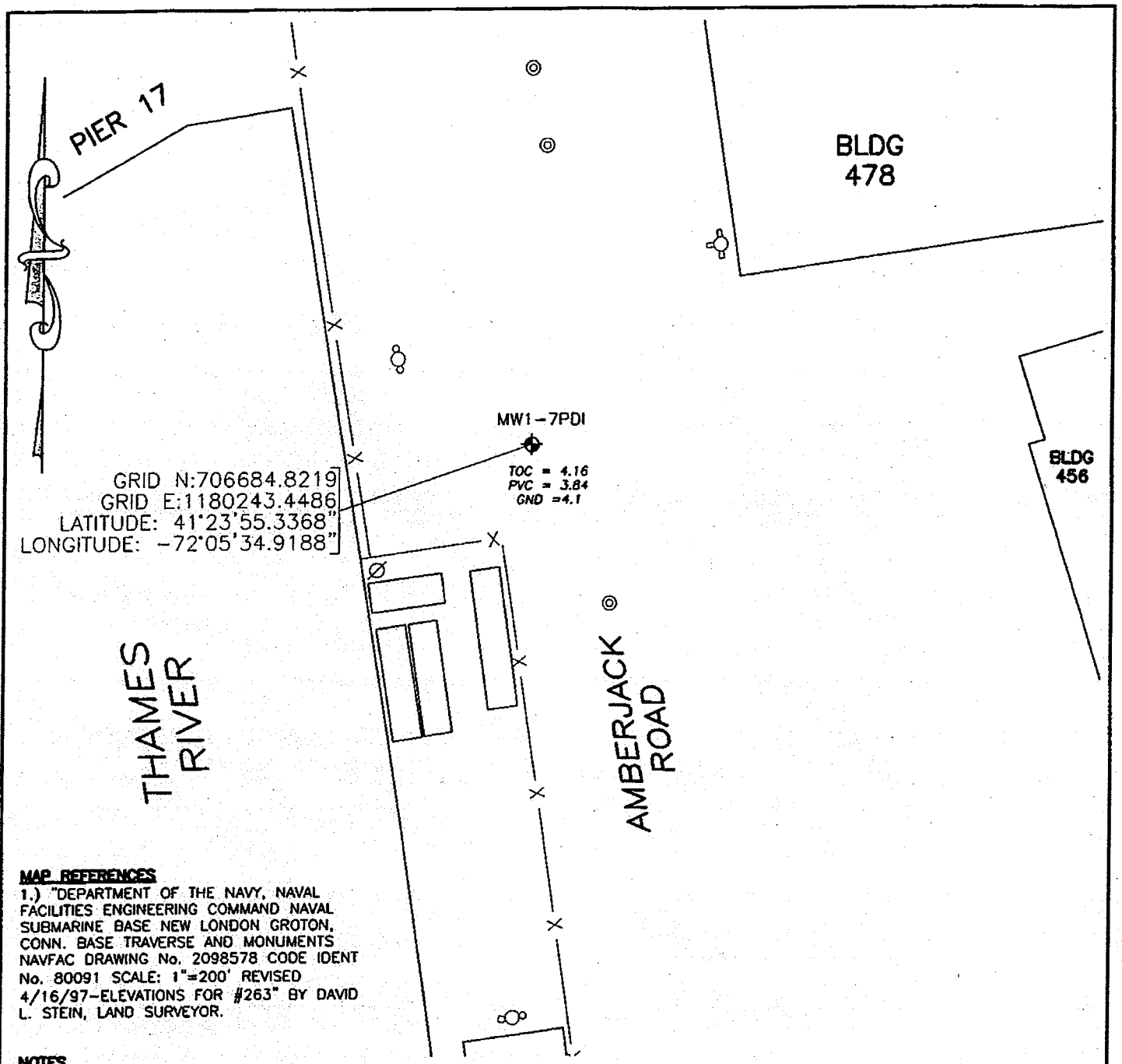
333 East River Drive, East Hartford, CT 06108 Phone 888-291-3227
50 Elm Street, Southbridge, MA 01550 www.cmeengineering.com



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GRAPHIC SCALE IN FEET

MONITORING WELL LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
ALBACORE ROAD, GROTON, CONNECTICUT

DATE: 05/10/10	SCALE: 1" = 40'	SHEET: 3 OF 4

CME Associates, Inc.

32 Crabtree Lane, Woodstock, CT 06281
55 Main Street, Suite 340 Norwich, CT 06360
333 East River Drive, East Hartford, CT 06108 Phone 888-291-3227
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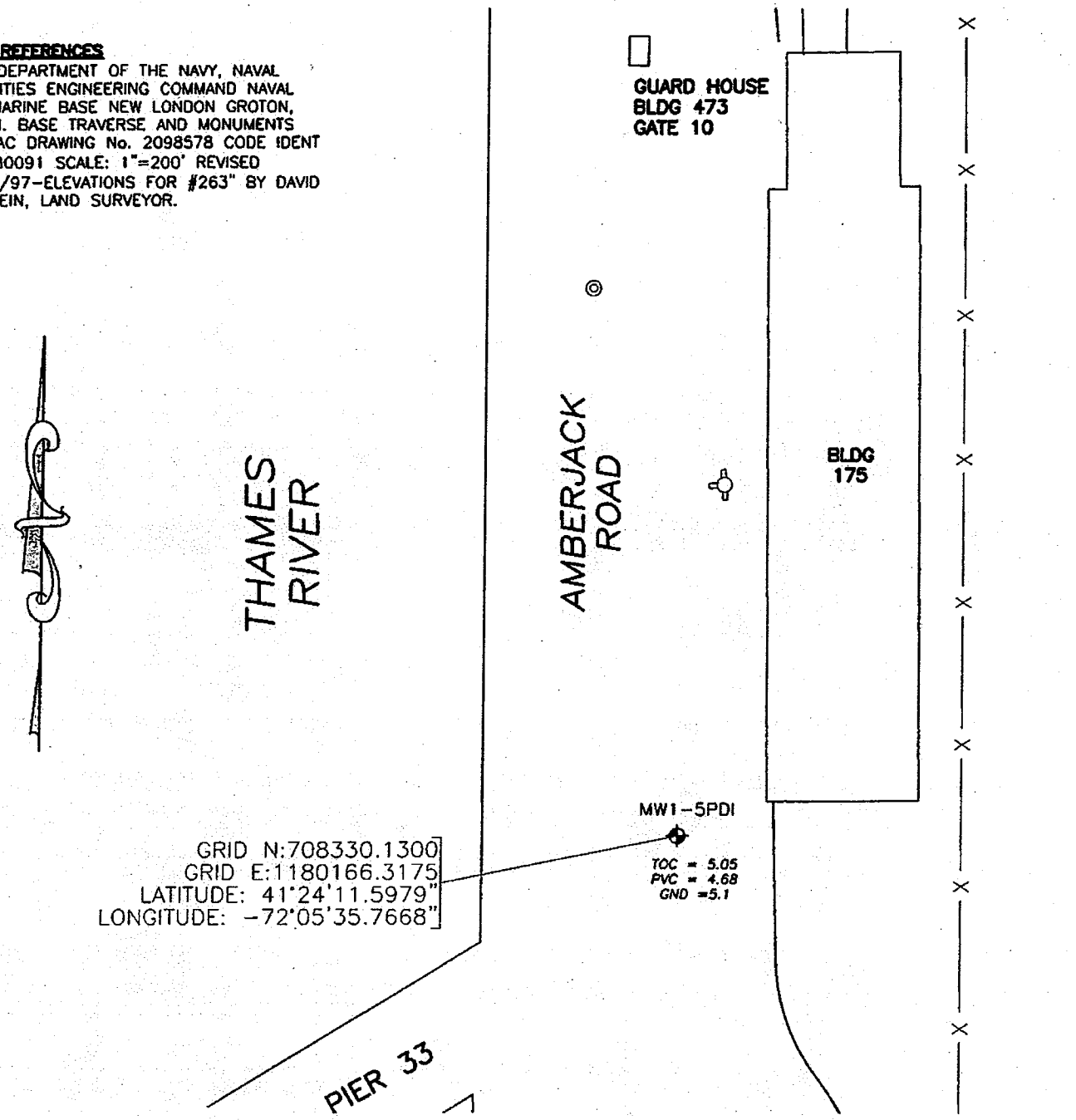

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GRAPHIC SCALE IN FEET

MONITORING WELL LOCATION SKETCH
PREPARED FOR

TETRA TECH NUS

NAVAL SUBMARINE BASE - NEW LONDON
ALBACORE ROAD, GROTON, CONNECTICUT

DATE: 05/10/10	SCALE: 1" = 40'	SHEET: 4 OF 4

CME Associates, Inc.

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APPENDIX B.1.11

INVESTIGATIVE DERIVED WASTE INFORMATION

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number CT4170022020	2. Page 1 of 1	3. Emergency Response Phone 800-698-1865	4. Waste Tracking Number NHWM052710

5. Generator's Name and Mailing Address
U.S. Naval Submarine Base
Box 400 - Environmental Bldg. 562
Groton CT 06349
Generator's Phone: 860 694-4298

Generator's Site Address (if different than mailing address)
U.S. Naval Submarine Base
Route 12 - Crystal Lake Road
Groton CT 06349

6. Transporter 1 Company Name: New England Disposal Technologies, Inc.
U.S. EPA ID Number: MAC300008059

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Vexor Technology, Inc.
955 West Smith Road
Medina OH 44256
Facility's Phone: 330 721-9773
U.S. EPA ID Number: OHD077772895

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-RCRA, non-DOT Regulated Material (soil)	5	DM	2000	P	NONE
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
1)VEX18333

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Armar E. Edmondston
Signature: X
Month 05 Day 27 Year 10

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Shawn M. Ford
Signature:
Month 05 Day 27 Year 10

Transporter 2 Printed/Typed Name: Scott Mulligan
Signature:
Month 6 Day 7 Year 10

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: T. O'Brien
Signature:
Month 06 Day 08 Year 10

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 8/06)

TRANSPORTER #1

VEXOR Technology, Inc.
955 West Smith Road
Medina, Ohio 44256
Phone: 330-721-9773
FAX: 330-721-9438
EPA ID# OHD 077772895
www.vexortechnology.com

MATERIAL CHARACTERIZATION

For VEXOR Use Only
Approval # _____
Sample # _____
Sales Rep _____
Date Submitted _____

Email: mail@vexortechnology.com

Generator: Naval Submarine Base New London	Bill To Name: New England Disposal Technologies
Site Address: Crystal Lake Rd. & Rt. 12	Site Address: 83 Gilmore Drive
City: Groton State: CT Zip: 06349	City: Sutton State: MA Zip: 01590
Phone: 860-694-4298 Fax:	Phone: 508-234-4440 Fax: 508-234-4441
EPA ID #: CT4170022020 SIC Code:	Business Contact: Michael Robertson
Technical Contact: Linda J. Tirrell	Title: GM Email: canderson@nedtinc.com
Title: Haz Waste Program Mgr Email:	

MATERIAL DESCRIPTION

Name and Description of Material: Soil IDW

Process Generating Material: Drill cuttings from wells and borings U.S. EPA Hazardous Waste: ☐Yes ☒No

Proper DOT Shipping Name: Non-RCRA - Non-DOT Regulated Waste

Method of Shipment: ☐Bulk ☒Drum ☐Tote ☐Cubic Yard Box ☐Other/Explain: Pallets

Est. Annual Volume: ____ Cu. Yds. ____ Tons ____ Gallons 5 - 8 Drums ____ container material (metal, plastic, etc.)

Frequency: ☐One Time Only ☐Daily ☐Weekly ☒Monthly ☐Other/Explain 400 Approximate Drum Weight

Special Handling Instructions: None Waste is anticipated to be shipped in two shippments over 2 motnths

Preferred Disposal Method: ☒Landfill ☐Waste to Energy ☐Recycling ☐Other

MATERIAL PROPERTIES AT 78°

a) Physical State: ☒Solid ☐Semi-Solid ☐Powder ☐Liquid ☐Phases

b) Reactivity: ☐Water reactive ☐Acid Reactive ☐Alkaline Reactive ☐Oxidizer ☐Autosetting ☒None

c) Flash Point, °F: ☐ ≤72 ☐ >72-100 ☐ >100-140 ☐ >140-200 ☒ >200 ☐ N/A

d) S.G./Density about 1

e) pH: ☐ ≤2 ☐ >2-6 ☐ >6-9 ☒ >9-12.5 ☐ ≥12.5 ☐N/A

f) Odor: ☒None ☐Mild ☐Strong: Describe

g) Color: Dirt

h) Total Organic Halogen (TOX) ☒ 0 ppm ☐>1000 ppm* If this material is considered "USED OIL" and is to be managed as a a "USED OIL", please complete the "USED OIL" ADDENDUM and attach to this profile.

i) PCB Content: ☒ 0 ppm ☐ 1-49 ppm* ☐ ≥50 ppm * Supporting analysis and documentation required.

MATERIAL COMPOSITION: List all components, must add up to 100%.

Constituent	Range % (wt-vol) Min	Max
Soil	100	100
A combined total should equal 100%		

Above is based on: ☐Generator Knowledge ☒Analytical Data MSDS
Please attach analysis, TCLP information and appropriate MSDS sheets.
SAMPLE SUBMITTED WITH THIS PROFILE: ☐Yes ☒No

For VEXOR Use Only
Evaluated by: _____
Approved - Treatment: _____
Rejected - Reason: _____
Date Completed: _____
Price: _____ /Unit _____
Approved By: _____ Date: _____

GENERATOR CERTIFICATION

I hereby certify that to the best of my knowledge and belief, the information contained herein is a true and accurate description of the material being offered for disposal. Samples of this material submitted to VEXOR are representative of the material described in this profile. I further certify that by utilizing this profile, neither myself not any other employee of the company will deliver for treatment, processing or recycling or attempt to deliver for same any material that is classified as toxic waste, hazardous water, medical or infectious waste or any other material that this facility is prohibited from accepting by law.

Authorized Representative Name (Printed) _____ Company _____

Authorized Representative Signature _____ Title: _____ Date: _____

Report Date:
10-May-10 16:28

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

New England Disposal Technologies, Inc
83 Gilmore Drive
Sutton, MA 01590
Attn: Lon Cohen

Project: Naval Submarine Base - New London, CT
Project #: IDW-Phase I

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SB11468-01	Soil	Soil	30-Apr-10 09:30	03-May-10 15:30

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393

ACCREDITED IN ACCORDANCE WITH nelac

Authorized by:

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.
Please note that this report contains 13 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 4.0 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 1.9 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

These samples do not exhibit the characteristics of reactivity as defined in 40 CFR 261.23, sections (1), (2), (4), and (5); however, Spectrum Analytical, Inc. does not test for detonation, explosive reaction or potential, or forbidden explosives as defined in 40 CFR 261.23, sections (3), (6), (7) and (8).

All VOC soils samples submitted and analyzed in methanol will have a minimum dilution factor of 50. This is the minimum amount of solvent allowed on the instrumentation without causing interference. Additional dilution factors may be required to keep analyte concentration within instrument calibration.

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

SW846 1030

Duplicates:

1009360-DUP1 *Source: SB11468-01*

A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for Ignitability is not specified within the method other than to state that the samples should be analyzed as soon as possible.

Ignitability by Definition

Samples:

SB11468-01 *Soil*

A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for Ignitability is not specified within the method other than to state that the samples should be analyzed as soon as possible.

Ignitability by Definition

SW846 1311/6010B

Blanks:

1009596-BLK1

The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.

Barium

Laboratory Control Samples:

1009596 BS/BSD

Cadmium percent recoveries (116/115) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Soil

Chromium percent recoveries (120/119) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Soil

SW846 1311/8260B

Laboratory Control Samples:

1009774 BSD

Vinyl chloride RPD 33% (30%) is outside individual acceptance criteria, but within overall method allowances.

1009774-BSD1

The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

Vinyl chloride

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Soil SB11468-01	IDW-Phase I	Soil	30-Apr-10 09:30	03-May-10

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Volatile Organic Compounds												
	TCLP Extraction	Completed		N/A		1	SW846 1311	06-May-10	06-May-10	AB	1009605	X
TCLP Volatile Organic Compounds by 8260B (TCL) Prepared by method SW846 5030 Water MS					Initial weight: 5 ml							
71-43-2	Benzene	BRL		µg/l	5.0	5	SW846 1311/8260B	10-May-10	10-May-10	eq	1009774	
78-93-3	2-Butanone (MEK)	BRL		µg/l	50.0	5	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL		µg/l	5.0	5	"	"	"	"	"	
108-90-7	Chlorobenzene	BRL		µg/l	5.0	5	"	"	"	"	"	
67-66-3	Chloroform	BRL		µg/l	5.0	5	"	"	"	"	"	
07-06-2	1,2-Dichloroethane	BRL		µg/l	5.0	5	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
27-18-4	Tetrachloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
79-01-6	Trichloroethene	BRL		µg/l	5.0	5	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL		µg/l	5.0	5	"	"	"	"	"	
Surrogate recoveries:												
60-00-4	*4-Bromofluorobenzene*	*90*			*70-130 %*		"	"	"	"	"	
037-26-5	*Toluene-d8*	*89*			*70-130 %*		"	"	"	"	"	
7060-07-0	*1,2-Dichloroethane-d4*	*115*			*70-130 %*		"	"	"	"	"	
868-53-7	*Dibromofluoromethane*	*103*			*70-130 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GCMS												
	TCLP Extraction	Completed		N/A		1	SW846 1311	06-May-10	06-May-10	DT	1009587	X
TCLP Semivolatiles by SW846 1311/8270C (TCL) Prepared by method SW846 3535												
06-46-7	1,4-Dichlorobenzene	BRL		µg/l	5.00	1	SW846 1311/8270C	07-May-10	10-May-10	SM	1009646	X
21-14-2	2,4-Dinitrotoluene	BRL		µg/l	5.00	1	"	"	"	"	"	X
18-74-1	Hexachlorobenzene	BRL		µg/l	5.00	1	"	"	"	"	"	X
7-68-3	Hexachlorobutadiene	BRL		µg/l	5.00	1	"	"	"	"	"	X
7-72-1	Hexachloroethane	BRL		µg/l	5.00	1	"	"	"	"	"	X
5-48-7	2-Methylphenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
08-39-4, 06-44-5	3 & 4-Methylphenol	BRL		µg/l	10.0	1	"	"	"	"	"	X
8-95-3	Nitrobenzene	BRL		µg/l	5.00	1	"	"	"	"	"	X
7-86-5	Pentachlorophenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
10-86-1	Pyridine	BRL		µg/l	5.00	1	"	"	"	"	"	X
5-95-4	2,4,5-Trichlorophenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
4-06-2	2,4,6-Trichlorophenol	BRL		µg/l	5.00	1	"	"	"	"	"	X
urrogate recoveries:												
1-60-8	*2-Fluorobiphenyl*	*83*			*30-130 %*		"	"	"	"	"	
7-12-4	*2-Fluorophenol*	*77*			*15-110 %*		"	"	"	"	"	
65-60-0	*Nitrobenzene-d5*	*96*			*30-130 %*		"	"	"	"	"	
18-51-0	*Terphenyl-d14*	*80*			*30-130 %*		"	"	"	"	"	
emivolatile Organic Compounds by GC												
olychlorinated Biphenyls by SW846 8082 epared by method SW846 3545A												
674-11-2	Aroclor-1016	BRL		µg/kg dry	21.6	1	SW846 8082	06-May-10	06-May-10	IMR	1009522	X

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit BRL = Below Reporting Limit

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Soil SB11468-01	IDW-Phase I	Soil	30-Apr-10 09:30	03-May-10

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3545A												
11104-28-2	Aroclor-1221	BRL		µg/kg dry	21.6	1	SW846 8082	06-May-10	06-May-10	IMR	1009522	X
11141-16-5	Aroclor-1232	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
53469-21-9	Aroclor-1242	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
12672-29-6	Aroclor-1248	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	BRL		µg/kg dry	21.6	1	"	"	"	"	"	X
Surrogate recoveries:												
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr)*	*91*			*30-150 %*		"	"	"	"	"	
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr) [2C]*	*98*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr)*	*117*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*117*			*30-150 %*		"	"	"	"	"	
TCLP Metals by EPA 1311 & 6000/7000 Series Methods												
	TCLP Extraction	Completed		N/A		1	SW846 1311	05-May-10	05-May-10	DT	1009506	X
7440-22-4	Silver	BRL		mg/l	0.0100	1	SW846 1311/6010B	06-May-10	06-May-10	TBG	1009596	X
7440-38-2	Arsenic	BRL		mg/l	0.0100	1	"	"	"	"	"	X
7440-39-3	Barium	0.308		mg/l	0.0100	1	"	"	"	"	"	X
7440-43-9	Cadmium	BRL		mg/l	0.0050	1	"	"	"	"	"	X
7440-47-3	Chromium	BRL		mg/l	0.0300	1	"	"	"	"	"	X
7439-97-6	Mercury	BRL		mg/l	0.00020	1	SW846 1311/7470A	"	06-May-10	CRM	1009598	X
7439-92-1	Lead	0.639		mg/l	0.0150	1	SW846 1311/6010B	"	06-May-10	TBG	1009596	X
7782-49-2	Selenium	BRL		mg/l	0.0300	1	"	"	"	"	"	X
General Chemistry Parameters												
	% Solids	87.3		%		1	SM2540 G Mod.	04-May-10	04-May-10	WW	1009351	
Toxicity Characteristics												
	Ignitability by Definition	Negative	IgHT	N/A		1	SW846 1030	04-May-10 09:30	04-May-10 09:30	VK	1009360	X
	pH	10.8	pH	pH Units		1	SW846 9045C	05-May-10 10:29	05-May-10 13:04	BD	1009456	X
Reactivity Cyanide/Sulfide Prepared by method General Preparation												
	Reactivity	Nonreactive		mg/kg dry		1	SW846 Ch. 7.3	06-May-10	06-May-10	BD	1009581	X
	Reactive Cyanide	BRL		mg/kg dry	23.8	1	"	"	"	"	"	X
	Reactive Sulfide	BRL		mg/kg dry	47.6	1	"	"	"	"	"	X

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009774 - SW846 5030 Water MS										
Blank (1009774-BLK1)					Prepared & Analyzed: 10-May-10					
Benzene	BRL		µg/l	1.0						
2-Butanone (MEK)	BRL		µg/l	10.0						
Carbon tetrachloride	BRL		µg/l	1.0						
Chlorobenzene	BRL		µg/l	1.0						
Chloroform	BRL		µg/l	1.0						
1,2-Dichloroethane	BRL		µg/l	1.0						
1,1-Dichloroethene	BRL		µg/l	1.0						
Tetrachloroethene	BRL		µg/l	1.0						
Trichloroethene	BRL		µg/l	1.0						
Vinyl chloride	BRL		µg/l	1.0						
Surrogate: 4-Bromofluorobenzene	*28.5*		µg/l		*30.0*		*95*	*70-130*		
Surrogate: Toluene-d8	*26.5*		µg/l		*30.0*		*88*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*35.0*		µg/l		*30.0*		*117*	*70-130*		
Surrogate: Dibromofluoromethane	*30.7*		µg/l		*30.0*		*102*	*70-130*		
Blank (1009774-BLK3)					Prepared & Analyzed: 10-May-10					
Benzene	BRL		µg/l	5.0						
2-Butanone (MEK)	BRL		µg/l	50.0						
Carbon tetrachloride	BRL		µg/l	5.0						
Chlorobenzene	BRL		µg/l	5.0						
Chloroform	BRL		µg/l	5.0						
1,2-Dichloroethane	BRL		µg/l	5.0						
1,1-Dichloroethene	BRL		µg/l	5.0						
Tetrachloroethene	BRL		µg/l	5.0						
Trichloroethene	BRL		µg/l	5.0						
Vinyl chloride	BRL		µg/l	5.0						
Surrogate: 4-Bromofluorobenzene	*26.6*		µg/l		*30.0*		*89*	*70-130*		
Surrogate: Toluene-d8	*26.7*		µg/l		*30.0*		*89*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*35.9*		µg/l		*30.0*		*120*	*70-130*		
Surrogate: Dibromofluoromethane	*31.0*		µg/l		*30.0*		*103*	*70-130*		
LCS (1009774-BS1)					Prepared & Analyzed: 10-May-10					
Benzene	17.6		µg/l		20.0		88	70-130		
2-Butanone (MEK)	16.0		µg/l		20.0		80	70-130		
Carbon tetrachloride	22.6		µg/l		20.0		113	70-130		
Chlorobenzene	19.8		µg/l		20.0		99	70-130		
Chloroform	20.4		µg/l		20.0		102	70-130		
1,2-Dichloroethane	18.7		µg/l		20.0		94	70-130		
1,1-Dichloroethene	19.0		µg/l		20.0		95	70-130		
Tetrachloroethene	17.7		µg/l		20.0		88	70-130		
Trichloroethene	18.4		µg/l		20.0		92	70-130		
Vinyl chloride	16.9		µg/l		20.0		84	70-130		
Surrogate: 4-Bromofluorobenzene	*29.4*		µg/l		*30.0*		*98*	*70-130*		
Surrogate: Toluene-d8	*27.2*		µg/l		*30.0*		*91*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*33.0*		µg/l		*30.0*		*110*	*70-130*		
Surrogate: Dibromofluoromethane	*30.0*		µg/l		*30.0*		*100*	*70-130*		
LCS Dup (1009774-BSD1)					Prepared & Analyzed: 10-May-10					
Benzene	19.4		µg/l		20.0		97	70-130	10	30
2-Butanone (MEK)	16.5		µg/l		20.0		83	70-130	3	30
Carbon tetrachloride	24.1		µg/l		20.0		120	70-130	6	30
Chlorobenzene	21.6		µg/l		20.0		108	70-130	9	30
Chloroform	21.6		µg/l		20.0		108	70-130	6	30

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009774 - SW846 5030 Water MS										
LCS Dup (1009774-BSD1)					Prepared & Analyzed: 10-May-10					
1,2-Dichloroethane	18.6		µg/l		20.0		93	70-130	0.6	30
1,1-Dichloroethene	21.4		µg/l		20.0		107	70-130	12	30
Tetrachloroethene	19.2		µg/l		20.0		96	70-130	8	30
Trichloroethene	19.5		µg/l		20.0		98	70-130	6	30
Vinyl chloride	23.5	QR2	µg/l		20.0		118	70-130	33	30
Surrogate: 4-Bromofluorobenzene	*28.8*		µg/l		*30.0*		*96*	*70-130*		
Surrogate: Toluene-d8	*26.8*		µg/l		*30.0*		*89*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*30.1*		µg/l		*30.0*		*100*	*70-130*		
Surrogate: Dibromofluoromethane	*29.9*		µg/l		*30.0*		*100*	*70-130*		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009646 - SW846 3535										
Blank (1009646-BLK1)						Prepared: 07-May-10	Analyzed: 10-May-10			
1,4-Dichlorobenzene	BRL		µg/l	5.00						
2,4-Dinitrotoluene	BRL		µg/l	5.00						
Hexachlorobenzene	BRL		µg/l	5.00						
Hexachlorobutadiene	BRL		µg/l	5.00						
Hexachloroethane	BRL		µg/l	5.00						
2-Methylphenol	BRL		µg/l	5.00						
3 & 4-Methylphenol	BRL		µg/l	10.0						
Nitrobenzene	BRL		µg/l	5.00						
Pentachlorophenol	BRL		µg/l	5.00						
Pyridine	BRL		µg/l	5.00						
2,4,5-Trichlorophenol	BRL		µg/l	5.00						
2,4,6-Trichlorophenol	BRL		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*45.9*		µg/l		*50.0*		*92*	*30-130*		
Surrogate: 2-Fluorophenol	*42.2*		µg/l		*50.0*		*84*	*15-110*		
Surrogate: Nitrobenzene-d5	*52.3*		µg/l		*50.0*		*105*	*30-130*		
Surrogate: Terphenyl-dl4	*46.9*		µg/l		*50.0*		*94*	*30-130*		
LCS (1009646-BS1)						Prepared: 07-May-10	Analyzed: 10-May-10			
1,4-Dichlorobenzene	149		µg/l	5.00	200		74	40-140		
2,4-Dinitrotoluene	184		µg/l	5.00	200		92	40-140		
Hexachlorobenzene	181		µg/l	5.00	200		90	40-140		
Hexachlorobutadiene	139		µg/l	5.00	200		70	40-140		
Hexachloroethane	164		µg/l	5.00	200		82	40-140		
2-Methylphenol	177		µg/l	5.00	200		89	30-130		
3 & 4-Methylphenol	174		µg/l	10.0	200		87	40-130		
Nitrobenzene	181		µg/l	5.00	200		90	40-140		
Pentachlorophenol	152		µg/l	5.00	200		76	30-130		
Pyridine	214		µg/l	5.00	200		107	40-140		
2,4,5-Trichlorophenol	152		µg/l	5.00	200		76	30-130		
2,4,6-Trichlorophenol	157		µg/l	5.00	200		79	30-130		
Surrogate: 2-Fluorobiphenyl	*171*		µg/l		*200*		*86*	*30-130*		
Surrogate: 2-Fluorophenol	*162*		µg/l		*200*		*81*	*15-110*		
Surrogate: Nitrobenzene-d5	*200*		µg/l		*200*		*100*	*30-130*		
Surrogate: Terphenyl-dl4	*181*		µg/l		*200*		*90*	*30-130*		
LCS Dup (1009646-BSD1)						Prepared: 07-May-10	Analyzed: 10-May-10			
1,4-Dichlorobenzene	152		µg/l	5.00	200		76	40-140	2	20
2,4-Dinitrotoluene	193		µg/l	5.00	200		97	40-140	5	20
Hexachlorobenzene	182		µg/l	5.00	200		91	40-140	0.8	20
Hexachlorobutadiene	143		µg/l	5.00	200		71	40-140	2	20
Hexachloroethane	168		µg/l	5.00	200		84	40-140	2	20
2-Methylphenol	178		µg/l	5.00	200		89	30-130	0.2	20
3 & 4-Methylphenol	169		µg/l	10.0	200		85	40-130	3	20
Nitrobenzene	186		µg/l	5.00	200		93	40-140	3	20
Pentachlorophenol	157		µg/l	5.00	200		78	30-130	3	20
Pyridine	218		µg/l	5.00	200		109	40-140	2	20
2,4,5-Trichlorophenol	169		µg/l	5.00	200		84	30-130	10	20
2,4,6-Trichlorophenol	149		µg/l	5.00	200		74	30-130	6	20
Surrogate: 2-Fluorobiphenyl	*150*		µg/l		*200*		*75*	*30-130*		
Surrogate: 2-Fluorophenol	*140*		µg/l		*200*		*70*	*15-110*		
Surrogate: Nitrobenzene-d5	*176*		µg/l		*200*		*88*	*30-130*		
Surrogate: Terphenyl-dl4	*158*		µg/l		*200*		*79*	*30-130*		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009646 - SW846 3535										
Duplicate (1009646-DUP1)			**Source: SB11468-01**		Prepared: 07-May-10 Analyzed: 10-May-10					
1,4-Dichlorobenzene	BRL		µg/l	5.00		BRL				50
2,4-Dinitrotoluene	BRL		µg/l	5.00		BRL				50
Hexachlorobenzene	BRL		µg/l	5.00		BRL				50
Hexachlorobutadiene	BRL		µg/l	5.00		BRL				50
Hexachloroethane	BRL		µg/l	5.00		BRL				50
2-Methylphenol	BRL		µg/l	5.00		BRL				50
3 & 4-Methylphenol	BRL		µg/l	10.0		BRL				50
Nitrobenzene	BRL		µg/l	5.00		BRL				50
Pentachlorophenol	BRL		µg/l	5.00		BRL				50
Pyridine	BRL		µg/l	5.00		BRL				50
2,4,5-Trichlorophenol	BRL		µg/l	5.00		BRL				50
2,4,6-Trichlorophenol	BRL		µg/l	5.00		BRL				50
Surrogate: 2-Fluorobiphenyl	*71.6*		µg/l		*83.3*		*86*	*30-130*		
Surrogate: 2-Fluorophenol	*61.3*		µg/l		*83.3*		*74*	*15-110*		
Surrogate: Nitrobenzene-d5	*79.0*		µg/l		*83.3*		*95*	*30-130*		
Surrogate: Terphenyl-dl4	*70.7*		µg/l		*83.3*		*85*	*30-130*		

Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009522 - SW846 3545A										
Blank (1009522-BLK1)					Prepared & Analyzed: 06-May-10					
Aroclor-1016	BRL		µg/kg wet	20.0						
Aroclor-1016 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1221	BRL		µg/kg wet	20.0						
Aroclor-1221 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1232	BRL		µg/kg wet	20.0						
Aroclor-1232 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1242	BRL		µg/kg wet	20.0						
Aroclor-1242 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1248	BRL		µg/kg wet	20.0						
Aroclor-1248 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1254	BRL		µg/kg wet	20.0						
Aroclor-1254 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1260	BRL		µg/kg wet	20.0						
Aroclor-1260 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1262	BRL		µg/kg wet	20.0						
Aroclor-1262 [2C]	BRL		µg/kg wet	20.0						
Aroclor-1268	BRL		µg/kg wet	20.0						
Aroclor-1268 [2C]	BRL		µg/kg wet	20.0						
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*17.0*		µg/kg wet		*20.0*		*85*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*17.4*		µg/kg wet		*20.0*		*87*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*19.2*		µg/kg wet		*20.0*		*96*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*17.5*		µg/kg wet		*20.0*		*88*	*30-150*		
LCS (1009522-BS1)					Prepared & Analyzed: 06-May-10					
Aroclor-1016	214		µg/kg wet	20.0	250		86	50-140		
Aroclor-1016 [2C]	206		µg/kg wet	20.0	250		82	50-140		
Aroclor-1260	194		µg/kg wet	20.0	250		78	50-140		
Aroclor-1260 [2C]	205		µg/kg wet	20.0	250		82	50-140		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*16.6*		µg/kg wet		*20.0*		*83*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*16.8*		µg/kg wet		*20.0*		*84*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*17.4*		µg/kg wet		*20.0*		*87*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*16.6*		µg/kg wet		*20.0*		*83*	*30-150*		
LCS Dup (1009522-BSD1)					Prepared & Analyzed: 06-May-10					
Aroclor-1016	223		µg/kg wet	20.0	250		89	50-140	4	30
Aroclor-1016 [2C]	245		µg/kg wet	20.0	250		98	50-140	18	30
Aroclor-1260	200		µg/kg wet	20.0	250		80	50-140	3	30
Aroclor-1260 [2C]	222		µg/kg wet	20.0	250		89	50-140	8	30
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*17.2*		µg/kg wet		*20.0*		*86*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*19.3*		µg/kg wet		*20.0*		*96*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*17.1*		µg/kg wet		*20.0*		*86*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*18.6*		µg/kg wet		*20.0*		*93*	*30-150*		

TCLP Metals by EPA 1311 & 6000/7000 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009596 - SW846 3010A										
Blank (1009596-BLK1)					Prepared & Analyzed: 06-May-10					
Selenium	BRL		mg/l	0.0300						
Lead	BRL		mg/l	0.0150						
Cadmium	BRL		mg/l	0.0050						
Silver	BRL		mg/l	0.0100						
Arsenic	BRL		mg/l	0.0100						
Chromium	BRL		mg/l	0.0300						
Barium	0.0114	QB1	mg/l	0.0100						
LCS (1009596-BS1)					Prepared: 06-May-10 Analyzed: 07-May-10					
Lead	2.68		mg/l	0.0150	2.50		107	85-115		
Selenium	2.64		mg/l	0.0300	2.50		106	85-115		
Silver	2.41		mg/l	0.0100	2.50		96	85-115		
Arsenic	2.46		mg/l	0.0100	2.50		98	85-115		
Cadmium	2.89	QC2	mg/l	0.0050	2.50		116	85-115		
Chromium	2.99	QC2	mg/l	0.0300	2.50		120	85-115		
Barium	2.70		mg/l	0.0100	2.50		108	85-115		
LCS Dup (1009596-BSD1)					Prepared & Analyzed: 06-May-10					
Selenium	2.74		mg/l	0.0300	2.50		110	85-115	4	20
Lead	2.65		mg/l	0.0150	2.50		106	85-115	0.9	20
Chromium	2.97	QC2	mg/l	0.0300	2.50		119	85-115	0.8	20
Cadmium	2.88		mg/l	0.0050	2.50		115	85-115	0.5	20
Arsenic	2.54		mg/l	0.0100	2.50		102	85-115	3	20
Silver	2.44		mg/l	0.0100	2.50		98	85-115	1	104
Barium	2.70		mg/l	0.0100	2.50		108	85-115	0.1	20
Batch 1009598 - EPA200/SW7000 Series										
Blank (1009598-BLK1)					Prepared & Analyzed: 06-May-10					
Mercury	BRL		mg/l	0.00020						
LCS (1009598-BS1)					Prepared & Analyzed: 06-May-10					
Mercury	0.00402		mg/l	0.00020	0.00500		80	69.2-107		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit BRL = Below Reporting Limit

Toxicity Characteristics - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009360 - General Preparation										
Duplicate (1009360-DUP1)										
			Source: SB11468-01			Prepared & Analyzed: 04-May-10				
Ignitability by Definition	Negative	IgHT	N/A			Negative				35
Batch 1009456 - General Preparation										
Reference (1009456-SRM1)										
						Prepared & Analyzed: 05-May-10				
pH	6.08		pH Units		6.00		101	97.5-102.5		
Reference (1009456-SRM2)										
						Prepared & Analyzed: 05-May-10				
pH	6.31		pH Units		6.25		101	92-108		
Batch 1009581 - General Preparation										
Blank (1009581-BLK1)										
						Prepared & Analyzed: 06-May-10				
Reactivity	Nonreactive		mg/kg wet							
Reactive Cyanide	BRL		mg/kg wet	25.0						
Reactive Sulfide	BRL		mg/kg wet	50.0						
Reference (1009581-SRM1)										
						Prepared & Analyzed: 06-May-10				
Reactive Cyanide	2.93		mg/kg wet	25.0	100		3	0-200		
Reference (1009581-SRM2)										
						Prepared & Analyzed: 06-May-10				
Reactive Sulfide	132		mg/kg wet	50.0	6700		2	0-200		

Notes and Definitions

IgHT	A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for Ignitability is not specified within the method other than to state that the samples should be analyzed as soon as possible.
QB1	The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.
QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:
Hanibal C. Tayeh, Ph.D.
June O'Connor
Rebecca Merz

SB 11468

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
- Standard TAT - 7 to 10 business days
- Rush TAT - Date Needed: 5/5/10 (5/14/10)
- All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: New England Disposal Technologies
83 Gilmore Drive
Sutton, MA 01590

Project Mgr.: Lon Cohen

Invoice To: SAME

P.O. No.:

RQN:

Project No.: IDW-Phase I
Site Name: Naval Base New London
Location: Groton State: CT
Sampler(s): BB

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8=$NaHSO_4$ 9= 4°C 10=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Containers: # of VOA Vials; # of Amber Glass; # of Clear Glass; # of Plastic

Analyses: pH; Cyanide/Sulfide Reactivity; TCLP RCRA 8 metals; TCLP VOC; TCLP SVOC; Ignitability; PCB

QA Reporting Notes: (check if needed)
- ☐ Provide MA DEP MCP CAM Report
- ☐ Provide CT DPH RCP Report

QA/QC Reporting Level
☐ Standard ☐ No QC
☐ Other

State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	pH	Cyanide/Sulfide Reactivity	TCLP RCRA 8 metals	TCLP VOC	TCLP SVOC	Ignitability	PCB		
11468a)	SOIL	4/30/10	9:30 AM	C	SO	9		1			✓	✓	✓	✓	✓	✓	✓		

☐ Fax results when available to ( )
☒ E-mail to lcohen@NEDTinc.com
EDD Format

Condition upon receipt: ☐ Iced ☐ Ambient ☒ °C 4.0 Ref.

Relinquished by:	Received by:	Date:	Time:
Brian Bottomley	Sandy Loster	4/30/10	3:00PM
Sandy Loster	Tim Foster	5/3/10	930
Tim Foster	[illegible]	5/3/10	1530

11 Almgren Drive • Agawam, Massachusetts 01001 • 413-789-9018 • Fax 413-789-4076 • www.spectrum-analytical.com

1.9

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number: CT 4 1 7 0 0 2 2 0 2 0

2. Page 1 of 1

3. Emergency Response Phone: 800-698-1865

4. Waste Tracking Number: NHWM052710-1

5. Generator's Name and Mailing Address
U.S. Naval Submarine Base
Box 400 - Environmental Bldg. 562
Groton CT 06349

Generator's Phone: 860 694-4298

Generator's Site Address (if different than mailing address)
U.S. Naval Submarine Base
Route 12 - Crystal Lake Road
Groton CT 06349

6. Transporter 1 Company Name
New England Disposal Technologies, Inc.

U.S. EPA ID Number: MAC300008059

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address
Dynecol, Inc.
6520 Georgia Street
Detroit MI 48211

Facility's Phone: 313 571-7140

U.S. EPA ID Number: MID074259565

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Non-RCRA, non-DOT Regulated Material (water)	8	DM	400	G	NONE
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
1)172231

14. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Warren E. Edmondston
Signature: X
Month 05 Day 27 Year 10

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Shaun M. Ford
Signature:
Month 05 Day 27 Year 10

Transporter 2 Printed/Typed Name: Lee T. Milligan
Signature:
Month 6 Day 2 Year 10

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Michael Cassidy
Signature:
Month 06 Day 28 Year 10

GENERATOR

INT'L

TRANSPORTER

DESIGNATED FACILITY

169-BLS-C 6 10497 (Rev. 8/06)

TRANSPORTER #1

DYNECOL, INC.
6520 GEORGIA STREET
DETROIT, MICHIGAN 48211
PHONE: (313) 571-7140
FAX: (313) 571-7190

WASTE APPROVAL FORM

I. General Information					
Approval Number		Cust./Gen.Code:			
Generator Name:	Naval Submarine Base New London				
Address:	Crystal Lake Rd. & Rt. 12				
City:	Groton	State:	CT	Zip Code:	06349
Contact Name:	Linda J. Tirrell				
Phone Number:	860-694-4298	Fax Number:			
24 Hour Emergency #:					
EPA ID Number:	CT4170022020	SIC Code:			
Customer Name:	New England Disposal Technologies, Inc.				
Customer Contact:	Lon Cohen				
Address:	83 Gilmore Drive				
City:	Sutton	State:	MA	Zip Code:	01590
Phone Number:	508-234-4440	Fax Number:	508-234-4441		
24 Hour Emergency #:	800-698-1865				

II. Waste Description	
Waste Common Name:	Water IDW
Specific Process Generating the waste:	
Well Development & Decontamination	

DYNECOL, INC. Waste Approval Form PAGE 2 **Approval Number:**

III. Waste Composition (Must equal 100%)

Constituent	Actual % of representative sample	Min. % of waste stream	Max. % of waste stream
Groundwater		98	100
Surfactant, sediment, etc		0	2

III. Waste Characterization

A. Michigan Act 451 and EPA 40 CFR Information: (For the following, please use SW 846 test method for determination)

1. Is this a hazardous waste as defined by either R299.9212-9214 or 261 Subpart B,C, or D?

Check One: ____ **YES** ✓ **NO**

a) *IF YES,* please list all applicable waste codes:

b) *IF NO*, please list all applicable non-hazardous waste codes as defined by Michigan Act 451 Part 121:

2. Does this waste indicate a volatile organic concentration in excess of 500 ppm or the compounds listed in 40 CFR 265 Appendix VI?:

Check One: ____ **YES** ✓ **NO**

a) *IF YES*, please indicate constituents and concentrations:

3. Does the analysis indicate PCB's above the detection limit?

Check One: ____ **YES** ✓ **NO**

a) IF YES, does the waste contain PCB contamination from a source with a concentration greater than or equal to 50 ppm?

Check One: ____ **YES** **NO**

DYNECOL, INC. Waste Approval Form PAGE 3 **Approval Number:**

III. Waste Characterization (continued)

B. Benzene/NESHAP Information (For the following, please use SW 846 method 8020 and/or EPA 602 and/or 624 for determination)

1. Does the waste stream have a benzene concentration of 10 ppm or more?

   Check One: ____ **YES** ✓ **NO**

   IF YES, please indicate total benzene concentration of waste:

2. Does the waste stream contain greater than 10% water ?

   Check One: ✓ **Yes** ___ **NO**

3. Does the generator manage wastes from facilities with Total Annual Benzene (TAB) greater or equal to 10 mg/year?

   Check One: ____ **Yes** ✓ **NO**

   IF YES, please indicate TAB quantity for generator facility:

C. Land Disposal Restriction Information (For the following, please see 40 CFR part 268.2 for definitions)

1. Does the waste stream contain less than 1% by weight Total Organic Carbon (TOC) and less than 1% by weight Total Suspended Solids?

   Check One: ✓ **YES** (wastewater) ____ **NO** (Non-wastewater)

IV. General Characteristics (at 70 degrees F unless otherwise specified:

Color	water clear	Phases
pH	6 - 9	☒ Single Layer
☒ Liquid ☐ Sludge/Slurry ☐ Solid		☐ Double Layer
Odor:		☐ Multi-Layer
☒ None ☐ Strong ☐ Mild		

V. Shipping Information

A. Determination of shipping name as defined by 29 CFR 172.101:

1. Proper Shipping Name:	Non RCRA Non DOT Regulated Waste					
(Well Development & Decontamination Water)						
2. Hazard Class:	3. UN/NA Number:					
4. Packing Group (Circle one):	I		II		III	None
B. Shipping Container (Circle one)	Bulk	Drums	Pails	Totes	Roll Off	Other:
C. Waste Volume	20 - 35					
D. Shipping Frequency (Circle one)	Weekly		**Monthly**	Quarterly	Yearly	One Time Only

VII. Comment Section

Please list any additional comments concerning this waste stream below:

VIII. Generator Authorizations

A. Authorization to correct material profile sheet

I _____(generator signature) hereby give authorization for Dynecol, Inc. to make corrections with oral authorization to establish consistency with the results of sample analysis and/or applicable federal and state regulations and the information on this profile. These changes WILL NOT include the addition or removal of waste codes and waste constituents which must have written authorization to be changed by the generator. I understand that Dynecol reserves the right to reject any material that does not conform to specifications described in profile.

B. Certification

I certify, under penalty of law, that I have personally examined, and am familiar with, the waste profiled through knowledge of the waste, and I believe the information submitted to be true, accurate, and complete.

Linda J. Tirell	Hazardous Waste Program Mgr
Generator Name (Please print or type)	**Title**
Generator Signature	**Date**

IX. Revision Section

Please list any revisions made to form

Revision	Date of Revision	Generator Authorization

X. Dynecol Use only

A. Approval Information

CMF WASTES:		**PLANT WASTES:**	
Primary outbound approval number		Plant treatment code	
Off-site management code		On-site management code:	

WAF Initiator signature:			
Approved by:		Date:	

Report Date:
10-May-10 15:54

☑ Final Report
☐ Re-Issued Report
☐ Revised Report

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

Laboratory Report

New England Disposal Technologies, Inc
83 Gilmore Drive
Sutton, MA 01590
Attn: Lon Cohen

Project: Naval Submarine Base - New London, CT
Project #: IDW-Phase I

Laboratory ID	Client Sample ID	Matrix	Date Sampled	Date Received
SB11470-01	Water	Ground Water	30-Apr-10 10:00	03-May-10 15:30

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393

Authorized by:

Hanibal C. Tayeh, Ph.D.
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.
Please note that this report contains 23 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 4.0 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 1.9 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

These samples do not exhibit the characteristics of reactivity as defined in 40 CFR 261.23, sections (1), (2), (4), and (5); however, Spectrum Analytical, Inc. does not test for detonation, explosive reaction or potential, or forbidden explosives as defined in 40 CFR 261.23, sections (3), (6), (7) and (8).

See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.

EPA 245.1/7470A

Duplicates:

1009688-DUP1 *Source: SB11470-01*

The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.

Mercury

SW846 8260B

Calibration:

1005006

Analyte quantified by quadratic equation type calibration.

1,2-Dibromo-3-chloropropane
Bromoform

This affected the following samples:

1009658-BLK1
1009658-BS1
1009658-BSD1
S004023-CCV1
Water

Laboratory Control Samples:

1009658 BS/BSD

Dibromochloromethane percent recoveries (130/138) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

Water

Samples:

S004023-CCV1

Analyte percent difference is outside individual acceptance criteria, but within overall method allowances.

Dibromochloromethane (31.3%)

SW846 8260B

Samples:

S004023-CCV1

This affected the following samples:

1009658-BLK1
1009658-BS1
1009658-BSD1
Water

SW846 8270C

Calibration:

1004037

Analyte quantified by quadratic equation type calibration.

Atrazine
Benzidine
Hexachlorocyclopentadiene

This affected the following samples:

1009392-BLK1
1009392-BS1
S004042-CCV1
Water

S003603-ICV1

Analyte percent recovery is outside individual acceptance criteria.

Atrazine (%)
Benzidine (278%)

This affected the following samples:

1009392-BLK1
1009392-BS1
S004042-CCV1
Water

Samples:

S004042-CCV1

Analyte percent difference is outside individual acceptance criteria, but within overall method allowances.

Bis(2-chloroisopropyl)ether (34.5%)
Pyridine (-48.1%)

Analyte percent drift is outside individual acceptance criteria, but within overall method allowances.

2,4-Dinitrophenol (57.8%)
4,6-Dinitro-2-methylphenol (52.7%)
4-Nitrophenol (-35.0%)
Benzidine (-39.2%)
Benzoic acid (41.3%)

This affected the following samples:

1009392-BLK1
1009392-BS1
Water

SB11470-01 *Water*

SW846 8270C

Samples:

SB11470-01 *Water*

Elevated Reporting Limits due to limited sample volume.

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water SB11470-01	IDW-Phase I	Ground Water	30-Apr-10 10:00	03-May-10

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B	07-May-10	08-May-10	JLG	1009658	X
67-64-1	Acetone	17.4		µg/l	10.0	1	"	"	"	"	"	X
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	X
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	X
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	X
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	X
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	X
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	X
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	X
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	X
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	X
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	X
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	X
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	X
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	X
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	X
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	X
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	X
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	X
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	X
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	X
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	X
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	X
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	X
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	X
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	X
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water	IDW-Phase I	Ground Water	30-Apr-10 10:00	03-May-10
SB11470-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Volatile Organic Compounds												
Volatile Organic Compounds Prepared by method SW846 5030 Water MS												
99-87-6	4-Isopropyltoluene	4.8		µg/l	1.0	1	SW846 8260B	07-May-10	08-May-10	JLG	1009658	X
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	X
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	X
91-20-3	Naphthalene	6.2		µg/l	1.0	1	"	"	"	"	"	X
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	X
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	X
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	X
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	X
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	X
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	X
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	X
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	X
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	X
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	X
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	X
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	X
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	X
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	X
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	X
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	X
Surrogate recoveries:												
460-00-4	*4-Bromofluorobenzene*	*100*			*70-130 %*		"	"	"	"	"	
2037-26-5	*Toluene-d8*	*101*			*70-130 %*		"	"	"	"	"	
17060-07-0	*1,2-Dichloroethane-d4*	*100*			*70-130 %*		"	"	"	"	"	
1868-53-7	*Dibromofluoromethane*	*103*			*70-130 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3510C			R02									
83-32-9	Acenaphthene	BRL		µg/l	7.14	1	SW846 8270C	05-May-10	07-May-10	MSL	1009392	X
208-96-8	Acenaphthylene	BRL		µg/l	7.14	1	"	"	"	"	"	X

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* Reportable Detection Limit BRL = Below Reporting Limit

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water SB11470-01	IDW-Phase I	Ground Water	30-Apr-10 10:00	03-May-10

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3510C			R02									
62-53-3	Aniline	BRL		µg/l	7.14	1	SW846 8270C	05-May-10	07-May-10	MSL	1009392	X
120-12-7	Anthracene	BRL		µg/l	7.14	1	"	"	"	"	"	X
1912-24-9	Atrazine	BRL		µg/l	7.14	1	"	"	"	"	"	
103-33-3	Azobenzene/Diphenyldiazine	BRL		µg/l	7.14	1	"	"	"	"	"	
92-87-5	Benzidine	BRL		µg/l	7.14	1	"	"	"	"	"	X
56-55-3	Benzo (a) anthracene	BRL		µg/l	7.14	1	"	"	"	"	"	X
50-32-8	Benzo (a) pyrene	BRL		µg/l	7.14	1	"	"	"	"	"	X
205-99-2	Benzo (b) fluoranthene	BRL		µg/l	7.14	1	"	"	"	"	"	X
191-24-2	Benzo (g,h,i) perylene	BRL		µg/l	7.14	1	"	"	"	"	"	X
207-08-9	Benzo (k) fluoranthene	BRL		µg/l	7.14	1	"	"	"	"	"	X
65-85-0	Benzoic acid	54.1		µg/l	7.14	1	"	"	"	"	"	X
100-51-6	Benzyl alcohol	BRL		µg/l	7.14	1	"	"	"	"	"	X
111-91-1	Bis(2-chloroethoxy)methane	BRL		µg/l	7.14	1	"	"	"	"	"	X
111-44-4	Bis(2-chloroethyl)ether	BRL		µg/l	7.14	1	"	"	"	"	"	X
108-60-1	Bis(2-chloroisopropyl)ether	BRL		µg/l	7.14	1	"	"	"	"	"	X
117-81-7	Bis(2-ethylhexyl)phthalate	BRL		µg/l	7.14	1	"	"	"	"	"	X
101-55-3	4-Bromophenyl phenyl ether	BRL		µg/l	7.14	1	"	"	"	"	"	X
85-68-7	Butyl benzyl phthalate	BRL		µg/l	7.14	1	"	"	"	"	"	X
86-74-8	Carbazole	BRL		µg/l	7.14	1	"	"	"	"	"	X
59-50-7	4-Chloro-3-methylphenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
106-47-8	4-Chloroaniline	BRL		µg/l	7.14	1	"	"	"	"	"	X
91-58-7	2-Chloronaphthalene	BRL		µg/l	7.14	1	"	"	"	"	"	X
95-57-8	2-Chlorophenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
7005-72-3	4-Chlorophenyl phenyl ether	BRL		µg/l	7.14	1	"	"	"	"	"	X
218-01-9	Chrysene	BRL		µg/l	7.14	1	"	"	"	"	"	X
53-70-3	Dibenzo (a,h) anthracene	BRL		µg/l	7.14	1	"	"	"	"	"	X
132-64-9	Dibenzofuran	BRL		µg/l	7.14	1	"	"	"	"	"	X
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X
91-94-1	3,3'-Dichlorobenzidine	BRL		µg/l	7.14	1	"	"	"	"	"	X
120-83-2	2,4-Dichlorophenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
84-66-2	Diethyl phthalate	BRL		µg/l	7.14	1	"	"	"	"	"	X
131-11-3	Dimethyl phthalate	BRL		µg/l	7.14	1	"	"	"	"	"	X
105-67-9	2,4-Dimethylphenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
84-74-2	Di-n-butyl phthalate	BRL		µg/l	7.14	1	"	"	"	"	"	X
534-52-1	4,6-Dinitro-2-methylphenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
51-28-5	2,4-Dinitrophenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
121-14-2	2,4-Dinitrotoluene	BRL		µg/l	7.14	1	"	"	"	"	"	X
606-20-2	2,6-Dinitrotoluene	BRL		µg/l	7.14	1	"	"	"	"	"	X
117-84-0	Di-n-octyl phthalate	BRL		µg/l	7.14	1	"	"	"	"	"	X
206-44-0	Fluoranthene	BRL		µg/l	7.14	1	"	"	"	"	"	X
86-73-7	Fluorene	BRL		µg/l	7.14	1	"	"	"	"	"	X
118-74-1	Hexachlorobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X

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* Reportable Detection Limit BRL = Below Reporting Limit

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water SB11470-01	IDW-Phase I	Ground Water	30-Apr-10 10:00	03-May-10

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
Semivolatile Organic Compounds by GCMS												
Semivolatile Organic Compounds by SW846 8270C Prepared by method SW846 3510C			R02									
87-68-3	Hexachlorobutadiene	BRL		µg/l	7.14	1	SW846 8270C	05-May-10	07-May-10	MSL	1009392	X
77-47-4	Hexachlorocyclopentadiene	BRL		µg/l	7.14	1	"	"	"	"	"	X
67-72-1	Hexachloroethane	BRL		µg/l	7.14	1	"	"	"	"	"	X
193-39-5	Indeno (1,2,3-cd) pyrene	BRL		µg/l	7.14	1	"	"	"	"	"	X
78-59-1	Isophorone	BRL		µg/l	7.14	1	"	"	"	"	"	X
91-57-6	2-Methylnaphthalene	BRL		µg/l	7.14	1	"	"	"	"	"	X
95-48-7	2-Methylphenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
108-39-4, 106-44-5	3 & 4-Methylphenol	BRL		µg/l	14.3	1	"	"	"	"	"	X
91-20-3	Naphthalene	BRL		µg/l	7.14	1	"	"	"	"	"	X
88-74-4	2-Nitroaniline	BRL		µg/l	7.14	1	"	"	"	"	"	X
99-09-2	3-Nitroaniline	BRL		µg/l	7.14	1	"	"	"	"	"	X
100-01-6	4-Nitroaniline	BRL		µg/l	28.6	1	"	"	"	"	"	X
98-95-3	Nitrobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X
88-75-5	2-Nitrophenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
100-02-7	4-Nitrophenol	BRL		µg/l	28.6	1	"	"	"	"	"	X
62-75-9	N-Nitrosodimethylamine	BRL		µg/l	7.14	1	"	"	"	"	"	X
621-64-7	N-Nitrosodi-n-propylamine	BRL		µg/l	7.14	1	"	"	"	"	"	X
86-30-6	N-Nitrosodiphenylamine	BRL		µg/l	7.14	1	"	"	"	"	"	X
87-86-5	Pentachlorophenol	BRL		µg/l	28.6	1	"	"	"	"	"	X
85-01-8	Phenanthrene	BRL		µg/l	7.14	1	"	"	"	"	"	X
108-95-2	Phenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
129-00-0	Pyrene	BRL		µg/l	7.14	1	"	"	"	"	"	X
110-86-1	Pyridine	BRL		µg/l	7.14	1	"	"	"	"	"	X
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X
90-12-0	1-Methylnaphthalene	BRL		µg/l	7.14	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
88-06-2	2,4,6-Trichlorophenol	BRL		µg/l	7.14	1	"	"	"	"	"	X
82-68-8	Pentachloronitrobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	
95-94-3	1,2,4,5-Tetrachlorobenzene	BRL		µg/l	7.14	1	"	"	"	"	"	X
Surrogate recoveries:												
321-60-8	*2-Fluorobiphenyl*	*57*			*30-130 %*		"	"	"	"	"	
367-12-4	*2-Fluorophenol*	*44*			*15-110 %*		"	"	"	"	"	
4165-60-0	*Nitrobenzene-d5*	*64*			*30-130 %*		"	"	"	"	"	
4165-62-2	*Phenol-d5*	*38*			*15-110 %*		"	"	"	"	"	
1718-51-0	*Terphenyl-dl4*	*67*			*30-130 %*		"	"	"	"	"	
118-79-6	*2,4,6-Tribromophenol*	*74*			*15-110 %*		"	"	"	"	"	
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3510C												
	Preservation							03-May-10				
12674-11-2	Aroclor-1016	BRL		µg/l	0.267	1	SW846 8082	06-May-10	07-May-10	IMR	1009619	X
11104-28-2	Aroclor-1221	BRL		µg/l	0.267	1	"	"	"	"	"	X

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* Reportable Detection Limit BRL = Below Reporting Limit

Sample Identification	Client Project #	Matrix	Collection Date/Time	Received
Water	IDW-Phase I	Ground Water	30-Apr-10 10:00	03-May-10
SB11470-01				

CAS No.	*Analyte(s)*	*Result*	*Flag*	*Units*	**RDL*	*Dilution*	*Method Ref.*	*Prepared*	*Analyzed*	*Analyst*	*Batch*	*Cert.*
Semivolatile Organic Compounds by GC												
Polychlorinated Biphenyls by SW846 8082 Prepared by method SW846 3510C												
11141-16-5	Aroclor-1232	BRL		µg/l	0.267	1	SW846 8082	06-May-10	07-May-10	IMR	1009619	X
53469-21-9	Aroclor-1242	BRL		µg/l	0.267	1	"	"	"	"	"	X
12672-29-6	Aroclor-1248	BRL		µg/l	0.267	1	"	"	"	"	"	X
11097-69-1	Aroclor-1254	BRL		µg/l	0.267	1	"	"	"	"	"	X
11096-82-5	Aroclor-1260	BRL		µg/l	0.267	1	"	"	"	"	"	X
37324-23-5	Aroclor-1262	BRL		µg/l	0.267	1	"	"	"	"	"	X
11100-14-4	Aroclor-1268	BRL		µg/l	0.267	1	"	"	"	"	"	X
Surrogate recoveries:												
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr)*	*60*			*30-150 %*		"	"	"	"	"	
10386-84-2	*4,4-DB-Octafluorobiphenyl (Sr) [2C]*	*66*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr)*	*64*			*30-150 %*		"	"	"	"	"	
2051-24-3	*Decachlorobiphenyl (Sr) [2C]*	*69*			*30-150 %*		"	"	"	"	"	
Total Metals by EPA 6000/7000 Series Methods												
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	07-May-10	08-May-10	TBG	1009687	X
7440-38-2	Arsenic	0.0188		mg/l	0.0040	1	"	"	"	"	"	X
7440-39-3	Barium	0.201		mg/l	0.0050	1	"	"	"	"	"	X
7440-43-9	Cadmium	0.0030		mg/l	0.0025	1	"	"	"	"	"	X
7440-47-3	Chromium	0.107		mg/l	0.0050	1	"	"	"	"	"	X
7439-92-1	Lead	0.791		mg/l	0.0075	1	"	"	"	"	"	X
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"	X
Total Metals by EPA 200 Series Methods												
7439-97-6	Mercury	0.00108		mg/l	0.00020	1	EPA 245.1/7470A	07-May-10	07-May-10	HB	1009688	X
General Chemistry Parameters												
	Flashpoint	>150		°F		1	SW846 1010	04-May-10	04-May-10	VK	1009353	
	pH	7.61	pH	pH Units		1	ASTM D 1293-99B	03-May-10 18:00	03-May-10 18:00	BD	1009308	X
Reactivity Cyanide/Sulfide Prepared by method General Preparation												
	Reactivity	Nonreactive		mg/l		1	SW846 Ch. 7.3	10-May-10	10-May-10	BD	1009784	
	Reactive Cyanide	BRL		mg/l	25.0	1	"	"	"	"	"	
	Reactive Sulfide	BRL		mg/l	50.0	1	"	"	"	"	"	

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009658 - SW846 5030 Water MS										
Blank (1009658-BLK1)					Prepared & Analyzed: 07-May-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0						
Acetone	BRL		µg/l	10.0						
Acrylonitrile	BRL		µg/l	0.5						
Benzene	BRL		µg/l	1.0						
Bromobenzene	BRL		µg/l	1.0						
Bromochloromethane	BRL		µg/l	1.0						
Bromodichloromethane	BRL		µg/l	0.5						
Bromoform	BRL		µg/l	1.0						
Bromomethane	BRL		µg/l	2.0						
2-Butanone (MEK)	BRL		µg/l	10.0						
n-Butylbenzene	BRL		µg/l	1.0						
sec-Butylbenzene	BRL		µg/l	1.0						
tert-Butylbenzene	BRL		µg/l	1.0						
Carbon disulfide	BRL		µg/l	2.0						
Carbon tetrachloride	BRL		µg/l	1.0						
Chlorobenzene	BRL		µg/l	1.0						
Chloroethane	BRL		µg/l	2.0						
Chloroform	BRL		µg/l	1.0						
Chloromethane	BRL		µg/l	2.0						
2-Chlorotoluene	BRL		µg/l	1.0						
4-Chlorotoluene	BRL		µg/l	1.0						
1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0						
Dibromochloromethane	BRL		µg/l	0.5						
1,2-Dibromoethane (EDB)	BRL		µg/l	0.5						
Dibromomethane	BRL		µg/l	1.0						
1,2-Dichlorobenzene	BRL		µg/l	1.0						
1,3-Dichlorobenzene	BRL		µg/l	1.0						
1,4-Dichlorobenzene	BRL		µg/l	1.0						
Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0						
1,1-Dichloroethane	BRL		µg/l	1.0						
1,2-Dichloroethane	BRL		µg/l	1.0						
1,1-Dichloroethene	BRL		µg/l	1.0						
cis-1,2-Dichloroethene	BRL		µg/l	1.0						
trans-1,2-Dichloroethene	BRL		µg/l	1.0						
1,2-Dichloropropane	BRL		µg/l	1.0						
1,3-Dichloropropane	BRL		µg/l	1.0						
2,2-Dichloropropane	BRL		µg/l	1.0						
1,1-Dichloropropene	BRL		µg/l	1.0						
cis-1,3-Dichloropropene	BRL		µg/l	0.5						
trans-1,3-Dichloropropene	BRL		µg/l	0.5						
Ethylbenzene	BRL		µg/l	1.0						
Hexachlorobutadiene	BRL		µg/l	0.5						
2-Hexanone (MBK)	BRL		µg/l	10.0						
Isopropylbenzene	BRL		µg/l	1.0						
4-Isopropyltoluene	BRL		µg/l	1.0						
Methyl tert-butyl ether	BRL		µg/l	1.0						
4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0						
Methylene chloride	BRL		µg/l	2.0						
Naphthalene	BRL		µg/l	1.0						
n-Propylbenzene	BRL		µg/l	1.0						
Styrene	BRL		µg/l	1.0						
1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0						

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009658 - SW846 5030 Water MS										
Blank (1009658-BLK1)					Prepared & Analyzed: 07-May-10					
1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5						
Tetrachloroethene	BRL		µg/l	1.0						
Toluene	BRL		µg/l	1.0						
1,2,3-Trichlorobenzene	BRL		µg/l	1.0						
1,2,4-Trichlorobenzene	BRL		µg/l	1.0						
1,3,5-Trichlorobenzene	BRL		µg/l	1.0						
1,1,1-Trichloroethane	BRL		µg/l	1.0						
1,1,2-Trichloroethane	BRL		µg/l	1.0						
Trichloroethene	BRL		µg/l	1.0						
Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0						
1,2,3-Trichloropropane	BRL		µg/l	1.0						
1,2,4-Trimethylbenzene	BRL		µg/l	1.0						
1,3,5-Trimethylbenzene	BRL		µg/l	1.0						
Vinyl chloride	BRL		µg/l	1.0						
m,p-Xylene	BRL		µg/l	2.0						
o-Xylene	BRL		µg/l	1.0						
Tetrahydrofuran	BRL		µg/l	2.0						
Ethyl ether	BRL		µg/l	1.0						
Tert-amyl methyl ether	BRL		µg/l	1.0						
Ethyl tert-butyl ether	BRL		µg/l	1.0						
Di-isopropyl ether	BRL		µg/l	1.0						
Tert-Butanol / butyl alcohol	BRL		µg/l	10.0						
1,4-Dioxane	BRL		µg/l	20.0						
trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0						
Ethanol	BRL		µg/l	400						
Surrogate: 4-Bromofluorobenzene	*49.9*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Toluene-d8	*50.2*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*50.0*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: Dibromofluoromethane	*51.4*		µg/l		*50.0*		*103*	*70-130*		
LCS (1009658-BS1)					Prepared & Analyzed: 07-May-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	17.6		µg/l		20.0		88	70-130		
Acetone	19.3		µg/l		20.0		97	53.2-137		
Acrylonitrile	19.8		µg/l		20.0		99	70-130		
Benzene	19.2		µg/l		20.0		96	70-130		
Bromobenzene	21.3		µg/l		20.0		106	70-130		
Bromochloromethane	21.7		µg/l		20.0		108	70-130		
Bromodichloromethane	21.5		µg/l		20.0		108	70-130		
Bromoform	23.6		µg/l		20.0		118	70-130		
Bromomethane	19.6		µg/l		20.0		98	48.9-147		
2-Butanone (MEK)	21.1		µg/l		20.0		105	70-139		
n-Butylbenzene	19.2		µg/l		20.0		96	70-130		
sec-Butylbenzene	20.9		µg/l		20.0		105	70-130		
tert-Butylbenzene	20.9		µg/l		20.0		104	70-130		
Carbon disulfide	18.2		µg/l		20.0		91	70-130		
Carbon tetrachloride	20.0		µg/l		20.0		100	70-130		
Chlorobenzene	20.2		µg/l		20.0		101	70-130		
Chloroethane	17.7		µg/l		20.0		89	65.6-130		
Chloroform	19.6		µg/l		20.0		98	70-130		
Chloromethane	16.4		µg/l		20.0		82	70-130		
2-Chlorotoluene	19.8		µg/l		20.0		99	70-130		
4-Chlorotoluene	19.8		µg/l		20.0		99	70-130		

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009658 - SW846 5030 Water MS										
LCS (1009658-BS1)					Prepared & Analyzed: 07-May-10					
1,2-Dibromo-3-chloropropane	20.1		µg/l		20.0		100	70-130		
Dibromochloromethane	26.0		µg/l		20.0		130	52.9-130		
1,2-Dibromoethane (EDB)	21.8		µg/l		20.0		109	70-130		
Dibromomethane	20.0		µg/l		20.0		100	70-130		
1,2-Dichlorobenzene	20.7		µg/l		20.0		104	70-130		
1,3-Dichlorobenzene	21.0		µg/l		20.0		105	70-130		
1,4-Dichlorobenzene	18.6		µg/l		20.0		93	70-130		
Dichlorodifluoromethane (Freon12)	17.4		µg/l		20.0		87	63.1-130		
1,1-Dichloroethane	18.0		µg/l		20.0		90	70-130		
1,2-Dichloroethane	18.6		µg/l		20.0		93	70-130		
1,1-Dichloroethene	17.8		µg/l		20.0		89	70-130		
cis-1,2-Dichloroethene	16.7		µg/l		20.0		84	70-130		
trans-1,2-Dichloroethene	18.6		µg/l		20.0		93	70-130		
1,2-Dichloropropane	19.2		µg/l		20.0		96	70-130		
1,3-Dichloropropane	19.5		µg/l		20.0		98	70-130		
2,2-Dichloropropane	15.8		µg/l		20.0		79	70-130		
1,1-Dichloropropene	18.2		µg/l		20.0		91	70-130		
cis-1,3-Dichloropropene	19.2		µg/l		20.0		96	70-130		
trans-1,3-Dichloropropene	19.0		µg/l		20.0		95	70-130		
Ethylbenzene	20.1		µg/l		20.0		101	70-130		
Hexachlorobutadiene	18.5		µg/l		20.0		93	70-130		
2-Hexanone (MBK)	21.3		µg/l		20.0		106	70-130		
Isopropylbenzene	19.7		µg/l		20.0		98	70-130		
4-Isopropyltoluene	19.2		µg/l		20.0		96	70-130		
Methyl tert-butyl ether	18.8		µg/l		20.0		94	70-130		
4-Methyl-2-pentanone (MIBK)	20.0		µg/l		20.0		100	61-130		
Methylene chloride	17.8		µg/l		20.0		89	70-130		
Naphthalene	18.7		µg/l		20.0		94	70-130		
n-Propylbenzene	21.6		µg/l		20.0		108	70-130		
Styrene	22.0		µg/l		20.0		110	70-130		
1,1,1,2-Tetrachloroethane	18.2		µg/l		20.0		91	70-130		
1,1,2,2-Tetrachloroethane	20.0		µg/l		20.0		100	70-130		
Tetrachloroethene	20.1		µg/l		20.0		101	70-130		
Toluene	19.2		µg/l		20.0		96	70-130		
1,2,3-Trichlorobenzene	22.7		µg/l		20.0		113	70-130		
1,2,4-Trichlorobenzene	18.5		µg/l		20.0		92	70-130		
1,3,5-Trichlorobenzene	20.8		µg/l		20.0		104	70-130		
1,1,1-Trichloroethane	18.3		µg/l		20.0		91	70-130		
1,1,2-Trichloroethane	19.8		µg/l		20.0		99	70-130		
Trichloroethene	19.5		µg/l		20.0		98	70-130		
Trichlorofluoromethane (Freon 11)	17.9		µg/l		20.0		90	60-172		
1,2,3-Trichloropropane	21.3		µg/l		20.0		106	70-130		
1,2,4-Trimethylbenzene	20.7		µg/l		20.0		104	70-130		
1,3,5-Trimethylbenzene	20.7		µg/l		20.0		104	70-130		
Vinyl chloride	14.4		µg/l		20.0		72	70-130		
m,p-Xylene	41.6		µg/l		40.0		104	70-130		
o-Xylene	21.1		µg/l		20.0		105	70-130		
Tetrahydrofuran	18.9		µg/l		20.0		94	70-130		
Ethyl ether	19.3		µg/l		20.0		96	70-130		
Tert-amyl methyl ether	18.8		µg/l		20.0		94	70-130		
Ethyl tert-butyl ether	18.5		µg/l		20.0		93	70-130		
Di-isopropyl ether	14.8		µg/l		20.0		74	70-130		

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009658 - SW846 5030 Water MS										
LCS (1009658-BS1)					Prepared & Analyzed: 07-May-10					
Tert-Butanol / butyl alcohol	195		µg/l		200		97	70-130		
1,4-Dioxane	212		µg/l		200		106	54.2-130		
trans-1,4-Dichloro-2-butene	20.8		µg/l		20.0		104	70-130		
Ethanol	348		µg/l		400		87	70-130		
Surrogate: 4-Bromofluorobenzene	*50.9*		µg/l		*50.0*		*102*	*70-130*		
Surrogate: Toluene-d8	*49.3*		µg/l		*50.0*		*99*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*48.1*		µg/l		*50.0*		*96*	*70-130*		
Surrogate: Dibromofluoromethane	*49.1*		µg/l		*50.0*		*98*	*70-130*		
LCS Dup (1009658-BSD1)					Prepared & Analyzed: 07-May-10					
1,1,2-Trichlorotrifluoroethane (Freon 113)	17.9		µg/l		20.0		89	70-130	1	25
Acetone	19.4		µg/l		20.0		97	53.2-137	0.5	50
Acrylonitrile	18.6		µg/l		20.0		93	70-130	6	25
Benzene	19.6		µg/l		20.0		98	70-130	2	25
Bromobenzene	21.8		µg/l		20.0		109	70-130	2	25
Bromochloromethane	22.2		µg/l		20.0		111	70-130	2	25
Bromodichloromethane	22.2		µg/l		20.0		111	70-130	3	25
Bromoform	23.4		µg/l		20.0		117	70-130	1	25
Bromomethane	20.9		µg/l		20.0		105	48.9-147	7	50
2-Butanone (MEK)	19.7		µg/l		20.0		99	70-139	7	50
n-Butylbenzene	19.2		µg/l		20.0		96	70-130	0.4	25
sec-Butylbenzene	20.8		µg/l		20.0		104	70-130	0.8	25
tert-Butylbenzene	21.3		µg/l		20.0		106	70-130	2	25
Carbon disulfide	18.5		µg/l		20.0		92	70-130	2	25
Carbon tetrachloride	20.7		µg/l		20.0		104	70-130	3	25
Chlorobenzene	21.0		µg/l		20.0		105	70-130	4	25
Chloroethane	18.4		µg/l		20.0		92	65.6-130	4	50
Chloroform	20.1		µg/l		20.0		100	70-130	2	25
Chloromethane	16.7		µg/l		20.0		84	70-130	2	25
2-Chlorotoluene	21.3		µg/l		20.0		106	70-130	7	25
4-Chlorotoluene	20.3		µg/l		20.0		102	70-130	2	25
1,2-Dibromo-3-chloropropane	20.8		µg/l		20.0		104	70-130	4	25
Dibromochloromethane	27.6	QM9	µg/l		20.0		138	52.9-130	6	50
1,2-Dibromoethane (EDB)	22.7		µg/l		20.0		114	70-130	4	25
Dibromomethane	20.1		µg/l		20.0		100	70-130	0.5	25
1,2-Dichlorobenzene	20.3		µg/l		20.0		101	70-130	2	25
1,3-Dichlorobenzene	21.7		µg/l		20.0		108	70-130	3	25
1,4-Dichlorobenzene	19.0		µg/l		20.0		95	70-130	2	25
Dichlorodifluoromethane (Freon12)	17.7		µg/l		20.0		88	63.1-130	2	50
1,1-Dichloroethane	18.6		µg/l		20.0		93	70-130	3	25
1,2-Dichloroethane	19.2		µg/l		20.0		96	70-130	3	25
1,1-Dichloroethene	18.4		µg/l		20.0		92	70-130	3	25
cis-1,2-Dichloroethene	17.0		µg/l		20.0		85	70-130	2	25
trans-1,2-Dichloroethene	19.3		µg/l		20.0		96	70-130	4	25
1,2-Dichloropropane	19.6		µg/l		20.0		98	70-130	2	25
1,3-Dichloropropane	20.1		µg/l		20.0		100	70-130	3	25
2,2-Dichloropropane	15.9		µg/l		20.0		80	70-130	0.9	25
1,1-Dichloropropene	18.6		µg/l		20.0		93	70-130	2	25
cis-1,3-Dichloropropene	20.4		µg/l		20.0		102	70-130	6	25
trans-1,3-Dichloropropene	18.9		µg/l		20.0		95	70-130	0.3	25
Ethylbenzene	20.9		µg/l		20.0		104	70-130	4	25
Hexachlorobutadiene	19.1		µg/l		20.0		96	70-130	3	50

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009658 - SW846 5030 Water MS										
LCS Dup (1009658-BSD1)					Prepared & Analyzed: 07-May-10					
2-Hexanone (MBK)	21.7		µg/l		20.0		108	70-130	2	25
Isopropylbenzene	20.8		µg/l		20.0		104	70-130	6	25
4-Isopropyltoluene	19.1		µg/l		20.0		95	70-130	0.6	25
Methyl tert-butyl ether	19.0		µg/l		20.0		95	70-130	0.6	25
4-Methyl-2-pentanone (MIBK)	19.6		µg/l		20.0		98	61-130	2	50
Methylene chloride	18.3		µg/l		20.0		92	70-130	3	25
Naphthalene	18.4		µg/l		20.0		92	70-130	2	25
n-Propylbenzene	20.8		µg/l		20.0		104	70-130	4	25
Styrene	22.0		µg/l		20.0		110	70-130	0.09	25
1,1,1,2-Tetrachloroethane	19.3		µg/l		20.0		97	70-130	6	25
1,1,2,2-Tetrachloroethane	20.5		µg/l		20.0		103	70-130	3	25
Tetrachloroethene	20.9		µg/l		20.0		105	70-130	4	25
Toluene	19.6		µg/l		20.0		98	70-130	2	25
1,2,3-Trichlorobenzene	22.1		µg/l		20.0		111	70-130	2	25
1,2,4-Trichlorobenzene	18.1		µg/l		20.0		90	70-130	2	25
1,3,5-Trichlorobenzene	20.3		µg/l		20.0		102	70-130	2	25
1,1,1-Trichloroethane	19.2		µg/l		20.0		96	70-130	5	25
1,1,2-Trichloroethane	20.0		µg/l		20.0		100	70-130	1	25
Trichloroethene	20.0		µg/l		20.0		100	70-130	3	25
Trichlorofluoromethane (Freon 11)	18.1		µg/l		20.0		90	60-172	1	50
1,2,3-Trichloropropane	21.9		µg/l		20.0		110	70-130	3	25
1,2,4-Trimethylbenzene	21.1		µg/l		20.0		105	70-130	2	25
1,3,5-Trimethylbenzene	21.2		µg/l		20.0		106	70-130	2	25
Vinyl chloride	15.1		µg/l		20.0		76	70-130	5	25
m,p-Xylene	42.9		µg/l		40.0		107	70-130	3	25
o-Xylene	21.8		µg/l		20.0		109	70-130	3	25
Tetrahydrofuran	18.8		µg/l		20.0		94	70-130	0.5	25
Ethyl ether	19.8		µg/l		20.0		99	70-130	3	50
Tert-amyl methyl ether	19.0		µg/l		20.0		95	70-130	1	25
Ethyl tert-butyl ether	19.4		µg/l		20.0		97	70-130	4	25
Di-isopropyl ether	15.0		µg/l		20.0		75	70-130	1	25
Tert-Butanol / butyl alcohol	186		µg/l		200		93	70-130	4	25
1,4-Dioxane	193		µg/l		200		96	54.2-130	10	25
trans-1,4-Dichloro-2-butene	21.6		µg/l		20.0		108	70-130	4	25
Ethanol	390		µg/l		400		98	70-130	12	30
Surrogate: 4-Bromofluorobenzene	*52.2*		µg/l		*50.0*		*104*	*70-130*		
Surrogate: Toluene-d8	*49.9*		µg/l		*50.0*		*100*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4	*48.3*		µg/l		*50.0*		*97*	*70-130*		
Surrogate: Dibromofluoromethane	*50.0*		µg/l		*50.0*		*100*	*70-130*		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009392 - SW846 3510C										
Blank (1009392-BLK1)					Prepared: 05-May-10 Analyzed: 07-May-10					
Acenaphthene	BRL		µg/l	5.00						
Acenaphthylene	BRL		µg/l	5.00						
Aniline	BRL		µg/l	5.00						
Anthracene	BRL		µg/l	5.00						
Atrazine	BRL		µg/l	5.00						
Azobenzene/Diphenyldiazine	BRL		µg/l	5.00						
Benzidine	BRL		µg/l	5.00						
Benzo (a) anthracene	BRL		µg/l	5.00						
Benzo (a) pyrene	BRL		µg/l	5.00						
Benzo (b) fluoranthene	BRL		µg/l	5.00						
Benzo (g,h,i) perylene	BRL		µg/l	5.00						
Benzo (k) fluoranthene	BRL		µg/l	5.00						
Benzoic acid	BRL		µg/l	5.00						
Benzyl alcohol	BRL		µg/l	5.00						
Bis(2-chloroethoxy)methane	BRL		µg/l	5.00						
Bis(2-chloroethyl)ether	BRL		µg/l	5.00						
Bis(2-chloroisopropyl)ether	BRL		µg/l	5.00						
Bis(2-ethylhexyl)phthalate	BRL		µg/l	5.00						
4-Bromophenyl phenyl ether	BRL		µg/l	5.00						
Butyl benzyl phthalate	BRL		µg/l	5.00						
Carbazole	BRL		µg/l	5.00						
4-Chloro-3-methylphenol	BRL		µg/l	5.00						
4-Chloroaniline	BRL		µg/l	5.00						
2-Chloronaphthalene	BRL		µg/l	5.00						
2-Chlorophenol	BRL		µg/l	5.00						
4-Chlorophenyl phenyl ether	BRL		µg/l	5.00						
Chrysene	BRL		µg/l	5.00						
Dibenzo (a,h) anthracene	BRL		µg/l	5.00						
Dibenzofuran	BRL		µg/l	5.00						
1,2-Dichlorobenzene	BRL		µg/l	5.00						
1,3-Dichlorobenzene	BRL		µg/l	5.00						
1,4-Dichlorobenzene	BRL		µg/l	5.00						
3,3'-Dichlorobenzidine	BRL		µg/l	5.00						
2,4-Dichlorophenol	BRL		µg/l	5.00						
Diethyl phthalate	BRL		µg/l	5.00						
Dimethyl phthalate	BRL		µg/l	5.00						
2,4-Dimethylphenol	BRL		µg/l	5.00						
Di-n-butyl phthalate	BRL		µg/l	5.00						
4,6-Dinitro-2-methylphenol	BRL		µg/l	5.00						
2,4-Dinitrophenol	BRL		µg/l	5.00						
2,4-Dinitrotoluene	BRL		µg/l	5.00						
2,6-Dinitrotoluene	BRL		µg/l	5.00						
Di-n-octyl phthalate	BRL		µg/l	5.00						
Fluoranthene	BRL		µg/l	5.00						
Fluorene	BRL		µg/l	5.00						
Hexachlorobenzene	BRL		µg/l	5.00						
Hexachlorobutadiene	BRL		µg/l	5.00						
Hexachlorocyclopentadiene	BRL		µg/l	5.00						
Hexachloroethane	BRL		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	BRL		µg/l	5.00						
Isophorone	BRL		µg/l	5.00						
2-Methylnaphthalene	BRL		µg/l	5.00						

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009392 - SW846 3510C										
Blank (1009392-BLK1)					Prepared: 05-May-10 Analyzed: 07-May-10					
2-Methylphenol	BRL		µg/l	5.00						
3 & 4-Methylphenol	BRL		µg/l	10.0						
Naphthalene	BRL		µg/l	5.00						
2-Nitroaniline	BRL		µg/l	5.00						
3-Nitroaniline	BRL		µg/l	5.00						
4-Nitroaniline	BRL		µg/l	20.0						
Nitrobenzene	BRL		µg/l	5.00						
2-Nitrophenol	BRL		µg/l	5.00						
4-Nitrophenol	BRL		µg/l	20.0						
N-Nitrosodimethylamine	BRL		µg/l	5.00						
N-Nitrosodi-n-propylamine	BRL		µg/l	5.00						
N-Nitrosodiphenylamine	BRL		µg/l	5.00						
Pentachlorophenol	BRL		µg/l	20.0						
Phenanthrene	BRL		µg/l	5.00						
Phenol	BRL		µg/l	5.00						
Pyrene	BRL		µg/l	5.00						
Pyridine	BRL		µg/l	5.00						
1,2,4-Trichlorobenzene	BRL		µg/l	5.00						
1-Methylnaphthalene	BRL		µg/l	5.00						
2,4,5-Trichlorophenol	BRL		µg/l	5.00						
2,4,6-Trichlorophenol	BRL		µg/l	5.00						
Pentachloronitrobenzene	BRL		µg/l	5.00						
1,2,4,5-Tetrachlorobenzene	BRL		µg/l	5.00						
Surrogate: 2-Fluorobiphenyl	*26.1*		µg/l		*50.0*		*52*	*30-130*		
Surrogate: 2-Fluorophenol	*18.2*		µg/l		*50.0*		*36*	*15-110*		
Surrogate: Nitrobenzene-d5	*30.3*		µg/l		*50.0*		*61*	*30-130*		
Surrogate: Phenol-d5	*14.1*		µg/l		*50.0*		*28*	*15-110*		
Surrogate: Terphenyl-dl4	*33.4*		µg/l		*50.0*		*67*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*36.4*		µg/l		*50.0*		*73*	*15-110*		
LCS (1009392-BS1)					Prepared: 05-May-10 Analyzed: 07-May-10					
Acenaphthene	32.0		µg/l	5.00	50.0		64	40-130		
Acenaphthylene	33.2		µg/l	5.00	50.0		66	40-130		
Aniline	38.3		µg/l	5.00	50.0		77	40-130		
Anthracene	33.7		µg/l	5.00	50.0		67	40-130		
Atrazine	BRL	QC2	µg/l	5.00	50.0			40-130		
Azobenzene/Diphenyldiazine	36.6		µg/l	5.00	50.0		73	40-130		
Benzidine	BRL		µg/l	5.00	50.0			0-140		
Benzo (a) anthracene	36.9		µg/l	5.00	50.0		74	40-130		
Benzo (a) pyrene	37.8		µg/l	5.00	50.0		76	40-130		
Benzo (b) fluoranthene	34.3		µg/l	5.00	50.0		69	40-130		
Benzo (g,h,i) perylene	36.0		µg/l	5.00	50.0		72	40-130		
Benzo (k) fluoranthene	44.4		µg/l	5.00	50.0		89	40-130		
Benzoic acid	26.6		µg/l	5.00	50.0		53	17.2-130		
Benzyl alcohol	31.5		µg/l	5.00	50.0		63	40-130		
Bis(2-chloroethoxy)methane	32.6		µg/l	5.00	50.0		65	40-130		
Bis(2-chloroethyl)ether	32.0		µg/l	5.00	50.0		64	40-130		
Bis(2-chloroisopropyl)ether	43.0		µg/l	5.00	50.0		86	40-130		
Bis(2-ethylhexyl)phthalate	32.6		µg/l	5.00	50.0		65	40-130		
4-Bromophenyl phenyl ether	42.8		µg/l	5.00	50.0		86	40-130		
Butyl benzyl phthalate	32.3		µg/l	5.00	50.0		65	40-130		
Carbazole	36.4		µg/l	5.00	50.0		73	40-130		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009392 - SW846 3510C										
LCS (1009392-BS1)					Prepared: 05-May-10		Analyzed: 07-May-10			
4-Chloro-3-methylphenol	34.2		µg/l	5.00	50.0		68	40-130		
4-Chloroaniline	34.8		µg/l	5.00	50.0		70	40-130		
2-Chloronaphthalene	31.9		µg/l	5.00	50.0		64	40-130		
2-Chlorophenol	27.6		µg/l	5.00	50.0		55	40-130		
4-Chlorophenyl phenyl ether	38.2		µg/l	5.00	50.0		76	40-130		
Chrysene	36.4		µg/l	5.00	50.0		73	40-130		
Dibenzo (a,h) anthracene	37.6		µg/l	5.00	50.0		75	40-130		
Dibenzofuran	31.8		µg/l	5.00	50.0		64	40-130		
1,2-Dichlorobenzene	29.9		µg/l	5.00	50.0		60	40-130		
1,3-Dichlorobenzene	28.2		µg/l	5.00	50.0		56	40-130		
1,4-Dichlorobenzene	27.8		µg/l	5.00	50.0		56	40-130		
3,3'-Dichlorobenzidine	28.5		µg/l	5.00	50.0		57	40-130		
2,4-Dichlorophenol	31.5		µg/l	5.00	50.0		63	40-130		
Diethyl phthalate	36.5		µg/l	5.00	50.0		73	40-130		
Dimethyl phthalate	33.8		µg/l	5.00	50.0		68	40-130		
2,4-Dimethylphenol	27.9		µg/l	5.00	50.0		56	40-130		
Di-n-butyl phthalate	36.3		µg/l	5.00	50.0		73	40-130		
4,6-Dinitro-2-methylphenol	50.7		µg/l	5.00	50.0		101	40-130		
2,4-Dinitrophenol	48.9		µg/l	5.00	50.0		98	40-130		
2,4-Dinitrotoluene	37.2		µg/l	5.00	50.0		74	40-130		
2,6-Dinitrotoluene	35.4		µg/l	5.00	50.0		71	40-130		
Di-n-octyl phthalate	35.9		µg/l	5.00	50.0		72	40-130		
Fluoranthene	36.1		µg/l	5.00	50.0		72	40-130		
Fluorene	38.2		µg/l	5.00	50.0		76	40-130		
Hexachlorobenzene	35.5		µg/l	5.00	50.0		71	40-130		
Hexachlorobutadiene	34.5		µg/l	5.00	50.0		69	40-130		
Hexachlorocyclopentadiene	38.2		µg/l	5.00	50.0		76	40-130		
Hexachloroethane	30.2		µg/l	5.00	50.0		60	40-130		
Indeno (1,2,3-cd) pyrene	36.4		µg/l	5.00	50.0		73	40-130		
Isophorone	33.8		µg/l	5.00	50.0		68	40-130		
2-Methylnaphthalene	32.4		µg/l	5.00	50.0		65	40-130		
2-Methylphenol	27.1		µg/l	5.00	50.0		54	40-130		
3 & 4-Methylphenol	26.9		µg/l	10.0	50.0		54	40-130		
Naphthalene	30.2		µg/l	5.00	50.0		60	40-130		
2-Nitroaniline	34.3		µg/l	5.00	50.0		69	40-130		
3-Nitroaniline	34.2		µg/l	5.00	50.0		68	40-130		
4-Nitroaniline	37.3		µg/l	20.0	50.0		75	40-130		
Nitrobenzene	35.7		µg/l	5.00	50.0		71	40-130		
2-Nitrophenol	32.7		µg/l	5.00	50.0		65	40-130		
4-Nitrophenol	14.0	QC2	µg/l	20.0	50.0		28	40-130		
N-Nitrosodimethylamine	23.6		µg/l	5.00	50.0		47	40-130		
N-Nitrosodi-n-propylamine	36.0		µg/l	5.00	50.0		72	40-130		
N-Nitrosodiphenylamine	37.4		µg/l	5.00	50.0		75	40-130		
Pentachlorophenol	38.7		µg/l	20.0	50.0		77	40-130		
Phenanthrene	33.8		µg/l	5.00	50.0		68	40-130		
Phenol	15.9		µg/l	5.00	50.0		32	40-130		
Pyrene	33.3		µg/l	5.00	50.0		67	40-130		
Pyridine	5.30		µg/l	5.00	50.0		11	10-140		
1-Methylnaphthalene	29.0		µg/l	5.00	50.0		58	40-140		
1,2,4-Trichlorobenzene	32.9		µg/l	5.00	50.0		66	40-130		
2,4,5-Trichlorophenol	35.2		µg/l	5.00	50.0		70	40-130		
2,4,6-Trichlorophenol	30.8		µg/l	5.00	50.0		62	40-130		

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009392 - SW846 3510C										
LCS (1009392-BS1)					Prepared: 05-May-10 Analyzed: 07-May-10					
Pentachloronitrobenzene	44.9		µg/l	5.00	50.0		90	40-140		
1,2,4,5-Tetrachlorobenzene	34.1		µg/l	5.00	50.0		68	40-140		
Surrogate: 2-Fluorobiphenyl	*28.2*		µg/l		*50.0*		*56*	*30-130*		
Surrogate: 2-Fluorophenol	*17.9*		µg/l		*50.0*		*36*	*15-110*		
Surrogate: Nitrobenzene-d5	*34.2*		µg/l		*50.0*		*68*	*30-130*		
Surrogate: Phenol-d5	*14.0*		µg/l		*50.0*		*28*	*15-110*		
Surrogate: Terphenyl-dl4	*33.5*		µg/l		*50.0*		*67*	*30-130*		
Surrogate: 2,4,6-Tribromophenol	*40.1*		µg/l		*50.0*		*80*	*15-110*		

Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009619 - SW846 3510C										
Blank (1009619-BLK1)					Prepared: 06-May-10 Analyzed: 07-May-10					
Aroclor-1016	BRL		µg/l	0.200						
Aroclor-1016 [2C]	BRL		µg/l	0.200						
Aroclor-1221	BRL		µg/l	0.200						
Aroclor-1221 [2C]	BRL		µg/l	0.200						
Aroclor-1232	BRL		µg/l	0.200						
Aroclor-1232 [2C]	BRL		µg/l	0.200						
Aroclor-1242	BRL		µg/l	0.200						
Aroclor-1242 [2C]	BRL		µg/l	0.200						
Aroclor-1248	BRL		µg/l	0.200						
Aroclor-1248 [2C]	BRL		µg/l	0.200						
Aroclor-1254	BRL		µg/l	0.200						
Aroclor-1254 [2C]	BRL		µg/l	0.200						
Aroclor-1260	BRL		µg/l	0.200						
Aroclor-1260 [2C]	BRL		µg/l	0.200						
Aroclor-1262	BRL		µg/l	0.200						
Aroclor-1262 [2C]	BRL		µg/l	0.200						
Aroclor-1268	BRL		µg/l	0.200						
Aroclor-1268 [2C]	BRL		µg/l	0.200						
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.168*		µg/l		*0.200*		*84*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.175*		µg/l		*0.200*		*88*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.181*		µg/l		*0.200*		*90*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.175*		µg/l		*0.200*		*88*	*30-150*		
LCS (1009619-BS1)					Prepared: 06-May-10 Analyzed: 07-May-10					
Aroclor-1016	2.21		µg/l	0.200	2.50		88	50-140		
Aroclor-1016 [2C]	2.17		µg/l	0.200	2.50		87	50-140		
Aroclor-1260	2.00		µg/l	0.200	2.50		80	50-140		
Aroclor-1260 [2C]	2.07		µg/l	0.200	2.50		83	50-140		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.172*		µg/l		*0.200*		*86*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.177*		µg/l		*0.200*		*88*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.183*		µg/l		*0.200*		*92*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.179*		µg/l		*0.200*		*90*	*30-150*		
LCS Dup (1009619-BSD1)					Prepared: 06-May-10 Analyzed: 07-May-10					
Aroclor-1016	2.27		µg/l	0.200	2.50		91	50-140	3	30
Aroclor-1016 [2C]	2.39		µg/l	0.200	2.50		96	50-140	10	30
Aroclor-1260	2.07		µg/l	0.200	2.50		83	50-140	3	30
Aroclor-1260 [2C]	2.21		µg/l	0.200	2.50		88	50-140	6	30
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	*0.174*		µg/l		*0.200*		*87*	*30-150*		
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]	*0.188*		µg/l		*0.200*		*94*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr)	*0.178*		µg/l		*0.200*		*89*	*30-150*		
Surrogate: Decachlorobiphenyl (Sr) [2C]	*0.194*		µg/l		*0.200*		*97*	*30-150*		

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009687 - SW846 3005A										
Blank (1009687-BLK1)					Prepared & Analyzed: 07-May-10					
Lead	BRL		mg/l	0.0075						
Selenium	BRL		mg/l	0.0150						
Chromium	BRL		mg/l	0.0050						
Barium	BRL		mg/l	0.0050						
Silver	BRL		mg/l	0.0050						
Arsenic	BRL		mg/l	0.0040						
Cadmium	BRL		mg/l	0.0025						
LCS (1009687-BS1)					Prepared & Analyzed: 07-May-10					
Lead	1.34		mg/l	0.0075	1.25		107	85-115		
Selenium	1.41		mg/l	0.0150	1.25		113	85-115		
Chromium	1.43		mg/l	0.0050	1.25		115	85-115		
Silver	1.16		mg/l	0.0050	1.25		92	85-115		
Arsenic	1.33		mg/l	0.0040	1.25		106	85-115		
Barium	1.38		mg/l	0.0050	1.25		110	85-115		
Cadmium	1.38		mg/l	0.0025	1.25		110	85-115		
LCS Dup (1009687-BSD1)					Prepared & Analyzed: 07-May-10					
Selenium	1.37		mg/l	0.0150	1.25		110	85-115	3	20
Lead	1.31		mg/l	0.0075	1.25		105	85-115	2	20
Chromium	1.40		mg/l	0.0050	1.25		112	85-115	3	20
Cadmium	1.34		mg/l	0.0025	1.25		108	85-115	2	20
Barium	1.35		mg/l	0.0050	1.25		108	85-115	2	20
Silver	1.14		mg/l	0.0050	1.25		91	85-115	2	20
Arsenic	1.30		mg/l	0.0040	1.25		104	85-115	3	20

Total Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009688 - EPA200/SW7000 Series										
Blank (1009688-BLK1)						Prepared & Analyzed: 07-May-10				
Mercury	BRL		mg/l	0.00020						
LCS (1009688-BS1)						Prepared & Analyzed: 07-May-10				
Mercury	0.00452		mg/l	0.00020	0.00500		90	85-115		
Duplicate (1009688-DUP1)			Source: SB11470-01			Prepared & Analyzed: 07-May-10				
Mercury	0.00076	QR6	mg/l	0.00020		0.00108			35	20
Matrix Spike (1009688-MS1)			Source: SB11470-01			Prepared & Analyzed: 07-May-10				
Mercury	0.00574		mg/l	0.00020	0.00500	0.00108	93	75-125		
Matrix Spike Dup (1009688-MSD1)			Source: SB11470-01			Prepared & Analyzed: 07-May-10				
Mercury	0.00575		mg/l	0.00020	0.00500	0.00108	93	75-125	0.2	20
Post Spike (1009688-PS1)			Source: SB11470-01			Prepared & Analyzed: 07-May-10				
Mercury	0.00641		mg/l	0.00020	0.00500	0.00108	107	85-115		

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1009308 - General Preparation										
Reference (1009308-SRM1)					Prepared & Analyzed: 03-May-10					
pH	6.04		pH Units		6.00		101	97.5-102.5		
Reference (1009308-SRM8)					Prepared & Analyzed: 03-May-10					
pH	6.02		pH Units		6.00		100	97.5-102.5		
Batch 1009353 - General Preparation										
Reference (1009353-SRM1)					Prepared & Analyzed: 04-May-10					
Flashpoint	79		°F		81.0		98	95-105		
Batch 1009784 - General Preparation										
Blank (1009784-BLK1)					Prepared & Analyzed: 10-May-10					
Reactivity	Nonreactive		mg/l							
Reactive Cyanide	BRL		mg/l	25.0						
Reactive Sulfide	BRL		mg/l	50.0						
Reference (1009784-SRM1)					Prepared & Analyzed: 10-May-10					
Reactive Cyanide	2.79		mg/l	25.0	100		3	0-200		
Reference (1009784-SRM2)					Prepared & Analyzed: 10-May-10					
Reactive Sulfide	96.2		mg/l	50.0	6700		1	0-200		

Notes and Definitions

QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR6	The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.
R02	Elevated Reporting Limits due to limited sample volume.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:
Hanibal C. Tayeh, Ph.D.
June O'Connor
Rebecca Merz

SB 11970

SPECTRUM ANALYTICAL, INC.
Featuring
HANIBAL TECHNOLOGY

CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling:
☐ Standard TAT - 7 to 10 business days
☒ Rush TAT - Date Needed: 5/5/10
All TATs subject to laboratory approval. Min. 24-hour notification needed for rushes. Samples disposed of after 60 days unless otherwise instructed.

Report To: New England Disposal Technologies, Inc
83 Gilmore Drive
Sutton, MA 01590

Invoice To: Same

Project No.: IDW-Phase I
Site Name: Navy Base New London
Location: Groton State: CT
Sampler(s): BEB

Project Mgr.: Lon Cohen

P.O. No.: RQN:

1=$Na_2S_2O_3$ 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=Ascorbic Acid
7=CH_3OH 8=$NaHSO_4$ 9=4°C 10=

DW=Drinking Water GW=Groundwater WW=Wastewater
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air
X1= X2= X3=

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic		Analyses: pH	Ignitability/Flash Reactivity	Total RCRA 8 Metals	Total Voc (8260)	Total Svoc (8270)	Flash Point	PCB		QA Reporting Notes: (check if needed)
11970-01	WATER	4/30/10	10:00AM	C	GW	9	2	3		2		✓	✓	✓	✓	✓	✓	✓		☐ Provide MA DEP MCP CAM Report ☐ Provide CT DPH RCP Report QA/QC Reporting Level ☐ Standard ☐ No QC ☐ Other State specific reporting standards:

☐ Fax results when available to (____)
☒ E-mail to lcohen@NEDSTINC.com
EDD Format

Condition upon receipt: ☐ Iced ☐ Ambient ☒ °C 4.0
Ref.

Relinquished By:	Received by:	Date:	Time:
[signature]	Sandy Foster	4/30/10	3:00PM
Sandy Foster	[signature]	5/3/10	9:30
[signature]	[signature]	5/2/10	1530

APPENDIX B.2

ROUND 2

B.2.1 WATER LEVEL MEASUREMENTS

B.2.2 GROUNDWATER PURGE AND SAMPLE LOG SHEETS

B.2.3 CALIBRATION LOGS

B.2.4 CHAIN OF CUSTODIES

B.2.5 COPIES OF PROJECT LOG BOOK

B.2.6 WELL INVENTORY INSPECTION TABLES

APPENDIX B.2.1

WATER LEVEL MEASUREMENTS

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSB NLON
Project No.: 112G02630
Location: Lower Base
Personnel: L. WARNO, R. SIMPSON
Weather Conditions: 80° SUNNY
Measuring Device: HERON INTERFACE PROBE
Tidally Influenced: Yes X No ___
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
13MW14	27 AUG 2010	0545		14.50	6.67			
NES011		0550		8.90	5.35			
13MW13		0552		14.30	5.25			
NES010		0556		7.95	6.15			
MW1-4PDI		0600		13.0	6.39			
MW1-1PDI		0608		12.90	5.03			
13MW21		0610		12.50	5.16			
13MW19		0612		14.62	4.47			
13MW20		0616		14.60	6.93			
FOMW14		0619		9.95	9.15			
MW3-7RI		0627		8.29	3.48			
MW1-7PDI		0629		12.95	3.13			
MW4-7RI		0633		9.90	5.02			
MW1-5PDI		0644		5.91	3.83			
19MW3		0647		5.15	3.83			

* All measurements to the nearest 0.01 foot

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSB NLON - Lower Subase
Project No.: 112G02630
Location: Lower Subase
Personnel: Charlie Warino, Keith Simpson
Weather Conditions:
Measuring Device: HERON INTERFACE PROBE
Tidally Influenced: Yes _X_ No ___
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	DEPTH TO ~~Thickness of~~ Free Product (feet)*	Groundwater Elevation (feet)*	Comments
13MW1	8/25/10							NOT ACCESSIBLE
13MW2		1339			9.24			
13MW3		1345			9.36			
FOMW13		1321			8.95			
FOMW14		1315			9.12			
FOMW15		1331			9.14			
FOMW16		1311			9.08			
13MW4								NOT FOUND
13MW5								NOT FOUND
13MW8								NOT FOUND
13MW9								NOT FOUND
TBD (4' from 13MW18)		1347				8.90		PRODUCT TOO VISCOUS. CAN NOT GET DTW.
13TB15/13MW21		1256			5.09			
13TB16/13MW19		1301			4.40			
13TB17/13MW20		1305			6.89			
NESO4								NOT FOUND
13MW6		1418			18.29			
13MW10		1424			5.28			
13MW17								NOT FOUND
MW-6								NOT FOUND
NESO6								NOT FOUND
13MW11		~~1438~~						NOT ACCESSIBLE
13MW12		1440			5.97			
MW2-3RI								NOT ACCESSIBLE - ASPHALT
13MW13		1443			5.07			

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSB NLON - Lower Subase
Project No.: 112G02630
Location: Lower Subase
Personnel: Charlie Warino, Keith Simpson
Weather Conditions:
Measuring Device:
Tidally Influenced: Yes _X_ No ___
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
13MW14	8/25/10	1525			4.98			
13MW15								NOT FOUND
13MW16								NOT FOUND
MW1-4RI								NOT FOUND
NESO10		1534			5.19			
NESO11		~~1536~~						NOT ACCESSIBLE
QW-1		1519			5.47			
QW-2		1503			6.73			
QW-3		1527			5.55			
QW-4								NOT FOUND
QW-5		1548			5.11			
WE1								NOT FOUND - NEW ASPHALT
WE4		1545			5.16			
WE5								NOT FOUND, NEW ASPHALT
MW2-4RI		1543			4.81			
19MW2		1050			3.49			
19MW3		1055			3.53			
19MW4								NOT FOUND
MW1-6RI		1137			26.85			
MW2-6RI								NOT ACCESSIBLE
MW3-6RI		1110			2.62			
MW4-6RI		1104			3.33			
MW5-6RI		1100			3.45			
20MW2		1242			4.19			
20MW3								NOT FOUND

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NSB NLON - Lower Subase
Project No.: 112G02630
Location: Lower Subase
Personnel: Charlie Warino, Keith Simpson
Weather Conditions:
Measuring Device:
Tidally Influenced: Yes _X_ No ___
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
20MW6	8/25/10	1224			6.00			
MW1-7RI		1250			4.44			
MW2-7RI		1237			4.28			
MW3-7RI		1207			2.92			
MW4-7RI		1157			4.25			
MW5-7RI								NOT FOUND
20MW7								NOT FOUND
MW1-4PDI		1523			5.30			
MW1-5PDI		1057			3.58			
MW1-1PDI		1609			4.71			
MW1-7PDI		1205			2.45			

TABLE 5-4

GROUNDWATER PDI ROUND 2 WATER LEVEL MEASUREMENTS
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

Well Number	Northing (NAD 83)	Easting (NAD 83)	Installation Date	Ground Elevation (feet, NAVD 1988)	Top Of Riser Elevation (feet, NAVD 1988)	Water Level Information 8/25/2010		Well Details						
						DTW (ft)	El. (feet, NAVD 1988)	Well Completion	Hole Diameter (inches)	Casing Material	Log Total Depth (1) (ft RP)	Screen Material	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)
ZONE 1														
13MW1	705452.600	1180818.100	11/5/1990	11.34	10.97	NM	NM	FM	2	PVC	17.00	PVC	7.49	17.49
13MW2	705419.900	1180831.200	11/5/1990	10.84	10.41	9.24	1.17	FM	2	PVC	17.00	PVC	7.67	17.67
13MW3	705396.100	1180734.500	11/7/1990	10.76	10.50	9.36	1.14	FM	2	PVC	17.00	PVC	7.36	17.36
FOMW13	705491.000	1180757.200	6/28/1989	10.80	10.11	8.95	1.16	FM	2	PVC	12.00	PVC	9.66	2.66
FOMW14	705477.500	1180721.100	6/28/1989	10.56	10.29	9.12	1.17	FM	2	PVC	10.00	PVC	3.20	10.20
FOMW15	705514.100	1180739.100	6/28/1989	10.94	10.29	9.14	1.15	FM	2	PVC	10.00	PVC	3.40	10.40
FOMW16	705499.400	1180712.000	6/28/1989	10.50	10.23	9.08	1.15	FM	2	PVC	10.00	PVC	2.90	9.90
13MW19	705449.900	1180513.800	1/25/1994	5.95	5.66	4.4	1.26	FM	2	PVC	15.00	PVC	5.00	15.00
13MW20	705513.300	1180578.400	1/25/1994	8.32	8.06	6.89	1.17	FM	2	PVC	13.00	PVC	3.00	13.00
13MW21	705485.900	1180525.600	1/25/1994	6.64	6.31	5.09	1.22	FM	2	PVC	15.00	PVC	5.00	15.00
MW1-1PDI	705393.439	1180442.314	4/28/2010	5.90	5.46	4.71	0.75	FM	2	PVC	14.00	PVC	4.00	14.00
ZONE 4														
13MW13	704363.700	1181030.600	11/13/1990	6.55	6.11	5.07	1.04	FM	2	PVC	14.00	PVC	4.60	14.60
13MW14	704343.400	1180927.200	11/13/1990	6.09	5.59	4.98	0.61	FM	2	PVC	14.00	PVC	4.80	14.80
MW2-4RI	704205.239	1181147.561	9/26/1997	6.96	6.46	4.81	1.65	FM	2	PVC	8.00	PVC	3.00	8.00
NESO10	704284.400	1180956.400	1979	6.03	5.71	5.19	0.52	FM	**3**	other	9.00	PVC	4.30	9.30
NESO11	704286.800	1181077.600	1979	6.50	6.39	NM	NM	FM	2	PVC	8.00	PVC	3.60	8.60
QW-1	704375.600	1180888.400	11/29/1994	5.47	5.07	5.47	-0.40	FM	6	Steel	11.00	Steel	6.50	11.00
QW-2	704422.500	1180871.000	11/30/1994	5.55	5.19	6.73	-1.54	FM	4	PVC	13.00	PVC	6.00	13.00
QW-3	704284.100	1180930.600	12/1/1994	5.47	5.17	5.55	-0.38	FM	4	Other	10.00	Other	7.00	10.00
QW-5	704108.100	1181007.500	12/12/1994	5.45	5.26	5.11	0.15	FM	4	--	10.00	--	7.50	10.00
WE1	704427.100	1181035.100	7/16/1986	7.23	7.03	NM	NM	FM	2	PVC	15.00	PVC	5.30	15.30
WE4	704387.300	1180999.700	7/16/1986	6.32	6.22	5.16	1.06	FM	2	PVC	13.00	PVC	3.40	13.40
MW1-4PDI	704303.210	1180917.204	4/28/2010	5.60	5.06	5.3	-0.24	FM	2	PVC	14.00	PVC	3.00	13.00
ZONE 5														
19MW2	708546.100	1180159.400	3/24/1993	4.89	4.59	3.49	1.10	FM	2	PVC	5.00	PVC	1.78	5.78
19MW3	708438.100	1180160.400	3/25/1993	4.79	4.50	3.53	0.97	FM	2	PVC	6.00	PVC	2.30	6.30
MW1-5PDI	708330.130	1180166.318	4/28/2010	5.10	4.68	3.58	1.10	FM	2	PVC	6.25	PVC	1.00	6.00
ZONE 7														
20MW2	706174.700	1180251.600	3/31/1993	5.57	5.35	4.19	1.16	FM	2	PVC	16.00	PVC	2.50	12.50
20MW6	706614.900	1180371.900	3/27/1993	7.80	7.63	6.00	1.63	FM	3	PVC	16.00	PVC	4.00	14.00
MW1-7RI	706203.779	1180331.319	9/28/1997	6.13	5.72	4.44	1.28	FM	3	PVC	10.00	PVC	5.00	9.00
MW2-7RI	706342.543	1180271.125	9/27/1997	5.81	5.43	4.28	1.15	FM	2	PVC	9.00	PVC	4.50	9.50
MW3-7RI	706602.498	1180250.838	9/27/1997	4.67	4.27	2.92	1.35	FM	2	PVC	8.00	PVC	3.00	8.00
MW4-7RI	706758.130	1180277.227	9/25/1997	6.03	5.67	4.25	1.42	FM	2	PVC	8.00	PVC	3.00	8.00
MW1-7PDI	706684.822	1180243.449	4/28/2010	4.10	3.84	2.45	1.39	FM	2	PVC	14.00	PVC	3.00	13.00

(1) Total well depth based on well construction logs.
All water level measurements taken from top of riser pipe.
DTW - Depth to water.
El. - Elevation
FM - Flush Mount
NM - Not measured
NAVD - North American Vertical Datum.
RP - Reference Point

APPENDIX B.2.2

GROUNDWATER PURGE AND SAMPLE LOG SHEETS

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LSI-GW-13MW19-10-02
Sample Location: 13MW19
Sampled By: C. WARLOD
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT ~~(%)~~	Other ORP
Date: 8/29/10								
Time: 1955								
Method: PERISTALTIC	CLEAR	7.63	1.382	26.12	5.2	0.80	0.70	159.4

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/29/10								
Method: PERISTALTIC								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material			SEE	PURGE	SHEET			
Type: 2" PVC								
Total Well Depth (TD): 14.62								
Static Water Level (WL): 4.56								
One Casing Volume (gal/L): 1.6								
Start Purge (hrs): 1855								
End Purge (hrs): 1955								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 3.2								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: 13MW19
DATE: 8/29/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1855	4.56	200	8.60	1.696	23	0.80	25.78	131.8	0.85	CLEAR
1900	4.67	200	8.67	1.484	19	3.02	25.48	131.3	0.83	
1905	4.71	200	8.54	1.446	17	0.46	25.16	135.4	0.66	
1910	4.71	200	8.29	1.001	18	1.06	25.69	146.3	0.47	
1915	4.71	200	7.92	0.738	16	1.76	25.91	160.4	0.35	
1920	4.72	200	7.76	0.683	11	1.77	26.00	166.0	0.33	
1925	4.72	200	7.68	0.657	7.4	1.54	26.12	167.7	0.33	
1930	4.73	200	7.65	0.761	6.6	1.29	26.13	167.3	0.37	
1935	4.74	200	7.63	0.873	6.2	1.14	26.15	165.9	0.43	
1940	4.74	200	7.62	0.971	6.2	1.04	26.12	165.0	0.48	
1945	4.75	200	7.62	1.168	6.0	0.90	26.14	162.3	0.59	
1950	4.76	200	7.64	1.364	5.7	0.82	26.10	159.8	0.68	
1955	4.76	200	7.63	1.382	5.2	0.80	26.12	159.4	0.70	SAMPLED

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LSI-GW-13MW20-10-02
Sample Location: 13MW20
Sampled By: C. WARLAND
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 8/27/10	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1805	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	PPT	ORP
Method: PERISTALTIC	CLEAR	7.21	1.351	23.21	1.2	0.36	0.68	0.0

PURGE DATA:

Date: 8/27/10	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material			SEE	PURGE	SHEET			
Type: 2" PVC								
Total Well Depth (TD): 14.60								
Static Water Level (WL): 6.95								
One Casing Volume(gal/L): ~1.36 GAL								
Start Purge (hrs): 1715								
End Purge (hrs): 1805								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 10								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	Y
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	Y

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: 13MW20
DATE: 8/27/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or (ppt)	Comments
1715	6.95	200	7.76	2.070	11	0.88	22.99	36.6	1.05	CLEAR
1720	6.95	200	7.57	2.026	12	0.50	22.91	28.0	1.03	
1725	6.95	200	7.34	1.803	6.9	0.70	23.23	20.3	0.90	
1730	6.95	200	7.26	1.594	5.8	0.52	0.78	12.1	0.80	
1735	6.95	200	7.20	1.451	5.5	0.40	23.54	10.5	0.72	
1740	6.95	200	7.23	1.601	5.4	0.46	23.39	6.2	0.81	
1745	6.95	200	7.23	1.743	5.2	0.56	23.21	-1.0	0.92	
1750	6.95	200	7.22	1.538	5.0	0.50	23.83	-2.6	0.77	
1755	6.95	200	7.22	1.368	3.7	0.35	23.17	-1.4	0.68	
1800	6.95	200	7.21	1.345	1.4	0.39	23.21	2.5	0.67	
1805	6.95	200	7.21	1.351	1.2	0.36	23.21	0.0	0.68	SAMPLEX

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS1-GW-13MW21-10-02
Sample Location: 13 MW 21
Sampled By: R. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT	Other
Date: 8.27.10								
Time: 1810								
Method: PERISTALTIC	CLEAR	8.15	8.178	24.3	0.5	0.42	4.52	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8.27.10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 12.50								
Static Water Level (WL): 5.19								
One Casing Volume (gal/L): 1.2								
Start Purge (hrs): 1720								
End Purge (hrs): 1810								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 2.4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 6:17PM + 10 MIN =
6:27 PM

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: LSIGW 13MW21-10-02
DATE: 8-27-10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~(ppt)~~ ppt	Comments START PURGE
1720	5.19	180								CLEAR, SLIGHT SULFUR ODOR
1730	5.20		7.87	7.978	1.0	1.27	24.6	43.7	4.40	
1740	5.21		8.07	8.092	0.8	0.38	24.3	60.5	4.48	
1750	5.21		8.11	8.145	0.7	0.43	24.3	60.6	4.52	HIGH SAL &
1800	5.22		8.14	8.170	0.6	0.51	24.3	63.0	4.52	SC ?
1810	5.22		8.15	8.178	0.5	0.42	24.3	65.0	4.52	METER CAL. OK

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LSI-GW-FOMW14-10-02
Sample Location: FOMW14
Sampled By: R. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT	Other
Date: 30 AUG 10								
Time: 0715								
Method: PERISTALTIC	CLEAR	6.92	1.012	20.6	2.6	4.37	0.48	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 30 AUG 10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 9.95								
Static Water Level (WL): 9.29								
One Casing Volume (gal/L): 0.1	←							
Start Purge (hrs): 0625								
End Purge (hrs): 0715								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 7:37 AM + 10 MIN = 7:47 AM

Circle if Applicable:

MS/MSD — Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: FO MW 14
DATE: 30 AUG 10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	*DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~ppt~~ or (ppt)	Comments START PURGE
0625	9.29	150								CLEAR, LT SULFUR
0635	9.60	150	7.27	1.119	6.8	4.33	20.3	-13.0	0.56	ODOR
0645	9.71	100	7.02	1.067	4.0	4.28	20.4	-9.6	0.52	
0655	9.85	↓	6.97	1.029	3.4	4.21	20.5	-6.9	0.51	
0705	↓	↓	6.94	1.015	3.0	4.30	20.6	+5.1	0.49	ORP = +5.1
0715			6.92	1.012	2.6	4.37	20.6	6.2	0.48	

* LOW WATER LEVEL I.E. ONLY .6' WATER IN WELL CAUSING BUBBLES IN CELL AND HIGH DO

PUMP INLET TUBING SET @ 9.85'

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LSI · GW · MW1 · 1PDI · 10.02
Sample Location: MW1 · 1PDI
Sampled By: R. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (mg/l)	Salinity ~~(%)~~ PPT	Other
Date: 29 AUG 10								
Time: 1955								
Method: PERISTALTIC	CLEAR	8.57	3.399	23.8	12	0.31	1.78	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 29 AUG 10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 12.90								
Static Water Level (WL): 4.98								
One Casing Volume (gal/L): 1.3								
Start Purge (hrs): 1905								
End Purge (hrs): 1955								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): ~~1.3~~ 15	2.19 AL							

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 7:50 PM + 10 MIN = 8:00 PM

FUEL ODOR IN PURGE WATER

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: MW1-1PDI
DATE: 29 AUG 10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~mS~~ (ppt)	Comments START PURGE
1905	4.98	160								CLEAR, FUEL ODOR
1915	4.99		8.13	3.419	28	1.66	24.7	-126	1.79	
1925	5.00		8.52	3.427	23	0.30	24.0	-114	1.80	
1935	5.01		8.55	3.414	20	0.28	24.0	-116	1.78	
1945	5.02		8.56	3.405	18	0.27	23.9	-118	1.78	
1955	5.02	↓	8.57	3.399	12	0.31	23.8	-120	1.78	
					TURB AFTER SAMPLING = 10 NTU @ 2013					

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS4-GW-13MW13-10-02
Sample Location: 13 MW13
Sampled By: K. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT	Other
Date: 8-27-10								
Time: 0525								
Method: PERISTALTIC	CLEAR	6.76	0.662	22.0	2.5	0.30	0.32	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8-27-10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 14.30								
Static Water Level (WL): 5.21								
One Casing Volume (gal/L): 1.5								
Start Purge (hrs): ~~16:35~~	0435							
End Purge (hrs): 0525								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 2.4								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 05:41 + 10 MIN
05:51

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: 13MW13
DATE: 8.27.10

KS Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~%~~ or ppt	Comments START PURGE
0435 ~~1635~~	5.21	180								CLEAR, NO ODOR
0445 ~~1645~~	5.21	↓	6.76	0.642	12	0.66	21.5	22.4	0.31	
0455 ~~1655~~	5.23		6.76	0.650	8.3	0.41	21.8	20.6	0.32	
0505	5.23		6.76	0.656	6.0	0.34	22.0	19.4	0.32	
0515	5.24		6.76	0.660	2.8	0.33	22.0	26.4	0.32	
0525	5.24		6.76	0.662	2.5	0.30	22.0	27.0	0.32	

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS4 - GW-13MW14-10 -02
Sample Location: 13MW14
Sampled By: C. WARNO
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT ~~(%)~~	Other ORP
Date: 8/28/10								
Time: 0620								
Method: PERISTALTIC	CLEAR	6.79	28.52	23.18	0.0	0.48	17.61	61.6

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/28/10								
Method: PERISTALTIC								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material			SEE	PURGE	SHEET			
Type: 2" PVC								
Total Well Depth (TD): 14.50								
Static Water Level (WL): 6.38								
One Casing Volume(~~gal~~): 1.3 GAL								
Start Purge (hrs): 0530								
End Purge (hrs): 0620								
Total Purge Time (min): 50								
Total Vol. Purged (gal/~~O~~): 10								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: 13MW14
DATE: 8/28/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0530	6.38	200	6.85	28.87	8.1	0.42	22.42	106.0	18.06	CLEAR - ORGANIC GROWTH
0535	6.42	200	6.85	28.95	5.9	0.56	22.97	82.1	17.98	
0540	6.45	200	6.81	29.12	2.0	0.62	23.08	67.6	18.01	
0545	6.49	200	6.79	29.04	1.4	0.57	23.16	60.9	17.93	
0550	6.50	200	6.78	29.01	1.0	0.46	26.16	58.1	17.90	
0555	6.53	200	6.79	28.68	0.0	0.42	23.21	52.8	17.69	
0600	6.55	200	6.79	28.67	0.0	0.43	23.18	52.9	17.70	
0605	6.57	200	6.79	28.68	0.0	0.46	23.11	57.6	17.71	
0610	6.60	200	6.79	28.60	0.0	0.46	23.16	60.4	17.62	
0615	6.63	200	6.79	28.54	0.0	0.47	23.17	60.9	17.61	
0620	6.65	200	6.79	28.52	0.0	0.48	23.18	61.6	17.61	SAMPLED

SIGNATURE(S): [illegible]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS4GWMW1-4PDI-10-02
Sample Location: MW1-4PDI
Sampled By: K. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA: PDT

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity (ppt)	Other
Date: 8/28/10								
Time: 0615								
Method: PERISTALTIC	CLEAR	6.75	27.00	20.2	2.5	0.63	16.61	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/28/10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 13.0								
Static Water Level (WL): 5.94								
One Casing Volume (gal/l): 1.2								
Start Purge (hrs): 0525								
End Purge (hrs): 0615								
Total Purge Time (min): 50								
Total Vol. Purged (gal/l): 2.5								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 6:16 AM + 10 MIN = 6:26 AM

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: 1-4 PDI
DATE: 8/28/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~250~~ ppt	Comments START PURGE
0525	5.94	200								CLEAR, LT SULFUR
0535	5.95	180	7.02	33.91	40	0.47	19.0	77.0	21.33	ODOR
0545	6.07		6.83	29.30	4.3	0.57	20.2	77.3	18.25	TR. BLACK FINES
0555	6.10		6.80	27.52	3.4	0.61	20.2	80.2	16.84	FLOATING IN
0605	6.15		6.76	27.19	2.1	0.69	20.1	70.0	16.78	PURGE WATER
0615	6.13	↓	6.75	27.00	2.5	0.63	20.2	75.2	16.61	

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS4GWNES010-10-02
Sample Location: NES010
Sampled By: K. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity ~~(%)~~ PPT	Other
Date: 29 AUG 10								
Time: 0655								
Method: PERISTALTIC	CLEAR	6.70	3.886	23.6	2.3	0.74	2.18	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 29 AUG 10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material Type: 3" PVC FM								
Total Well Depth (TD): ~~9.30~~ 7.95	MEASURED							
Static Water Level (WL): 5.93								
One Casing Volume (gal/l): 0.74								
Start Purge (hrs): 0555								
End Purge (hrs): 0655								
Total Purge Time (min): 60								
Total Vol. Purged (gal/l): 2.7								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 6:54AM + 10 MIN = 7:04AM

3" PVC = 0.3670 GAL/FT - NO J PLUG 3" RISER

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: NESO 10
DATE: 29 AUG 10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~%~~ or ppt	Comments
0555	~~7.95~~ 5.93	170								START PURGE
0605	6.12	↓	7.05	1.487	35	0.75	23.1	32.9	0.74	CLEAR W/ TR
0615	6.18		6.88	2.460	15	0.71	23.6	30.6	1.22	RUST COLOR
0625	6.25		6.82	2.478	11	0.70	23.8	29.2	1.25	FLOC, NO ODOR
0635	6.29		6.78	3.667	6.7	0.68	23.7	34.3	1.78	
0645	6.32		6.73	3.809	4.8	0.68	23.7	37.0	2.00	
0655	6.34		6.70	3.886	2.3	0.74	23.6	39.0	2.18	

SIGNATURE(S): [illegible]

PAGE 2 OF 2

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

ZONE 4

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS4-GW-NES011-10-02
Sample Location: NESO 11
Sampled By: C. WATKINS
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT ~~(%)~~	Other ORP
Date: 8/27/10								
Time: 0530								
Method: PERISTALTIC	CLEAR	6.25	0.652	24.42	2.0	0.43	0.32	148.7

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/27/10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material		SEE	PURGE	SHEET				
Type: 3" SCHED PVC								
Total Well Depth (TD): 8.90								
Static Water Level (WL): 5.30								
One Casing Volume(gal/L): ~~[illegible]~~ 0.75 GAL								
Start Purge (hrs): 0400								
End Purge (hrs): 0530								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 2.6								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	Y
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	Y

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD

Duplicate ID No.: —

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: NES011
DATE: 8/27/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
0440	5.30	200	7.16	0.121	21	1.56	23.90	126.7	0.05	CLEAR
0445	5.43	200	6.67	0.104	17	1.07	23.93	145.9	0.05	
0450	5.43	200	6.43	0.1666	16	0.79	24.15	154.4	0.08	
0455	5.43	200	6.19	0.233	13	0.73	24.23	159.3	0.12	
0500	5.45	200	6.18	0.339	11	0.73	24.28	151.5	0.16	
0505	5.45	200	6.24	0.434	8.4	0.64	24.32	146.6	0.21	
0510	5.45	200	6.22	0.514	5.4	0.64	24.30	146.7	0.25	
0515	5.45	200	6.21	0.578	3.9	0.56	24.32	146.2	0.28	
0520	5.45	200	6.23	0.609	3.3	0.55	24.32	147.7	0.29	
0525	5.46	200	6.24	0.632	2.2	0.49	24.40	148.3	0.30	
0530	5.46	200	6.25	0.652	2.0	0.43	24.42	148.7	0.32	SAMPLED

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LSS-GW-19MW3-10-02
Sample Location: 19 MW3
Sampled By: K. SIMPSON
C.O.C. No.:
Type of Sample: ZONE 5
[] Low Concentration
[] High Concentration

SAMPLING DATA:

Date: 26 AUG 10	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT	Other
Time: 1720								
Method: PERISTALTIC	CLEAR	6.30	0.448	24.0	3.0	0.47	0.21	—

PURGE DATA:

Date: 26 AUG 10	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 5.15								
Static Water Level (WL): 3.61								
One Casing Volume (gal/l): 0.3								
Start Purge (hrs): 1630								
End Purge (hrs): 1720								
Total Purge Time (min): 50								
Total Vol. Purged (gal/l): 2.1								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic FILTERED	✓

OBSERVATIONS / NOTES:

LOW TIDE @ 5:35 PM +10 MIN
5:45 PM (1745)

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: 19 MW 3
DATE: 26 AUG 10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~%~~ or (ppt)	Comments START PURGE
1630	3.61	160								CLEAR, NO ODOR
1640	3.67	↓	6.38	0.443	7.9	0.99	24.3	29.7	0.21	
1650	3.68		6.30	0.458	4.6	0.38	24.2	36.6	0.22	
1700	3.69		6.28	0.447	3.9	0.50	24.0	45.5	0.21	
1710	3.71		6.30	0.448	3.4	0.49	24.0	46.6	0.21	
1720	3.72	↓	6.30	0.448	3.0	0.47	24.0	48.1	0.21	
								KS		

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LSS-GW-MW1-SPDI-10-02
Sample Location: MW1-SPI
Sampled By: C. WARWD
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT (%)	Other ORP
Date: 8/26/10								
Time: 1720								
Method: PERISTALTIC	CLEAR	6.40	1.425	24.97	2.6	0.12	0.71	25.9

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/26/10								
Method: PERISTALTIC								
Monitor Reading (ppm): 0.0		SEE	PURGE	SHEET				
Well Casing Diameter & Material								
Type: 2" PVC								
Total Well Depth (TD): 5.91								
Static Water Level (WL): 3.95								
One Casing Volume(gal/L): 2.3 GAL								
Start Purge (hrs): 1620								
End Purge (hrs): 1720								
Total Purge Time (min): 60								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	LSS-GW-MW1-SPDI-10-02-D

LSS-GW-MW1-SPDI-10-02-~~B~~-D

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: MW1-5PDI
DATE: 8/26/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1620	3.95	200	6.50	1.358	11	0.40	25.11	82.1	0.67	PETRO ODOR- CLEAR
1625	4.05	200	6.44	1.349	9.1	0.35	25.08	78.3	0.67	
1630	4.14	200	6.34	1.336	3.8	0.23	24.99	60.3	0.67	
1635	4.16	200	6.33	1.339	4.4	0.13	25.00	53.1	0.67	
1640	4.15	200	6.33	1.340	4.7	0.16	25.26	46.5	0.67	
1645	4.15	200	6.36	1.337	4.3	0.22	25.07	40.8	0.67	
1650	4.15	200	6.35	1.355	3.6	0.14	25.08	36.1	0.68	
1655	4.15	200	6.36	1.368	3.5	0.12	25.10	34.4	0.68	
1700	4.15	200	6.37	1.379	3.3	0.12	25.07	32.5	0.68	
1705	4.15	200	6.37	1.390	3.1	0.11	25.04	31.4	0.69	
1710	4.16	200	6.37	1.417	2.7	0.12	25.02	28.6	0.71	
1715	4.17	200	6.40	1.420	2.6	0.12	25.00	26.8	0.71	
1720	4.18	200	6.40	1.425	2.6	0.12	24.97	25.9	0.71	SAMPLED

SIGNATURE(S): [signature]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS7-GW-MW1-7PD1-10-2
Sample Location: MW1-7PD1
Sampled By: R. SIMPSON
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT	Other
Date: 8·28·10								
Time: 1855								
Method: PERISTALTIC	CLEAR	6.97	0.494	24.7	3.2	0.32	0.24	—

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8·28·10								
Method: PERISTALTIC								
Monitor Reading (ppm): —								
Well Casing Diameter & Material								
Type: 2" PVC FM								
Total Well Depth (TD): 12.95								
Static Water Level (WL): 3.09								
One Casing Volume (gal/l): 1.6								
Start Purge (hrs): 1805								
End Purge (hrs): 1855								
Total Purge Time (min): 50								
Total Vol. Purged (gal/l): 2.3								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	✓
		2X VOL FOR QA	

OBSERVATIONS / NOTES:

LOW TIDE @ 7:01 PM +10 MIN. =
7:11 PM

Circle if Applicable:

MS/~~MSD~~ YES

Duplicate ID No.:

Signature(s):

MS ONLY
AS PER UFP-SAP

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630

WELL ID.: MW1-7PD1
DATE: 28 AUG 2010

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity ~~ppt~~ or ppt	Comments START PURGE
1805	3.09	170								CLEAR, LT SULFUR
1815	3.08		7.42	0.590	3.6	0.81	25.0	-25.5	0.28	ODOR
1825	3.12		7.03	0.500	36 *	0.34	24.9	-21.4	0.24	CLOUDY
1835	3.13		7.00	0.498	8.5	0.36	24.8	-12.7	0.24	
1845	3.15		6.99	0.496	4.6	0.37	24.7	-10.1	0.24	
1855	3.15		6.97	0.494	3.2	0.32	24.7	-12.6	0.24	

* MEASURED TD MAY HAVE STIRRED UP BTM.

SIGNATURE(S): [illegible]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS7-GW-MW3-7RI-10-02
Sample Location: MW3-7RI
Sampled By: C. WARREN
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/28/10								
Time: 1850	(Visual)	(S.U.)	(mS/cm)	(^{0}C)	(NTU)	(mg/l)	PPT ~~(%)~~	ORP
Method: PERISTALTIC	CLEAR	6.70	1.763	25.83	0.0	1.23	0.89	166.4

PURGE DATA:

Date: 8/28/10	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Method: PERISTALTIC								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material								
Type: 2" PVC			SEE	PURGE	SHEET			
Total Well Depth (TD): 8.29								
Static Water Level (WL): 3.46								
One Casing Volume (gal/L): 0.75								
Start Purge (hrs): 1800								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	LS7-GW-MW3-7RI-10-02-D

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: MW3-7RI
DATE: 8/28/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ppt	Comments
1800	3.46	200	7.33	1.731	6.7	1.73	25.97	158.6	0.86	CLEAR
1805	3.49	200	7.00	1.649	5.1	1.31	26.00	168.1	0.83	
1810	3.50	200	6.77	1.665	3.7	1.19	25.99	172.9	0.84	
1815	3.50	200	6.73	1.661	2.4	1.30	26.07	172.6	0.84	
1820	3.50	200	6.72	1.674	1.1	1.23	25.95	171.8	0.84	
1825	3.51	200	6.72	1.684	0.0	1.28	25.91	171.0	0.85	
1830	3.51	200	6.71	1.708	0.0	1.29	25.90	169.7	0.86	
1835	3.52	200	6.71	1.719	0.0	1.30	25.88	168.9	0.87	
1840	3.53	200	6.71	1.729	0.0	1.27	25.86	167.8	0.87	
1845	3.54	200	6.70	1.756	0.0	1.25	25.84	166.5	0.89	
1850	3.54	200	6.70	1.763	0.0	1.23	25.83	166.4	0.89	SAMPLED

SIGNATURE(S): [illegible]

PAGE 1 OF 1

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NSB NLON - Lower Subase
Project No.: 112G02630

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

Sample ID No.: LS7-GW-MW4-7RI-10-22
Sample Location: MW4-7RI
Sampled By: C. WARNO
C.O.C. No.:
Type of Sample:
[] Low Concentration
[] High Concentration

SAMPLING DATA:

	Color (Visual)	pH (S.U.)	S.C. (mS/cm)	Temp. (^{0}C)	Turbidity (NTU)	DO (mg/l)	Salinity PPT ~~(%)~~	Other ORP
Date: 8/29/10								
Time: 0645								
Method: PERISTALTIC	CLEAR	7.07	0.924	23.75	1.1	0.38	0.45	-39.8

PURGE DATA:

	Volume	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Date: 8/28/10								
Method: PERISTALTIC								
Monitor Reading (ppm): 0.0								
Well Casing Diameter & Material			SEE	PURGE	SHEET			
Type: 2" PVC								
Total Well Depth (TD): 9.90								
Static Water Level (WL): 5.18								
One Casing Volume (gal/L): 0.75								
Start Purge (hrs): 0555								
End Purge (hrs): 0645								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 10								

SAMPLE COLLECTION INFORMATION:

Analysis	Preservative	Container Requirements	Collected
Total Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X
Dissolved Arsenic, Copper, Lead	HN03, 4° C	1L Plastic	X

OBSERVATIONS / NOTES:

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s):

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NSB NLON - Lower Subase
PROJECT NUMBER: 112G02630
WELL ID.: MW4-7RI
DATE: 8/29/10

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	S. Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celcius)	ORP mV	Salinity % or ~~ppt~~	Comments
0555	5.18	200	7.05	0.903	8.1	0.57	23.42	20.2	0.44	CLEAR
0600	5.20	200	7.02	0.873	9.9	0.55	23.65	-2.7	0.43	
0605	5.21	200	7.03	0.876	7.5	0.47	23.78	-20.9	0.43	
0610	5.21	200	7.05	0.884	4.9	0.46	23.78	-31.7	0.43	
0615	5.23	200	7.06	0.892	3.7	0.44	23.77	-36.5	0.44	
0620	5.23	200	7.07	0.896	2.7	0.43	23.76	-38.3	0.44	
0625	5.23	200	7.07	0.905	1.7	0.42	23.76	-39.6	0.44	
0630	5.24	200	7.07	0.911	1.4	0.41	23.73	-39.6	0.45	
0635	5.25	200	7.08	0.914	1.4	0.36	23.75	-40.5	0.45	
0640	5.26	200	7.08	0.923	1.1	0.40	23.75	-40.4	0.45	
0645	5.26	200	7.07	0.924	1.1	0.38	23.75	-39.8	0.45	SAMPLED

SIGNATURE(S): [illegible]

PAGE 1 OF 1

APPENDIX B.2.3

CALIBRATION LOGS

DOCUMENTATION OF FIELD CALIBRATION

This attachment is to be completed daily (pre-/post-) for all direct reading instruments employed in support of the identified scope of work.

SITE NAME: NSB NLON Lower Subase **CTO #:** WE24 **PROJECT NO.:** 112G02630

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
8/26/10	YSI 556	08D101031	C. WASWO	pH 4.0/		3.99	4.00		
				pH 7.0/		6.83	7.00		
				pH 10.0/		10.04	10.00		
				COND/1,000 uS/cm (1 ms/cm)		0.979	1.000		
				ORP/100 mV - 231.0 mV		143.1	230.8		
				DO % SAT		98.8 %	100.0 %		
8/27/10	"	"	"	pH 4.0		4.16	4.00		
				pH 7.0		6.93	7.00		
				pH 10.0		10.24	10.03		
				COND 1 ms/cm		1.154	1.000		
				ORP 237 mV		168.4	237.0		
				DO % SAT		97.6	100.0		

DOCUMENTATION OF FIELD CALIBRATION

This attachment is to be completed daily (pre-/post-) for all direct reading instruments employed in support of the identified scope of work.

SITE NAME: NSB NLON - LOWER BASE **CTO #:** 112602630

PROJECT NO.: 112602630

nstrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Ren
			Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
8/28/10 YSI 556	08D101031	C. LOREWOO	pH 4.0		4.23	4.00		
			pH 7.0		6.78	7.00		
			pH 10.0		10.14	10.00		
			COND 1ms/cm		1.200	1.000		
			ORP 237.5		267.3	237.5		
			DO % SAT		104.3	100.8		
8/29/10 "	"	"	pH 4.0		3.80	4.00		
			pH 7.0		6.87	7.00		
			pH 10.0		10.55	10.08		
			COND 1ms/cm		0.873	1.000		
			ORP 237.5		309.2	237.5		
			DO % SAT		98.6	100.8		

DOCUMENTATION OF FIELD CALIBRATION

This attachment is to be completed daily (pre-/post-) for all direct reading instruments employed in support of the identified scope of work.

SITE NAME: NSB NLON Lower Subase **CTO #:** WE24 **PROJECT NO.:** 112G02630

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
8/26/10	YSI 556	09D100185	C. WARING	pH 4.0		3.98	4.00		
				pH 7.0		6.83	7.00		
				pH 10.0		10.16	10.02		
				COND 1 mS/cm		0.964	1.000		
				ORP 231 mV		235.0	231.0		
				DO % SAT		99.4 %	100 %		
8/27/10	"	"	"	pH 4.0		3.95	4.00		
				pH 7.0		6.96	7.00		
				pH 10.0		10.19	10.03		
				COND. 1 mS/cm		0.978	1.000		
				ORP 237		256.5	237.1		
				DO % SAT		101.2	100.0		

DOCUMENTATION OF FIELD CALIBRATION

This attachment is to be completed daily (pre-/post-) for all direct reading instruments employed in support of the identified scope of work.

SITE NAME: NSB NLON - LOWER BASE **CTO #:** WE24

PROJECT NO.: 112G02630

nstrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Ren
			Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
8/28/10 YSI 556	09D100185	C. WARING	pH 4.0	[illegible]	4.16	4.00		
			pH 7.0		5.85	7.00		
			pH 10.0		10.13	10.02		
			COND 1ms/cm		1.000	1.000		
			ORP 237.5mv		221.0	237.5		
			DO % SAT		106.9	100.8		
8/29/10 "	"	"	pH 4.0		4.05	4.00		
			pH 7.0		6.74	7.00		
			pH 10.0		10.51	10.07		
			COND 1ms/cm		1.011	1.000		
			ORP 237.5mv		169.0	237.5		
			DO % SAT		99.2	100.8		

DOCUMENTATION OF FIELD CALIBRATION

This attachment is to be completed daily (pre-/post-) for all direct reading instruments employed in support of the identified scope of work.

SITE NAME: NSB NLON Lower Subase **CTO #:** WE24 **PROJECT NO.:** 112G02630

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration	NTU	
26 AUG 10	LA MOTTE 2020	4644-4303	KES	0.00	0.00	9.6	10.0	0 - 10	
27 AUG 10	"	"	KES	0.10	0.00	9.9	10.0	0 - 10	
28 AUG 10	"	"	KES	0.00	0.00	10.0	10.0	0 - 10	
29 AUG 10	"	"	KES	0.00	0.00	10.0	10.0	0 - 10	

DOCUMENTATION OF FIELD CALIBRATION

This attachment is to be completed daily (pre-/post-) for all direct reading instruments employed in support of the identified scope of work.

SITE NAME: NSB NLON Lower Subase **CTO #:** WE24 **PROJECT NO.:** 112G02630

Date of Calibration	Instrument Name and Model	Instrument I.D. Number	Person Performing Calibration	Instrument Settings		Instrument Readings		Calibration Standard (Lot Number)	Remarks/ Comments
				Pre-Calibration	Post-Calibration	Pre-Calibration	Post-Calibration		
26 AUG 10	LA MOTTE 2020 E	3836-3802	KES	0.35	0.05	10.0	10.0	0 - 10 NTU	
27 AUG 10	"	"	KES	0.00	0.00	10.0	10.0	0 - 10	
28 AUG 10	"	"	KES	0.15	0.00	9.8	10.0	0 - 10	
29 AUG 10	"	"	KES	0.30	0.00	9.6	10.0	0 - 10	

APPENDIX B.2.4

CHAIN OF CUSTODIES

TETRA TECH NUS, INC. | **CHAIN OF CUSTODY** | **NUMBER** 3877 | **PAGE** 1 OF 3

PROJECT NO: 112G02630	FACILITY: NSB-NWON	PROJECT MANAGER: COREY RICH	PHONE NUMBER: 412 921 7090	LABORATORY NAME AND CONTACT: COLUMBIA ANALYTICAL, L. HACKESTEIN
SAMPLERS (SIGNATURE): [signature]		FIELD OPERATIONS LEADER: KEITH SIMPSON	PHONE NUMBER: 412 352 2264	ADDRESS:
		CARRIER/WAYBILL NUMBER: FEDEX 8735 5966 0141		CITY, STATE: KELSO, WA

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

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED

DATE YEAR 2010	TIME	SAMPLE ID (PRE-DESIGN GW SAMPLING LOWER BASE)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: TOTAL - ARSENIC, COPPER, LEAD	TYPE OF ANALYSIS: DISS. - ARSENIC, COPPER, LEAD							COMMENTS
8/26	1720	LS5-GW-19MW3-10-02	5	—	—	GW	G	~~2~~ 1	1	~~1~~							
	1720	LS5-GW-19MW3-10-02-F	5	—	—			1	—	1							
	1720	LS5-GW-MW1-5PDI-10-2	5	—	—			1	1	—							
	1720	LS5-GW-MW1-5PDI-10-2-F	5	—	—			1	—	1							
	0000	LS5-GW-MW1-5PDI-10-2-D	5	—	—			1	1	—							
	0000	LS5-GW-MW1-5PDI-10-2-F-D	5	—	—			1	—	1							
8/27	0525	LS4-GW-13MW13-10-02	4	—	—			1	1	—							
	0525	LS4-GW-13MW13-10-02-F	4	—	—			1	—	1							
	0530	LS4-GW-NES011-10-02	4	—	—			1	1	—							
	0530	LS4-GW-NES011-10-02-F	4	—	—			1	—	1							
	1805	LS1-GW-13MW20-10-02	1	—	—			1	1	—							
	1805	LS1-GW-13MW20-10-02-F	1	—	—			1	—	1							

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature]	9.30.10	1430	1. RECEIVED BY FEDEX	9.30.10	1430
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS: F = FIELD FILTERED

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | **CHAIN OF CUSTODY** | **NUMBER** 3879 | **PAGE** 3 **OF** 3

PROJECT NO: 1126-02630	**FACILITY:** NSB-NLON	**PROJECT MANAGER** COREY RICH	**PHONE NUMBER** 412 921 7090
LABORATORY NAME AND CONTACT: COLUMBIA ANALYTICAL, L. HUCKESTEIN		**SAMPLERS (SIGNATURE)** [signature]	**FIELD OPERATIONS LEADER** KEITH SIMPSON
PHONE NUMBER 412 352 2264	**ADDRESS**	**CARRIER/WAYBILL NUMBER** FEDEX 8735 5966 0141	**CITY, STATE** KELSO, WA

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

PRE-DESIGN GW SAMPLING LOWER BASE ROUND 2

DATE YEAR 2010	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: TOTAL - ARSENIC, COPPER, LEAD	TYPE OF ANALYSIS: DISS. - ARSENIC, COPPER, LEAD	COMMENTS
8/29	0645	LS7-GW-MW4-7RI-10-02	7	—	—	GW	G	1	1	—	
	0645	LS7-GW-MW4-7RI-10-02-F	7	—	—			1	—	1	
	0655	LS4-GW-NES010-10-02	4	—	—			1	1	—	
	0655	LS4-GW-NES010-10-02-F	4	—	—			1	—	1	
	1955	LS1-GW-13MW19-10-02	1	—	—			1	1	—	
	1955	LS1-GW-13MW19-10-02-F	1	—	—			1	—	1	
	1955	LS1-GW-MW1-1PDI-10-02	1	—	—			1	1	—	
	1955	LS1-GW-MW1-1PDI-10-02-F	1	—	—			1	—	1	
8/30	0715	LS1-GW-FOMW14-10-02	1	—	—			1	1	—	
	0715	LS1-GW-FOMW14-10-02-F	1	—	—			1	—	1	

1. RELINQUISHED BY [signature]	DATE 8.30.10	TIME 1430	1. RECEIVED BY FEDEX	DATE 8.30.10	TIME 1430
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS F = FIELD FILTERED

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

4/02R
FORM NO. TtNUS-001

TETRA TECH NUS, INC. | CHAIN OF CUSTODY | NUMBER 3878 | PAGE 2 OF 3

PROJECT NO:	FACILITY:	PROJECT MANAGER	PHONE NUMBER	LABORATORY NAME AND CONTACT:
112G02630	NSB - NLON	COREY RICH	412 921 7090	COLUMBIA ANALYTICAL, L. HUCKESTEIN
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER	PHONE NUMBER	ADDRESS
[signature]		KEITH SIMPSON	412 352 2264	
		CARRIER/WAYBILL NUMBER		CITY, STATE
		FEDEX 8735 5966 0141		KELSO WA

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

CONTAINER TYPE PLASTIC (P) or GLASS (G)
PRESERVATIVE USED
TYPE OF ANALYSIS

DATE YEAR 2010	TIME	SAMPLE ID (PRE-DESIGN GW SAMPLING LOWER BASE ROUND 2)	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	TOTAL - ARSENIC, COPPER, LEAD	DISS - ARSENIC, COPPER, LEAD							COMMENTS
8/27	1810	LS1-GW-13MW21-10-02	1	—	—	GW	G	1	1	—							
8/27	1810	LS1-GW-13MW21-10-02-F	1	—	—			1	—	1							
8/28	0615	LS4-GW-MW1-4PDI-10-02	4	—	—			1	~~1~~ 1	~~1~~							
	0615	LS4-GW-MW1-4PDI-10-02-F	4	—	—			1	—	~~1~~ 1							
	0620	LS4-GW-13MW14-10-02	4	—	—			1	1	—							
	0620	LS4-GW-13MW14-10-02-F	4	—	—			1	—	1							
	1850	LS7-GW-MW3-7RI-10-02	7	—	—			1	1	—							
	1850	LS7-GW-MW3-7RI-10-02-F	7	—	—			1	—	1							
	0000	LS7-GW-MW3-7RI-10-02-D	7	—	—			1	1	—							
	0000	LS7-GW-MW3-7RI-10-02-F-D	7	—	—			1	—	1							
8/28	1855	LS7-GW-MW1-7PDI-10-02	7	—	—			2	2	—							RUN ALSO
8/28	1855	LS7-GW-MW1-7PDI-10-02-F	7	—	—			2	—	2							MS

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
[signature]	8.30.10	1430	FEDEX	8.30.10	1430
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS F = FIELD FILTERED

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

4/02R
FORM NO. TtNUS-001

APPENDIX B.2.5

COPIES OF PROJECT LOG BOOK

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112G02630

BOOK NO. 1333

MONDAY 23 AUG 2010

Work continued from Page

WEATHER 70° RAIN/CLOUDS & WIND

0715 KEITH SIMPSON & CHARLIE WARNO @ PASS AND ID TO OBTAIN BADGES. THEY DO NOT HAVE OUR INFO, TRYING TO CONTACT KEVIN BRANIFF. KEVIN NOT ANSWERING, CALLING DICK CONANT. KEVIN HAS A NEW CELL PHONE #(860) 941-4562. CALLING NEW NUMBER AND LEAVING A MESSAGE.

0800 KEITH SIMPSON CALLING KEVIN BRANIFF AGAIN, KEVIN COMING OVER TO HELP ~~THE~~ GET PASSES.

0845 KEITH SIMPSON & CHARLIE WARNO BADGED, HEADING TO PUBLIC WORKS TO COMPLETE RAD CON AWARENESS TRAINING & REVIEW ACTIVITIES WITH KEVIN BRANIFF AND MARK SHULTZ.

0930 KEVIN BRANIFF ESCORTS K.S & C.W TO LOWER BASE TO MEET IDW HANDLING CREW. K.S. & C.W. THEN HEAD TO LINDA TIRRELL'S OFFICE TO DISCUSS STORAGE SHED & DRUM USAGE. TTNUS PERSONNEL HAS ACCESS TO QUONSETT HUT STORAGE AREA. DRUMS ARE AVAILABLE UPON REQUEST.

1000 C.W & K.S - LUNCH

1030 C.W. & K.S. TO LOWER BASE ZONE 5 TO BEGIN MARKOUTS. MARKING OUT ALL LOCATIONS IN ZONE 5.

1100 C.W. & K.S. MOVE TO ZONE 6, MARKING OUT LOCATIONS. LOCATION # NEEDS TO BE MOVED DUE TO ACCESS ISSUES WITH THE DPT RIG.

1150 C.W. & K.S. MOVING TO ZONE 7 TO MARK OUT LOCATIONS.

1240 HAGER-RICHTER PERSONNEL CALL FROM PASS & ID. C.W & K.S. HEADING OVER TO MEET THEM.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 8/23/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

NSB NLON

50 MON 23 AUG 2010 1333

70° RAIN / CLOUDS / WIND

1250 C.W. HELPING HAGER RICHTER PERSONNEL, K.S. INFORMING KEVIN BRANIFF THAT SUBCONTRACTORS HAVE ARRIVED FOR RAD CON TRAINING.

1300 HAGER RICHTER PERSONNEL COMPLETING RAD CON & TTNUS HEALTH AND SAFETY TRAINING. ALSO COMPLETING PAPERWORK FOR LONG-TERM BADGES. TURNING PAPERWORK IN TO PASS & ID.

1500 C.W. TAKING HAGER-RICHTER PERSONNEL TO ZONE 5 TO BEGIN CLEARING.
K.S. TO IDW MANAGEMENT TO OBTAIN QUONSETT KEY AND THEN TO ZONE 7 TO CONTINUE MARK OUTS.

1530 C.W. JOINING K.S. TO CONTINUE MARKING OUT ZONE 7.

1645 ZONE 7 MARKED OUT. LOCATION # HAS TO BE MOVED DUE TO RIG ACCESS ISSUES.
K.S. OFFSITE TO HARDWARE STORE.
C.W. CHECKING ON UTILITY CLEARANCE ACTIVITIES.

1700 C.W. & HAGER RICHTER OFFSITE.

END

TUES 24 AUG 2010

Work continued from Page

WEATHER: 65° CLOUDY / DRIZZLE / WIND

C. WARWO
K. SIMPSON

0730 C. WARWO & K. SIMPSON ONSITE AT ZONE 7 TO FINISH MARKING OUT LOCATIONS. MARKING OUT ZONES 3 & 4

0930 ZONES 3 & 4 MARKED OUT, CALLING COREY RICH TO DISCUSS DIFFICULT LOCATIONS.

1000 CALLING DRILEX TO DISCUSS TIGHT ACCESS FOR SOME DPT LOCATIONS. THEY ARE BRINGING AN ELECTRIC JACKHAMMER CAPABLE OF DRIVING GEOPROBE TOOLS.

1030 CHECKING ON UTILITY LOCATORS, CHECKING AREAS OF TIGHT ACCESS IN ZONES 5 & 6. ALL LOCATIONS CAN BE SAMPLED WITH JACK HAMMER SETUP.

1100 C. WARWO & K. SIMPSON - LUNCH

1130 C. WARWO & K. SIMPSON TO ZONE 1 TO MARK OUT LOCATIONS.

1230 ZONE 1 COMPLETED, MOVING TO ZONE 2

1345 ZONE 2 MARKED OUT, CHECKING QUONSETT HUT TO SEE WHAT EQUIPMENT CAN BE STORED THERE. LOTS OF ROOM AVAILABLE.

1430 HEADING TO BEST WESTERN TO PICK UP GWS EQUIPMENT AND BOTTLEWARE. BRINGIN EQUIPMENT TO QUONSETT HUT TO UN PACK AND PREP FOR SAMPLING.

1500 K. SIMPSON CALLING NINA BALSAMO TO DISCUSS COORDINATE DISCREPENCIES ON FIGURES. C. WARWO PREPPING EQUIPMENT. UTILITY LOCATORS COVERED ZONES 6, 5, & PARTS OF 7.

1700 C. WARWO & K. SIMPSON OFFSITE

END

Work continued to Page

SIGNATURE DATE 8/24/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

TITLE NSB NLON - LOWER BASE

PROJECT NO. 112G02630

BOOK NO. 1333

WED 25 AUG 2010

Work continued from Page

WEATHER: 70° DRIZZLE, CLOUDS, SOME SUN

K. SIMPSON
C. WARNO

0730 K. SIMPSON & C. WARNO ONSITE @ QUONSETT HUT, PREPPING FOR WELL INVENTORY & SCHEDULING GW ACTIVITIES.

0800 HEADING TO ZONE 5 TO MEET UTILITY CLEARANCE PERSONNEL FOR WALK THROUGH OF ZONES 5, 6, & 7. DUE TO RAIN, WALK-THROUGH IS POSTPONED UNTILL THIS AFTERNOON WHEN PAVEMENT WILL BE DRY ENOUGH TO PAINT ON.

0830 C. WARNO & K. SIMPSON TO PUBLIC WORKS TO DISCUSS MARK OUT WALK THROUGH WITH MARK SHULTZ, AND AFTER HOURS WORK WITH KEVIN BRANIFF.

1030 C. WARNO & K. SIMPSON TO ZONE 5 TO BEGIN WELL INVENTORY.

1050 COMMENCE WELL GAUGING & INVENTORY.

* SEE WELL INVENTORY & GW LEVEL SHEETS FOR DETAILS *

1600 COMPLETED WELL INVENTORY AND WATER LEVEL COLLECTION.

1630 MEETING UTILITY CLEARANCE PERSONNEL TO CONDUCT WALK-THROUGH OF ZONES 5 & 6 TO REVIEW MARKINGS.

1800 WALK-THROUGH OF ZONES 5 & 6 COMPLETE. WILL MEET MARK SHULTZ AT PUBLIC WORKS OFFICE AT 0815 TOMORROW TO CONDUCT FINAL WALK-THROUGH AND APPROVAL OF PDI BORING LOCATIONS. C. WARNO & K. SIMPSON OFFSITE.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 8/25/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

THUR 26 AUG 2010
Work continued from Page

WEATHER - 75-80° CLOUDS, SUN, SHOWERS

C. WARLIND
K. SIMPSON

0730 C. WARLIND & K. SIMPSON ONSITE AT QUONSETT HUT PREPPING GWS EQUIPMENT. HAZ WASTE IS PUTTING A DRUM IN A CONTAINER NEAR BLDG 174 @ LOWER BASE CORRIDOR.

0800 K. SIMPSON CALLS M. SHULTZ TO DISCUSS UTILITY WALK THROUGH OF ZONES 5, 6 & 7. K.S & C.W. SETTING UP SAMPLING SCHEDULE.

0815 C.W. & K.S. TO PUBLIC WORKS TO MEET MARK SHULTZ FOR WALK THROUGH.

0845 BEGINNING WALK THROUGH @ ZONE 5 & WORKING SOUTH TOWARDS ZONE 7. DIG PERMIT MISSING FROM 25 PDI OOS.
LOCATIONS THAT NEED FURTHER MARKOUTS/REVIEW INCLUDE:
Z6-002 - FORCE MAIN
Z7-018 - MISSED ELECTRIC
3 OTHER LOCATIONS IN Z7 NOT COMPLETED YET.

1415 WALK THROUGH OF ZONES 5, 6, & 7 COMPLETE. C.W. OFFSITE TO PICK UP TURBIDITY METERS & K.S. TO PUBLIC WORKS TO DISCUSS BORING LOCATIONS

1500 C.W. & K.S. TO QUONSETT HUT TO CALIBRATE EQUIPMENT & PREP FOR GWS.

1600 MOBILIZING TO ZONE 5 TO SAMPLE MW1-5PDI & 19MW3.

1720 SAMPLED 19MW3 - LSS-GW-19MW3-10-02
MW1-5PDI - LSS-GW-MW1-5PDI-10-02 * FD LSS-GW-MW1-5PDI-10-02-D
DUMPING PURGE H2O.

1800 OFFSITE

END

SIGNATURE DATE 8/26/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

FRI 8/27/10

Work continued from Page 80° SUNCLOUDS C. WARING, K. SIMPSON

0415 ONSITE, SETTING UP TO SAMPLE. K. SIMPSON ON 13MW13, C. WARING ON NESO11.

0525 K.S. COLLECTED SAMPLE LS4-GW-13MW13-10-02

0530 C.W. COLLECTED SAMPLE LS4-GW-NESO11-10-02

0545 C.W. & K.S. COLLECTING ROUND OF WATER LEVELS @ 15 WELLS TO BE SAMPLED. * SEE WATER LEVEL LOG SHEET. *

0715 SPEAKING WITH UTILITY LOCATORS TO DISCUSS PROGRESS AND PLAN FOR FRIDAY AND SATURDAY. DUMPING PURGE H_2O.

0800 C.W. & K.S. TO QUONSETT HUT TO CALIBRATE EQUIPMENT, PREP FOR NEXT SAMPLES, START C.O.C., AND DISCUSS MARK SHULTZ WALK THROUGH AND MH & CB SURVEY.

1100 LUNCH

1130 ONSITE, K.S. TO MARK SHULTZ' OFFICE TO BEGIN WALK THROUGH, C.W. CONTINUING MH & CB SURVEY.

1430 C.W. FINISHED MH. & CB. SURVEY. NEEDS ASSISTANCE WITH ACCESSING 4 LOCATIONS IN ZONES 1 & 7, AND NEEDS A CART TO MOVE IN ZONE 4. C.W., K.S., AND MARK SHULTZ CONTINUING WALK THROUGH.

1700 STOPPING WALK THROUGH IN ZONE 1. NEED TO SAMPLE AT LOW TIDE. K.S. RETURNING M.S. TO BLD 135. C.W. GETTING SET UP TO SAMPLE 13MW20 & 13MW21.

1715 BEGIN PURGING 13MW20 & 13MW21.

NSB NLON - LOWER BASE 112602630

58 27 AUG 2010

C. WARINO
K. SIMPSON

WATER LEVEL DATA

SAMPLED WELLS ONLY

TIME	DTW	WELL ID
0545	6.67	13MW14
0550	5.35	NES011
0552	5.25	13MW13
0556	6.15	NES010
0600	6.39	MW1-4PDI
0608	5.03	MW1-1PDI
0610	5.16	13MW21
0612	4.47	13MW19
0616	6.93	13MW20
0619	9.15	F0MW14
0622	3.48	MW3-7RI
0629	3.13	MW1-7PDI
0633	5.02	MW4.7RI
0644	3.83	MW1-5PDI
0647	3.83	19MW3

FRI 27 AUG 2010

Work continued from Page

80° SUNNY

C. WARLIND, K. SIMPSON

1805 SAMPLED 13MW20

1810 SAMPLED 13MW21

1830 C.W. DUMPING PURGE WATER
K.S. RETURNING TO QUONSET HUT TO PUT SAMPLES ON ICE.

1845 OFFSITE

END

TITLE NSB NLON - LOWER BASE

PROJECT NO. 1R6026030

BOOK NO. 1333

SAT 28 AUG 2010

Work continued from Page

80° SUNNY

C. WARNO, K. SIMPSON

0500 ONSITE, SETTING UP ON WELLS 13MW14 & MW1-4PDI IN CORRIDOR.
C. WARNO SET UP ON 13MW14
K. SIMPSON SET UP ON MW1-4PDI

0615 K. SIMPSON COLLECTING SAMPLE LS4-GW-MW1-4PDI-10-02
0620 C. WARNO COLLECTING SAMPLE LS4-GW-13MW14-10-02

0645 OFFSITE FOR BREAKFAST

0730 K.S. & C.W. ONSITE AT QUONSETT HUT TO CALIBRATE SAMPLING EQUIPMENT & COMPLETE C.O.C.S.

0900 K.S. & C.W. CONTINUING MH & LB SURVEY IN ZONES 4 & 7.

1000 MH & LB SURVEY COMPLETE. CHECKING ON UTILITY LOCATOR.

1015 K.S. OFFSITE TO PURCHASE SUPPLIES FOR SOIL SAMPLING.
C.W. OFFSITE.

1700 C.W. & K.S. ONSITE TO CONTINUE GWS. ACTIVITIES.
REVIEWING PROGRESS WITH UTILITY LOCATOR. HE SHOULD FINISH THIS EVENING.

1730 C.W. SETTING UP ON MW3-7RI
K.S. SETTING UP ON MW1-7PDI

1850 C.W. COLLECTING SAMPLE LS7-GW-MW3-7RI-10-02

1915 C.W. & K.S. ASSISTING UTILITY LOCATOR WITH FINAL MARK OUTS, PUMPING PURGE H2O.
1945 MARK OUTS COMPLETE. C.W. & K.S. OFFSITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 8/29/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

SUN 29 AUG 2010

Work continued from Page 90° SUNNY C. WARNO, K. SIMPSON

0530 C.W. AND K.S ONSITE, DISCUSSING THE REMAINING SAMPLING ACTIVITIES AND LOCATIONS.

K.S. SETTING UP ON NES010
C.W. SETTING UP ON MW4-7RI

0645 C.W. COLLECTING SAMPLE LS7-GW-MW4-7RI-10-02
0655 K.S. COLLECTING SAMPLE LS4-GW-NES010-10-02

0730 C.W. & K.S. DUMPING PURGE WATER, HEADING TO QUONSETT HUT TO CALIBRATE EQUIPMENT, UPDATE C.O.C., AND PACK SAMPLES

0900 C.W. & KS. OFFSITE. K.S. STOPPING @ HARDWARE STORE TO PURCHASE SUPPLIES FOR UPCOMING SOIL BORINGS

1800 K.S. ONSITE, AT QUONSETT HUT ORGANIZING PAPERWORK. STOPPING AT FIRESTATION TO DISCUSS SAMPLING THE WELL IN THEIR PARKING LOT.

1815 C.W. & K.S. @ FRONT GATE TO OBTAIN LOWER BASE CORIDOR PASSES.

1830 C.W. SETTING UP ON 13MW19
K.S. SETTING UP ON MW1-1PDI

1955 C.W. ~~COLLECTING~~ SAMPLE LS1-GW-13MW19-10-02
K.S. COLLECTING SAMPLE LS1-GW-MW1-1PDI-10-02
2030 CONTAINERIZING PURGE WATER, PACKING SAMPLES

2055 OFFSITE

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 8/29/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

MON 30 AUG 2010
Work continued from Page 90° SUNNY C. WARNO, K. SIMPSON

0600 K.S. ONSITE SETTING UP ON FOMW14 NEAR FIRE STATION.
0645 C.W. TO QUONSETT HUT TO PACK UP EQUIPMENT AND GET SAMPLES READY TO SHIP.

0715 K.S. COLLECTING SAMPLE LSI-GW-FOMW14-10-02
DUMPING PURGE WATER.
0745 K.S. JOINS C.W @ QUONSETT HUT. COMPLETING C.O.C's

0830 K.S. MEETING MARK SHULTZ TO CONTINUE WALK THROUGH, CLEARING SOIL BORING LOCATIONS.
C.W. CONTINUES TO PACK EQUIPMENT AND PREPARE FOR SHIPPING.

1030 C.W. JOINS K.S. & M.S. NEAR POWER PLANT TO CONTINUE WALK THROUGH. EQUIPMENT AND SAMPLES ARE PACKED AND READY TO SHIP.

1330. ZONE 1 AND 4 LOCATIONS CAN NOT BE CLEARED DUE TO LACK OF PROPER MAPPING. M.S. WILL OBTAIN CORRECT MAPS, AND THE WALK THROUGH WILL BE COMMENCE TOMORROW.

1400 K.S. & C.W. TAKING EQUIPMENT & SAMPLES TO FED EX FOR SHIPPING.

1445 ALL EQUIPMENT AND SAMPLES SHIPPED, HEADING TO HARDWARE STORE TO PURCHASE A TABLE FOR SOIL SAMPLING.

1530 RETURNED TO BASE, DROPPING TABLE AT QUONSETT HUT, STOPPING @ DICK CONANTS OFFICE TO CHECK IN. HAD CONFERENCE CALL WITH DICK AND COREY RICK REGARDING PROGRESS & BASEWIDE CONSTRUCTION ACTIVITIES.

1630 OFFSITE.

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE DATE 8/30/10

DISCLOSED TO AND UNDERSTOOD BY DATE WITNESS DATE

B 100 P ©

TUE 31 AUG 2010

Work continued from Page 95° SUNNY C. WARNO, K. SIMPSON

0730 C. WARNO & K. SIMPSON ONSITE TO MEET KEVIN BRANIFF TO DISCUSS POSSIBLE UTILITY INTERFERENCE NEAR THE POWER PLANT. AFTER REVIEWING THE BORING LOCATIONS, THERE IS NO CONFLICT.

0800 C. WARNO TO QUONSET HUT TO UNPACK BOTTLEWARE, K.S. TO PUBLIC WORKS TO MEET M. SHULTZ FOR FINAL UTILITY MARK OUT WALK THROUGH.

1100 UTILITY MARK OUTS COMPLETE, ALL LOCATIONS CLEARED FOR DRILLING BY M. SHULTZ. PERMITS WILL GO THROUGH FINAL APPROVAL.

1130 K.S. OFFSITE TO AIRPORT.
C.W. CONTINUES TO PREP BOTTLEWARE FOR SOIL SAMPLES.

1530 C.W. OFFSITE.

END

TITLE NSB NLON - LOWER BASE

WED
1 SEP 2010

PROJECT NO. 112602630

BOOK NO. 1330

Work continued from Page 95° SUNNY C. WARWO

0900 ONSITE DROPPING OFF GEAR IN QUONSETT HUT, PREPARING FOR TRIP TO PITTSBURGH.
SPEAKING WITH KEVIN REGARDING PERSONNEL FOR TUESDAY. EVERYONE SHOULD HAVE ACCESS.

1130 C. W. OFFSITE TO AIRPORT.

END

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605 MADE IN USA

Work continued to Page

SIGNATURE

DATE 9/1/10

DISCLOSED TO AND UNDERSTOOD BY **DATE** **WITNESS** **DATE**

APPENDIX B.2.6

WELL INVENTORY INSPECTION TABLES

TABLE 14-3

2010 INVENTORY RESULTS - LOWER SUBASE WELLS
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Able to Open Well/ Open	Not Deficient	Unable to Determine	Not Usable	Damaged - Usable	Not Found	Abandoned	Organic Vapor Reading
1	10	13MW1			X					NA
1	10	13MW2	X	X						ND
1	10	13MW3	X	X						ND
1	10	FOMW13	X				X			ND
1	10	FOMW14	X				X			ND
1	10	FOMW15	X	X						NA
1	10	FOMW16	X				X			ND
1	11	13MW4			X			X		NA
1	11	13MW5			X			X		NA
1	11	13MW8			X			X		NA
1	11	13MW9			X			X		NA
1	11	TBD (4' from 13MW18)	X	X						ND
1	11	13TB15/13MW21	X				X			ND
1	11	13TB16/13MW19	X	X						ND
1	11	13TB17/13MW20	X				X			ND
1	11	NESO4			X			X		NA
2	11	13MW6	X	X						ND
2	11	13MW10	X				X			ND
2	11	13MW17			X			X		NA
2	11	MW-6			X			X		NA
2	11	NESO6			X			X		NA
2	17	13MW11	X				X			NA
3	13	13MW12	X	X						ND
3	17	MW2-3RI			X	X Completely covered by asphalt				NA
4	13	13MW13	X	X						ND
4	13	13MW14	X				X			ND
4	13	13MW15 / MW1 4TDI	X	X						ND
4	13	13MW16			X			X		NA
4	13	MW1-4RI			X			X		NA

TABLE 14-3

2010 INVENTORY RESULTS - LOWER SUBASE WELLS
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Able to Open Well/ Open	Not Deficient	Unable to Determine	Not Usable	Damaged - Usable	Not Found	Abandoned	Organic Vapor Reading
4	13	NESO10	X	X						ND
4	13	NESO11	X	X						ND
4	13	QW-1	X	X						ND
4	13	QW-2				X			CASING FULL OF GROUT	NA
4	13	QW-3	X				X			0.5
4	13	QW-4			X			X		ND
4	13	QW-5	X	X						ND
4	13	WE1			X			X		NA
4	13	WE4	X				X NO CASING			ND
4	13	WE5			X			X		NA
4	19	MW2-4RI	X				X			ND
5	22	19MW2	X	X						ND
5	22	19MW3	X	X						ND
5	22	19MW4 / MW1 SPDI	X	X						ND
6	24	MW1-6RI	X				X			ND
6	24	MW2-6RI			X			X		NA
6	24	MW3-6RI	X	X						ND
6	24	MW4-6RI	X	X						ND
6	24	MW5-6RI	X				X			ND
7	21	20MW2	X				X			ND
7	21	20MW3			X			X		NA
7	21	20MW6	X				X			ND
7	21	MW1-7RI	X	X						ND
7	21	MW2-7RI	X	X						ND
7	21	MW3-7RI	X				X			ND
7	21	MW4-7RI	X				X			ND
7	21	MW5-7RI			X			X		NA
7	25	20MW7 / MW1 7PDI	X	X						ND

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Action Recommended Casing	Well Sampling Equipment	Well Cap Type	Well Cap Condition	Action Recommended Cap	Well Cap Comment	Action Recommended Surface
1	10	13MW1	2007	Install new protective casing	None	Flush mount cover - center bolt	Other	Install new flush mount cover	Cover cracked	No action needed
1	10	13MW1	2010	SAA	SAA	SAA	SAA	SAA	SAA	SAA
1	10	13MW2	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
1	10	13MW2	2010	SAA	SAA	SAA	SAA	SAA	SAA	SAA
1	10	13MW3	2007	No action needed	None	Flush mount cover - no bolt-type	Outer cover/plug present but not secure and riser plug/cover present	No action needed	---	No action needed
1	10	13MW3	2010	SAA	SAA	SAA -INTERIOR FLUSHMOUNT (ORIGINAL) WITH CENTER BOLT	SAA	SAA	SAA	SAA
1	10	FOMW13	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	Repair flush-mount cover	---	Install new concrete pad
1	10	FOMW13	2010	RAISE FLUSHMOUNT	SAA	SAA	SAA	SAA - RAISE	SAA	SAA
1	10	FOMW14	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	Hinged riser cap	
1	10	FOMW14	2010	DOG EARS NEED RE-THREADED	SAA	SAA	SAA	SAA	SAA	SAA
1	10	FOMW15	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	Hinged riser cap	No action needed
1	10	FOMW15	2010	SAA	SAA	SAA	SAA	SAA	SAA	SAA
1	10	FOMW16	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present but not secure and riser plug/cover present	Repair flush-mount cover	Hinged riser cap. Flush mount cover flanges broken - bolts will not tighten	No action needed
1	10	FOMW16	2010	INSTALL NEW PROTECTIVE CASING.	SAA	FLUSH MOUNT COVER NO BOLTS	SAA	SAA	SAA	SAA
1	11	13TB15/ 13MW21	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
1	11	13TB15/ 13MW21	2010	BOLTS NEED REPLACED.	SAA - TUBING	FLUSH MOUNT COVER NO BOLTS	SAA - NO BOLTS	SAA	SAA	SAA
1	11	TBD (N of 13MW18)	2007	--	--	Flush mount - 9/16" bolts	--	--	--	--
1	11	TBD (N of 13MW18)	2010	NO ACTION NEEDED	NONE	SAA	OK	NO ACTION NEEDED	—	NO ACTION NEEDED
1	11	13TB16 /13MW19	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
1	11	13TB16/ 13MW19	2010	SAA	SAA	SAA	SAA	SAA	—	SAA
1	11	13TB17/ 13MW20	2007	Raise flush-mount vault	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
1	11	13TB17/ 13MW20	2010	SAA REPLACE MISSING BOLT	SAA - TUBING	FLUSH MOUNT COVER 1 BOLT MISSING	SAA - MISSING 1 BOLT	SAA	—	SAA
2	11	13MW6	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
2	11	13MW6	2010	SAA	SAA	SAA	SAA	SAA	—	SAA
2	11	13MW10	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Surface Comment	Well Label Type	Well Label Location	Well Tag	Action Recommended ID	Notes
1	10	13MW1	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---
1	10	13MW1	2010	SAA	SAA	SAA	SAA	SAA	SAA
1	10	13MW2	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---
1	10	13MW2	2010	SAA	SAA	SAA	SAA	SAA	SAA
1	10	13MW3	2007	---	Temporary painted well name/number	On pad	Legible	---	---
1	10	13MW3	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	10	FOMW13	2007	Vault floods - build up slightly above grade	None	Not applicable	Missing	Install permanent client-specified well tag	Vault floods - build up slightly above grade
1	10	FOMW13	2010	SAA	TEMPORARY PAINTED WELL NAME/NUMBER	ON LID	MISSING	SAA	SAA
1	10	FOMW14	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	---	---
1	10	FOMW14	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	10	FOMW15	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
1	10	FOMW15	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	10	FOMW16	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
1	10	FOMW16	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	11	13TB15/ 13MW21	2007	---	Temporary marker well name/number	On back of well cap/cover	Partially legible	Install permanent client-specified well tag	---
1	11	13TB15/ 13MW21	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	11	TBD (N of 13MW18)	2007	recent installation, new concrete pad, white cover lid	None	NA	[illegible]	--	very heavy black product, almost like tar, interface probe too coated to get accurate readings
1	11	TBD (N of 13MW18)	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	11	13TB16 /13MW19	2007	---	Temporary marker well name/number	On back of well cap/cover	Legible	Install permanent client-specified well tag	---
1	11	13TB16/ 13MW19	2010	SAA	SAA	SAA	MISSING	SAA	SAA
1	11	13TB17/ 13MW20	2007	well in low spot - elevate vault and place new pad	Stamped metal plate with well name/number	On protective casing cover/lid	Legible	Upgrade existing well tag to permanent client-specified well tag	Well in low spot - elevate vault and place new pad
1	11	13TB17/ 13MW20	2010	SAA	TEMPORARY MARKER WELL NAME / NUMBER	SAA	MISSING	SAA	SAA
2	11	13MW6	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-speced well tag	---
2	11	13MW6	2010	PAD CRACKED	TEMPORARY MARKER WELL NAME / NUMBER	ON LID	MISSING	SAA	SAA
2	11	13MW10	2007	well located in sidewalk area	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Action Recommended Casing	Well Sampling Equipment	Well Cap Type	Well Cap Condition	Action Recommended Cap	Well Cap Comment	Action Recommended Surface
2	11	13MW10	2010	SAA	SAA	SAA	SAA	SAA	SAA	NONE
2	17	13MW11	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
2	17	13MW11	2010	SAA	SAA	SAA	SAA	SAA	—	SAA
3	13	13MW12	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
3	13	13MW12	2010	SAA	SAA	SAA	SAA	SAA	SAA	SAA
3	17	MW2-3RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
3	17	MW2-3RI	2010	COVERED IN ASPHALT	NA	NA	NA	NA	NA	SAA - RAISE CASING
4	13	13MW13	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
4	13	13MW13	2010	SAA	SAA	SAA	SAA	SAA	SAA	SAA
4	13	13MW14	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
4	13	13MW14	2010							
4	13	NESO10	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover missing	Install new inner cap	3" riser plug missing - put temp plastic over riser	No action needed
4	13	NESO10	2010	SAA	SAA	SAA	NO J PLUG	SAA	SAA	SAA
4	13	NESO11	2007	No action needed	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	Install new inner cap	no riser plug - 3" riser covered with temp plastic bag	Install new concrete pad
4	13	NESO11	2010	SAA	SAA	SAA	SAA	~~NEEDS 3"~~ NEEDS 3" J-PLUG	SAA	SAA
4	13	QW-1	2007	Scrape and paint protective casing	Not known	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover missing	Install new inner cap	no 6" riser plugs availabe - put temp plastic bag over riser	No action needed
4	13	QW-1	2010	REMOVE 5-GALLON BUCKET FROM BENEATH CASING ALL 3 BOLT HOLES NEED RETHREADED	NONE	SAA - BOLTHOLES STRIPPED	SAA	SAA	SAA	SAA
4	13	QW-2	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present but not secure and riser plug/cover present	Repair flush-mount cover	cover bolts and flanges all stripped - will not bolt down	No action needed
4	13	QW-2	2010	WELL FILLED WITH GROUT?	NOT KNOWN					
4	13	QW-3	2007	Other	Not known	Flush mount cover - 4 bolts	Other	Repair flush-mount cover	phillips screws on modified steel plate cover	Install new concrete pad
4	13	QW-3	2010	REPLACE COVER & BOLTS	NONE	SAA - NO BOLTS	OK, BUT NO BOLTS	SAA	SAA	SAA
4	13	QW-5	2007	Determine well status and re-inspect	Not known	Other	Other	Repair flush-mount cover	Steel cover should be cut loose and vault replaced with new bolted cover	Repair concrete pad
4	13	QW-5	2010	NEEDS NEW PAD & CASING	NONE	1/2" STEEL PLATE	OK, NO BOLTS	SAA	SAA	SAA
4	13	WE1	2007	Install new protective casing	None	Flush mount cover - center bolt	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	Bolt is 5-sided and need special socket key -could replace with better bolt	Install new concrete pad

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Surface Comment	Well Label Type	Well Label Location	Well Tag	Action Recommended ID	Notes
2	11	13MW10	2010	SAA	SAA	SAA	SAA	SAA	SAA
2	17	13MW11	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
2	17	13MW11	2010	---	SAA	SAA	~~SAA~~ MISSING	SAA	---
3	13	13MW12	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---
3	13	13MW12	2010	—	SAA	SAA	SAA	SAA	—
3	17	MW2-3RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
3	17	MW2-3RI	2010	LID IS ASPHALTED OVER. PARTIALLY VISIBLE.	NO LABEL	—	NA	SAA, REMOVE ASPHALT	REPLACE PROTECTIVE CASING AND RAISE ABOVE ASPHALT.
4	13	13MW13	2007	pad old but not cracked and ok condition for now	Temporary marker well name/number	On pad	Legible	Install permanent client-specified well tag	---
4	13	13MW13	2010	SAA	SAA	ON LID	MISSING	SAA	—
4	13	13MW14	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---
4	13	13MW14	2010	UNDER JERSEY BARRIER, BUT STILL ALLESSIBLE	CAN NOT SEE	NA	NA	SAA	NEED TO HAVE JERSEY BARRIER MOVED TO COMPLETE INSPECTION.
4	13	NESO10	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---
4	13	NESO10	2010	—	SAA	SAA	SAA	SAA	—
4	13	NESO11	2007	---	Stamped metal plate with well name/number	On pad	Legible	Upgrade existing well tag to permanent client-specified well tag	---
4	13	NESO11	2010	—	SAA	SAA	SAA	SAA	—
4	13	QW-1	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	Unknown if sampling equipment. Proper abandonment recommended
4	13	QW-1	2010	—	SAA	SAA	~~SAA~~ MISSING	SAA	—
4	13	QW-2	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	MasterLock lock, unknown key number. Proper abandonment recommended
4	13	QW-2	2010	MANHOLE GROUTED UP, NOT ALLESSIBLE	SAA	ASPHALT	SAA	SAA	CASING FULL OF GROUT
4	13	QW-3	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	Proper abandonment recommended
4	13	QW-3	2010	—	SAA	SAA	MISSING	SAA	—
4	13	QW-5	2007	---	Temporary painted well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	Welded steel cover, unable to open.
4	13	QW-5	2010	—	SAA	SAA	MISSING	SAA	—
4	13	WE1	2007	---	Stamped metal plate with well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	Well ID stamped in "WATER" lid

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Action Recommended Casing	Well Sampling Equipment	Well Cap Type	Well Cap Condition	Action Recommended Cap	Well Cap Comment	Action Recommended Surface
4	13	WE1	2010	—	—	—	—	—	—	COULD NOT FIND. IN AREA OF NEW ASPHALT.
4	13	WE4	2007	Install new protective casing	None	Other	Outer cover/plug missing with riser plug/cover present and not secure	Install new flush mount cover	installed temp j-plug in riser - no lock and not permanent	Install new concrete pad
4	13	WE4	2010	SAA	SAA	SAA	SAA	SAA	INSTALLED RUBBER FORMED CAP, COVERED WELL WITH SAND.	SAA
4	13	WE5	2007	Other	Not known	Other	Other	Other	---	No action needed
4	13	WE5	2010	—	—	—	—	—	—	COULD NOT FIND. IN AREA OF NEW ASPHALT
4	19	MW2-4RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
4	19	MW2-4RI	2010	2 STRIPPED BOLTS 1 BROKEN DOG EAR	SAA	2 STRIPPED BOLTS 1 BROKEN DOG EAR	SAA	REPLACE	—	REPLACE PROTECTIVE CASING
5	22	19MW2	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
5	22	19MW2	2010	SAA	SAA	1 STRIPPED BOLT SAA	SAA	REPLACE STRIPPED BOLT	—	SAA
5	22	19MW3	2007	No action needed	None	Other	Other	Install new flush mount cover	Outer cover temporary wooden plate	No action needed
5	22	19MW3	2010	SAA	SAA	CUSTOM ALUMINUM CAP (OUTER CAP)	SAA	SAA	OUT COVER IS A TEMPORARY ALUMINUM CAP.	REPLACE COVER.
6	24	MW1-6RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present and locked	No action needed	---	Install new concrete pad
6	24	MW1-6RI	2010	SAA	SAA	SAA	SAA	SAA	—	SAA
6	24	MW2-6RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
6	24	MW2-6RI	2010	NA	NA	NA	NA	NA	—	UNACCESSIBLE BURIED BENEATH MACHINERY.
6	24	MW3-6RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
6	24	MW3-6RI	2010	SAA	SAA	SAA	SAA	SAA	—	SAA
6	24	MW4-6RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
6	24	MW4-6RI	2010	SAA	SAA	SAA	SAA	SAA	—	SAA
6	24	MW5-6RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
6	24	MW5-6RI	2010	REPLACE CASING	NONE	SAA - MISSING 1 BOLT	1 DOGEAR BROKEN	REPLACE CASING	—	REPLACE CASING.
7	21	20MW2	2007	No action needed	None	Flush mount cover - 2 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
7	21	20MW2	2010	BOLTS STRIPPED	SAA	SAA	SAA	SAA	—	SAA
7	21	20MW6	2007	Install new protective casing	None	Flush mount cover - 2 bolts	Outer cover/plug present but not secure and riser plug/cover present	Install new flush mount cover	Both bolts missing and flanges broken - cannot install new bolts	Install new concrete pad
7	21	20MW6	2010	CASING OK	SAA	FLUSH MOUNT 3 BOLTS	OUTER - OK INNER - ADDED J-PLUG	NO ACTION	—	NO ACTION

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Surface Comment	Well Label Type	Well Label Location	Well Tag	Action Recommended ID	Notes
4	13	WE1	2010	COULD NOT LOCATE IN AREA OF NEW ASPHALT	NA	NA	NA	NA	NO FOUND, NEW ASPHALT
4	13	WE4	2007	---	Temporary painted well name/number	Other	Legible	Install permanent client-specified well tag	Not usable, proper abandonment recommended
4	13	WE4	2010	NO PROTECTIVE CASING.	SAA	ASPHALT	SAA	SAA	NEEDS NEW PROTECTIVE CASING.
4	13	WE5	2007	---	None	Not applicable	Missing	Other	Land/sea lifted by forklift, found only vault-shaped hole in asphalt filled with debris. Proper abandonment recommended.
4	13	WE5	2010	NEW ASPHALT, COULD NOT LOCATE WELL	—	—	—	—	—
4	19	MW2-4RI	2007	---	Temporary marker well name/number	On pad	Legible	Install permanent client-specified well tag	---
4	19	MW2-4RI	2010	—	SAA	ON LID	MISSING	SAA	—
5	22	19MW2	2007	location in pavement	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
5	22	19MW2	2010	SAA	SAA	SAA	MISSING	SAA	1 BOLT STRIPPED
5	22	19MW3	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
5	22	19MW3	2010	—	SAA	SAA	MISSING	SAA	CUSTOM ALUMINUM CAP.
6	24	MW1-6RI	2007	well sits in low spot in grass	None	Not applicable	Missing	Install permanent client-specified well tag	MasterLock lock, unknown key number.
6	24	MW1-6RI	2010	SAA	TEMPORARY	LID	MISSING	SAA	REPLACED WITH NEW J-PLUG.
6	24	MW2-6RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
6	24	MW2-6RI	2010	NA	NA	NA	NA	NA	UNACCESSIBLE, BURIED BENEATH MACHINERY.
6	24	MW3-6RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
6	24	MW3-6RI	2010	—	SAA	SAA	MISSING	SAA	—
6	24	MW4-6RI	2007	---	Temporary marker well name/number	Other	Legible	Install permanent client-specified well tag	---
6	24	MW4-6RI	2010	—	SAA	~~CAP~~ LID	MISSING	SAA	—
6	24	MW5-6RI	2007	---	Temporary marker well name/number	Other	Legible	Install permanent client-specified well tag	---
6	24	MW5-6RI	2010	—	"	~~CAP~~ LID	MISSING	SAA	—
7	21	20MW2	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
7	21	20MW2	2010	—	SAA	SAA	MISSING	SAA	—
7	21	20MW6	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
7	21	20MW6	2010	NEW ASPHALT, CASING & LID IN LOW SPOT	SAA	SAA	~~SAA~~ MISSING	SAA	—

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Action Recommended Casing	Well Sampling Equipment	Well Cap Type	Well Cap Condition	Action Recommended Cap	Well Cap Comment	Action Recommended Surface
7	21	MW1-7RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Repair concrete pad
7	21	MW1-7RI	2010	NEED NEW CASING & PAD	SAA	BROKEN CASING	"	REPLACE CASING & PAD	REPLACE	SAA
7	21	MW2-7RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	No action needed
7	21	MW2-7RI	2010	1 BOLT STRIPPED	SAA	FLUSH MOUNT 3 BOLTS 1 BOLT STRIPPED	SAA	SAA	-	SAA
7	21	MW3-7RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	Cover on - looks ok	No action needed
7	21	MW3-7RI	2010	BROKEN DOG EAR, REPLACE CASING	SAA	FLUSH MOUNT 2 FUNCTIONAL BOLTS	SAA	REPLACE CASING	SAA	PAD IS CRACKED, INSTALL NEW PAD.
7	21	MW4-7RI	2007	No action needed	None	Flush mount cover - 3 bolts	Outer cover/plug present with bolt(s) and riser plug/cover present	No action needed	---	Install new concrete pad
7	21	MW4-7RI	2010	SAA	SAA - TUBING	SAA	SAA	SAA	OK	PAD IS CRACKED, SAA

TABLE 14-4

FIELD ASSESSMENT OF WELL CONDITION AND RECOMMENDED MAINTENANCE
2007 AND 2010 LOWER SUBASE MONITORING WELL INVENTORY
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

Zone	Site	Well ID	Evaluation Year	Surface Comment	Well Label Type	Well Label Location	Well Tag	Action Recommended ID	Notes
7	21	MW1-7RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
7	21	MW1-7RI	2010	REPALE PAD	SAA	SAA	MISSING	SAA	—
7	21	MW2-7RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
7	21	MW2-7RI	2010	OK	SAA	SAA	MISSING	SAA	—
7	21	MW3-7RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
7	21	MW3-7RI	2010	CRACKED PAD	SAA	SAA	MISSING	SAA	—
7	21	MW4-7RI	2007	---	Temporary marker well name/number	On protective casing cover/lid	Legible	Install permanent client-specified well tag	---
7	21	MW4-7RI	2010	NEEDS NEW PAD	"	"	MISSING	"	—

TABLE 14-1

MONITORING WELL CONSTRUCTION INFORMATION AND FIELD MEASUREMENTS
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

			Field Verified											Well Log Documentation					
Zone	Site	Well Number	Northing (NAD 83)	Easting (NAD 83)	Hole Dia. (in)	Casing Material	Well Outer Casing	2007 Depth to Water (ft)	2010 Depth to Water (ft)	2007 Depth of Well (ft RP)	2010 Depth of Well (ft RP)	2007 Depth to Free Product (ft RP)	2010 Depth to Free PRoduct (ft RP)	Log Total Depth (ft RP)	Ground Surface Elevation (NAVD 88)	Top Of Casing Elevation (NAVD 88)	Top Of Riser Elevation (NAVD 88)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)
IRP Wells																			
1	10	13MW1	705452.60	1180818.10	2	PVC	8" Diameter	10.60	– EXTE TRUCK	17.15		NA		17	11.34	--	10.97	7.49	17.49
1	10	13MW2	705419.90	1180831.20	2	PVC	8" Diameter	9.83	9.24	17.30		NA		17	10.84	--	10.41	7.67	17.67
1	10	13MW3	705396.10	1180734.50	2	PVC	12" Diameter	9.98	9.36	17.30		NA		17	10.76	--	10.50	7.36	17.36
1	10	FOMW13	705491.00	1180757.20	2	PVC	12" Diameter	8.87	8.95	9.93		NA		10	10.80	--	10.11	3.50	10.50
1	10	FOMW14	705477.50	1180721.10	2	PVC	12" Diameter	9.71	9.12	10.02		NA		10	10.56	--	10.29	3.20	10.20
1	10	FOMW15	705514.10	1180739.10	2	PVC	12" Diameter	9.70	9.14	10.02		NA		10	10.94	--	10.29	3.40	10.40
1	10	FOMW16	705499.40	1180712.00	2	PVC	12" Diameter	apparently dry	9.08	9.50		NA		10	10.50	--	10.23	2.90	9.90
1	11	13MW4	705490.90	1180555.20	2	PVC								15	7.90		7.75	4.95	14.95
1	11	13MW5	705235.90	1180680.10	2	PVC								17	9.33		8.74	7.92	17.12
1	11	13MW8	705272.80	1180456.70	2	PVC								13	5.41		4.95	3.71	13.71
1	11	13MW9	705117.00	1180533.30	2	PVC								14	5.18		4.52	4.78	14.78
1	11	TBD	4' N of 13MW18		2	PVC		9.40	NA/ TO VISIONS	14.6		8.90	8.90	--	--	--	--	--	--
1	11	13TB15/13MW21	705485.90	1180525.60	2	PVC	8" Diameter	5.60	5.09	12.60		NA		15	6.64	6.64	6.31	5.00	15.00
1	11	13TB16/13MW19	705449.90	1180513.80	2	PVC	8" Diameter	4.84	4.40	14.62		NA		15	5.95	5.95	5.66	5.00	15.00
1	11	13TB17/13MW20	705513.30	1180578.40	2	PVC	8" Diameter	7.47	6.89	14.60		NA		13	8.32	8.32	8.06	3.00	13.00
1	11	NESO4	705074.20	1180604.00	2	PVC								8	6.12		5.83	2.90	7.90
2	11	13MW6	705084.80	1180924.60	2	PVC	8" Diameter	19.42	18.29	24.68		NA		27	19.45	--	19.08	17.82	27.82
2	11	13MW10	704891.90	1180694.30	2	PVC	10" Diameter	6.53	5.28	15.05		NA		15	6.34	--	6.05	5.00	15.00
2	11	13MW17	704842.90	1180689.10	2	PVC								13	5.32		5.08	3.50	13.50
2	11	MW-6	704954.89	1180677.67	2	PVC								10	19.91		19.50	3.00	10.00
2	11	NESO6	704938.30	1180675.60	2	PVC								6	6.50		6.28	1.40	6.40
2	17	13MW11	704684.80	1180772.80	2	PVC	10" Diameter	6.18	– CAR	13.07		NA		14	5.84	--	5.44	4.00	14.00
3	13	13MW12	704523.90	1180979.20	2	PVC	10" Diameter	7.04	5.97	15.21		NA		15	7.16	--	6.82	5.30	15.30
3	17	MW2-3RI	704591.18	1180804.46	2	PVC	8" Diameter	3.91	– ASPHALT	4.90		NA		8	5.88	5.88	5.39	3.00	8.00
4	13	13MW13	704363.70	1181030.60	2	PVC	10" Diameter	6.03	5.07	14.33		NA		14	6.55	--	6.11	4.60	14.60
4	13	13MW14	704343.40	1180927.20	2	PVC	8" Diameter	5.16	4.98	14.15		NA		14	6.09	--	5.59	4.80	14.80
4	13	13MW15	704310.30	1180916.90	2	PVC								12	5.31		4.86	2.60	12.60
4	13	13MW16	704357.10	1180897.60	2	PVC								13	5.25		4.91	3.50	13.50
4	13	MW1-4RI	704130.15	1181062.30	2	PVC								9	5.88	5.88	5.56	4.00	9.50
4	13	NESO10	704284.40	1180956.40	3	Other	10" Diameter	6.21	5.19	9.25		NA		9	6.03	--	5.71	4.30	9.30
4	13	NESO11	704286.80	1181077.60	2	PVC	10" Diameter	6.04	– CAR	8.77		NA		8	6.50	--	6.39	3.60	8.60
4	13	QW-1	704375.60	1180888.40	6	STEEL	12" Diameter	4.59	5.47	unknown		NA		11	5.47	5.47	5.07	6.50	11.00
4	13	QW-2	704422.50	1180871.00	4	PVC	12" Diameter	5.91	6.73	8.94		NA		13	5.55	5.55	5.19	6.00	13.00
4	13	QW-3	704284.10	1180930.60	4	Other	12" Diameter	--	5.55	--		NA		10	5.47	5.47	5.17	7.00	10.00
4	13	QW-4	704233.40	1180952.80	6									9	5.41	5.41	4.28	7.50	10.50
4	13	QW-5	704108.10	1181007.50	4	--	--	--	5.11	--		NA		10	5.45	5.45	5.26	7.50	10.00
4	13	WE1	704427.10	1181035.10	2	PVC	Circular	7.03	NOT FOUND	15.41		NA		15	7.23	--	7.03	5.30	15.30
4	13	WE4	704387.30	1180999.70	2	PVC	Circular	6.48	5.16	6.61		NA		13	6.32	--	6.22	3.40	13.40
4	13	WE5	704425.30	1180911.30	2	None	Circular	--	NOT FOUND	--		NA		14	5.98	--	5.86	4.00	14.00
4	19	MW2-4RI	704205.24	1181147.56	2	PVC	8" Diameter	5.60	4.81	9.53		NA		8	6.96	6.96	6.46	3.00	8.00
5	22	19MW2	708546.10	1180159.40	2	PVC	6" Diameter	5.57	3.49	5.68		NA		5	4.89	--	4.59	1.78	5.78
5	22	19MW3	708438.10	1180160.40	2	PVC	6" Diameter	5.19	3.53	5.22		NA		6	4.79	--	4.50	2.30	6.30
5	22	19MW4	708333.00	1180178.20	2	PVC								5	4.94		4.70	1.70	5.70
6	24	MW1-6RI	707646.62	1180333.04	2	PVC	8" Diameter	27.71	26.85	34.35		NA		35	28.36	28.36	27.99	25.00	35.00
6	24	MW2-6RI	707554.52	1180197.96	2	PVC	8" Diameter	3.39	NOT ACCESSIBLE	7.96		NA		8	4.10	4.10	3.63	3.00	8.00
6	24	MW3-6RI	707614.64	1180172.82	2	PVC	8" Diameter	3.68	2.62	7.84		NA		8	4.38	4.38	3.92	3.00	8.00
6	24	MW4-6RI	707712.67	1180171.17	2	PVC	8" Diameter	4.35	3.33	7.88		NA		8	4.95	4.95	4.51	3.00	8.00

TABLE 14-1

MONITORING WELL CONSTRUCTION INFORMATION AND FIELD MEASUREMENTS
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

			Field Verified											Well Log Documentation					
Zone	Site	Well Number	Northing (NAD 83)	Easting (NAD 83)	Hole Dia. (in)	Casing Material	Well Outer Casing	2007 Depth to Water (ft)	2010 Depth to Water (ft)	2007 Depth of Well (ft RP)	2010 Depth of Well (ft RP)	2007 Depth to Free Product (ft RP)	2010 Depth to Free PRoduct (ft RP)	Log Total Depth (ft RP)	Ground Surface Elevation (NAVD 88)	Top Of Casing Elevation (NAVD 88)	Top Of Riser Elevation (NAVD 88)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)
6	24	MW5-6RI	707798.01	1180170.65	2	PVC	8" Diameter	4.45	3.45	7.86		NA		8	5.24	5.24	4.83	3.00	8.00
7	21	20MW2	706174.70	1180251.60	2	PVC	6" Diameter	6.14	4.19	12.40		NA		12	5.57		5.35	2.50	12.50
7	21	20MW3	706326.90	1180212.90	2	PVC								12	4.44		4.27	2.50	12.50
7	21	20MW6	706614.90	1180371.90	2	PVC	6" Diameter	7.66	6.00	13.90		NA		14	7.80		7.63	4.00	14.00
7	21	MW1-7RI	706203.78	1180331.32	2	PVC	8" Diameter	6.35	4.44	9.31		NA		9	6.13	6.13	5.72	5.00	9.00
7	21	MW2-7RI	706342.54	1180271.12	2	PVC	8" Diameter	5.76	4.28	9.38		NA		9	5.81	5.81	5.43	4.50	9.50
7	21	MW3-7RI	706602.50	1180250.84	2	PVC	8" Diameter	3.86	2.92	8.35		NA		8	4.67	4.67	4.27	3.00	8.00
7	21	MW4-7RI	706758.13	1180277.23	2	PVC	8" Diameter	6.31	4.25	9.90		NA		8	6.03	6.03	5.67	3.00	8.00
7	21	MW5-7RI	706370.02	1180460.40	2	PVC								9	6.94	6.94	6.48	4.50	9.50
7	25	20MW7	706694.80	1180254.90	2	PVC								12	3.79		3.57	2.50	12.50

NA - Not Applicable
PVC - Polyvinyl Chloride
All Lower Subase wells listed are flush mount

White on Black Well not found in 2007 inventory.

APPENDIX C

DATA VALIDATION

C.1 SOIL

C.2 GROUNDWATER

C.1 SOIL

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**OCTOBER 25, 2010**
FROM:	**LEANNE M. GANSER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- PAH**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-7

SAMPLES: 7/Soil/

Z7PDI-SO-002-0002	Z7PDI-SO-002-0607	Z7PDI-SO-004-0002
Z7PDI-SO-004-0406	Z7PDI-SO-005-0002	Z7PDI-SO-005-0204
Z7PDI-SO-009-0002		

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG WE57-7, consists of seven (7) soil environmental samples. No field duplicate pairs were included in this SDG.

All samples were analyzed for polycyclic aromatic hydrocarbons (PAHs). The samples were collected by Tetra Tech NUS on September 11, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Method 8270C SIM. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	GC/MS Tuning
	•	Initial/Continuing Calibrations
*	•	Laboratory Method Blank Results
*	•	Surrogate Recoveries
*	•	Laboratory Control Spike/Laboratory Control Spike Duplicate Results
*	•	Internal Standards
*	•	Compound Quantitation
*	•	Compound Identification
*	•	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.

Initial/Continuing Calibrations

Continuing calibration percent difference (%D) on 10/01/10 at 15:43 for phenanthrene was greater than 20% quality control limit affecting samples Z7PDI-SO-004-0002 (original analysis), Z7PDI-SO-005-0002 (dilution), Z7PDI-SO-005-0204 (dilution), and Z7PDI-SO-009-0002 (dilution). Positive results for phenanthrene in samples Z7PDI-SO-005-0002, Z7PDI-SO-005-0204, and Z7PDI-SO-009-0002 were qualified as estimated, "J". No action was taken for sample Z7PDI-SO-004-0002 because phenanthrene was reported from the analysis at dilution.

Comments

Several samples were analyzed at dilution to bring target compounds into calibration range.

Laboratory Control Spike (LCS)/LCS Duplicate (LCSD) relative percent difference (RPD) was greater than quality control limits for benzo(b)fluoranthene. No action was taken as LCS and LCSD percent recoveries were compliant.

The area of internal standard perylene-d12 was outside of quality control limits for samples Z7PDI-SO-004-0002, Z7PDI-SO-005-0204, and Z7PDI-SO-009-0002. No action was taken as results were reported from the diluted samples.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Calibration noncompliance was noted for phenanthrene.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Leanne M. Ganser
Environmental Scientist/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-002-0002			Z7PDI-SO-002-0002DL			Z7PDI-SO-002-0607			Z7PDI-SO-002-0607DL		
SDG: WE57-7	LAB_ID	SD5617-5			SD5617-5DL			SD5617-7			SD5617-7DL		
FRACTION: PAH	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.2			94.2			94.4			94.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					5000						430		
BENZO(A)PYRENE					5100						480		
BENZO(B)FLUORANTHENE					6900						690		
BENZO(K)FLUORANTHENE					3000			220					
CARBAZOLE		180						38					
CHRYSENE					4900						480		
DIBENZO(A,H)ANTHRACENE					1100			100					
INDENO(1,2,3-CD)PYRENE					3600						340		
PHENANTHRENE					2000						310		
PYRENE					9100						900		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-004-0002DL			Z7PDI-SO-004-0406			Z7PDI-SO-005-0002DL			Z7PDI-SO-005-0204DL		
SDG: WE57-7	LAB_ID	SD5617-12DL			SD5617-16			SD5617-18DL			SD5617-19DL		
FRACTION: PAH	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	97.7			92.2			91.2			94.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		5500			110			2000			3400		
BENZO(A)PYRENE		5800			110			2100			2900		
BENZO(B)FLUORANTHENE		8600			150			3100			4600		
BENZO(K)FLUORANTHENE		3200			69			1000			1500		
CARBAZOLE		370	J	P	16	J	P	220	J	P	420	J	P
CHRYSENE		5200			100			1800			3000		
DIBENZO(A,H)ANTHRACENE		1400	J	P	23			470	J	P	670	J	P
INDENO(1,2,3-CD)PYRENE		3900			82			1300			1800		
PHENANTHRENE		2100			100			2000	J	C	6200	J	C
PYRENE		9600			220			3600			6100		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-009-0002DL		
SDG: WE57-7	LAB_ID	SD5617-21DL		
FRACTION: PAH	SAMP_DATE	9/11/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	UG/KG		
	PCT_SOLIDS	92.7		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		2100		
BENZO(A)PYRENE		2200		
BENZO(B)FLUORANTHENE		3300		
BENZO(K)FLUORANTHENE		1100		
CARBAZOLE		380	J	P
CHRYSENE		2200		
DIBENZO(A,H)ANTHRACENE		520	J	P
INDENO(1,2,3-CD)PYRENE		1200		
PHENANTHRENE		2400	J	C
PYRENE		3000		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**November 3, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION- PAH, ETPH, AND SPLP LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-1

SAMPLES: 20/Soil/

Z1PDI-SO-001-0002	Z1PDI-SO-001-0204
Z1PDI-SO-001-0810	Z1PDI-SO-003-0002
Z1PDI-SO-003-0406	Z1PDI-SO-003-0809
Z1PDI-SO-003-0910	Z1PDI-SO-003-1012
Z1PDI-SO-003-1012-D	Z1PDI-SO-003-1214
Z1PDI-SO-004-0002	Z1PDI-SO-004-0406
Z1PDI-SO-004-0809	Z1PDI-SO-004-0910
Z1PDI-SO-004-0910-D	Z1PDI-SO-006-0002
Z1PDI-SO-006-0204	Z1PDI-SO-006-0810
Z1PDI-SO-009-0002	Z1PDI-SO-009-0406

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG WE57-1, consists of twenty (20) soil environmental samples. This SDG contained two field duplicate pairs: Z1PDI-SO-003-1012/Z1PDI-SO-003-1012-D and Z1PDI-SO-004-0910/Z1PDI-SO-004-0910-D.

Samples Z1PDI-SO-004-0002, Z1PDI-SO-004-0406, Z1PDI-SO-004-0809, Z1PDI-SO-009-0002, and Z1PDI-SO-009-0406 were analyzed for polyaromatic hydrocarbons (PAH). Samples Z1PDI-SO-001-0002, Z1PDI-SO-001-0204, Z1PDI-SO-001-0810, Z1PDI-SO-003-0002, Z1PDI-SO-003-0406, Z1PDI-SO-003-0809, Z1PDI-SO-003-0910, Z1PDI-SO-003-1012, Z1PDI-SO-003-1012-D, Z1PDI-SO-003-1214, Z1PDI-SO-004-0002, Z1PDI-SO-004-0406, Z1PDI-SO-004-0809, Z1PDI-SO-004-0910, Z1PDI-SO-004-0910-D, Z1PDI-SO-006-0002, Z1PDI-SO-006-0204, and Z1PDI-SO-006-0810 were analyzed of extractable total petroleum hydrocarbons (ETPH). Sample Z1PDI-SO-009-0406 was analyzed for synthetic precipitation leaching procedure (SPLP) lead. The samples were collected by Tetra Tech NUS on September 8, 2010 and were analyzed by Katahdin Analytical services. PAH analyses were conducted by method 8270 SIM. ETPH analyses were conducted by Connecticut method CT-ETPH. SPLP metals analyses were conducted by method 6010. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	GC/MS Tuning
	•	Initial/Continuing Calibrations
*	•	Laboratory Method/Field Blank Results
	•	Internal Standard Recoveries
*	•	Surrogate Recoveries
*	•	ICP Internal Standard Recoveries
	•	Laboratory Control Spike/Laboratory Control Spike Duplicate Recoveries
*	•	Matrix Spike/Matrix Spike Duplicate Recoveries
*	•	Field Duplicate Precision

* • Compound Quantitation
* • Compound Identification
* • 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 summarizes the validation qualifications which are based on the following information:

PAH:

The initial calibration analyzed on 9/21/10 had a relative standard deviation >15% for chrysene. All samples in analyzed for PAHs were affected. All positive results were qualified as estimated (J).

The continuing calibration analyzed on 9/23/10 at 11:22 had a percent difference >20% for pyrene. Samples Z1PDI-SO-009-0002 and Z1PDI-SO-009-0406 were affected. Positive results were qualified as estimated (J).

Sample Z1PDI-SO-004-0809 had a percent recovery <50% for internal standard perylene-d12. Positive results for benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene were qualified as estimated (J).

ETPH:

The laboratory control spike had a percent recovery less than the lower quality control limit for ETPH. All samples analyzed for ETPH were affected. The relative percent difference between the LCS and the LCSD also exceeded the lab control limits. Positive results were qualified as estimated (J) and non-detects were qualified as estimated (UJ).

SPLP METALS:

All results were within quality control limits.

Notes:

The following samples were analyzed at dilutions to bring target analytes into calibration range:

Samples	Dilution Factor	Analytes
Z1PDI-SO-001-0204	10X	ETPH
Z1PDI-SO-003-0809	5X	ETPH
Z1PDI-SO-003-0910	200X	ETPH
Z1PDI-SO-003-1012	200X	ETPH
Z1PDI-SO-003-1012-D	200X	ETPH
Z1PDI-SO-003-1214	100X	ETPH
Z1PDI-SO-004-0002	20X	ETPH
Z1PDI-SO-004-0002	80X	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, pyrene
Z1PDI-SO-004-0406	5X	ETPH
Z1PDI-SO-004-0406	12X	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, pyrene
Z1PDI-SO-004-0809	10X	ETPH
Z1PDI-SO-004-0809	2X	pyrene
Z1PDI-SO-004-0910	40X	ETPH
Z1PDI-SO-004-0910-D	40X	ETPH
Z1PDI-SO-006-0002	100X	ETPH

No MS/MSD was performed on samples in this SDG. No validation action was taken.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Initial and continuing calibration non-compliances resulted in the qualification of chrysene and pyrene results. Sample Z1PDI-SO-004-0809 was qualified for poor internal standard recoveries. The laboratory control spike for ETPH resulted in the qualification of sample results.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96), Region I USEPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV (11/08), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist 1/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery 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 - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-004-0002			Z1PDI-SO-004-0002-DL			Z1PDI-SO-004-0406			Z1PDI-SO-004-0406-DL		
SDG: WE57-1	LAB_ID	SD5563-11			SD5563-11DL			SD5563-12			SD5563-12DL		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	93.4			93.4			93.5			93.5		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					4100						1400		
BENZO(A)PYRENE					5500						1700		
BENZO(B)FLUORANTHENE					7000						2300		
BENZO(K)FLUORANTHENE					3200						850		
CARBAZOLE		34						21					
CHRYSENE					3300	J	C				1200	J	C
DIBENZO(A,H)ANTHRACENE					1000	J	P				360		
INDENO(1,2,3-CD)PYRENE					3100						1000		
PHENANTHRENE		240						250					
PYRENE					4500						1800		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-004-0809			Z1PDI-SO-004-0809-DL			Z1PDI-SO-009-0002			Z1PDI-SO-009-0406		
SDG: WE57-1	LAB_ID	SD5563-13			SD5563-13DL			SD5563-19			SD5563-20		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	93.2			93.2			96.2			97.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		120						71			10	U	
BENZO(A)PYRENE		120	J	N				86			10	U	
BENZO(B)FLUORANTHENE		180	J	N				120			10	U	
BENZO(K)FLUORANTHENE		54	J	N				45			10	U	
CARBAZOLE		27						7.7	J	P	10	U	
CHRYSENE		100	J	C				67	J	C	1.7	J	CP
DIBENZO(A,H)ANTHRACENE		25	J	N				20	J	P	10	U	
INDENO(1,2,3-CD)PYRENE		78	J	N				58			10	U	
PHENANTHRENE		180						39			10	U	
PYRENE					240			130	J	C	2.8	J	CP

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-009-0406		
SDG: WE57-1	LAB_ID	SD5563-020T		
FRACTION: SPLPM	SAMP_DATE	9/8/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	97.7		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
LEAD		2.7	J	P

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-001-0002			Z1PDI-SO-001-0204			Z1PDI-SO-001-0810			Z1PDI-SO-003-0002		
SDG: WE57-1	LAB_ID	SD5563-1			SD5563-2DL			SD5563-3			SD5563-4		
FRACTION: PET	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	90.3			94.9			94.3			78.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		45	J	E	630	J	E	82	J	E	37	J	E

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-003-0406			Z1PDI-SO-003-0809			Z1PDI-SO-003-0910			Z1PDI-SO-003-1012		
SDG: WE57-1	LAB_ID	SD5563-5			SD5563-6DL			SD5563-7DL			SD5563-8DL		
FRACTION: PET	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	92.7			94.1			92.6			90.5		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		16	J	E	150	J	E	10000	J	E	8100	J	E

PROJ_NO: 02630 SDG: WE57-1 FRACTION: PET MEDIA: SOIL	NSAMPLE	Z1PDI-SO-003-1012-D			Z1PDI-SO-003-1214			Z1PDI-SO-004-0002			Z1PDI-SO-004-0406		
	LAB_ID	SD5563-9DL			SD5563-10DL			SD5563-11DL			SD5563-12DL		
	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	92.9			90.3			93.4			93.5		
	DUP_OF	Z1PDI-SO-003-1012											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		7800	J	E	8200	J	E	390	J	E	54	J	E

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-004-0809			Z1PDI-SO-004-0910			Z1PDI-SO-004-0910-D			Z1PDI-SO-006-0002		
SDG: WE57-1	LAB_ID	SD5563-13DL			SD5563-14DL			SD5563-15DL			SD5563-16DL		
FRACTION: PET	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.2			93.3			95.4			92.4		
	DUP_OF							Z1PDI-SO-004-0910					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		180	J	E	1800	J	E	1900	J	E	2200	J	E

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-006-0204			Z1PDI-SO-006-0810		
SDG: WE57-1	LAB_ID	SD5563-17			SD5563-18		
FRACTION: PET	SAMP_DATE	9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	90.0			97.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		29	J	E	3.8	UJ	E

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-001-0002			Z1PDI-SO-001-0204			Z1PDI-SO-001-0810			Z1PDI-SO-003-0002		
SDG: WE57-1	LAB_ID	SD5563-1			SD5563-2			SD5563-3			SD5563-4		
FRACTION: MISC	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	90.3			94.9			94.3			78.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		90			95			94			78		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-003-0406			Z1PDI-SO-003-0809			Z1PDI-SO-003-0910			Z1PDI-SO-003-1012		
SDG: WE57-1	LAB_ID	SD5563-5			SD5563-6			SD5563-7			SD5563-8		
FRACTION: MISC	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	92.7			94.1			92.6			90.5		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		93			94			93			90		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-003-1012-D			Z1PDI-SO-003-1214			Z1PDI-SO-004-0002			Z1PDI-SO-004-0406		
SDG: WE57-1	LAB_ID	SD5563-9			SD5563-10			SD5563-11			SD5563-12		
FRACTION: MISC	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	92.9			90.3			93.4			93.5		
	DUP_OF	Z1PDI-SO-003-1012											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		93			90			93			93		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-004-0809			Z1PDI-SO-004-0910			Z1PDI-SO-004-0910-D			Z1PDI-SO-006-0002		
SDG: WE57-1	LAB_ID	SD5563-13			SD5563-14			SD5563-15			SD5563-16		
FRACTION: MISC	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	93.2			93.3			95.4			92.4		
	DUP_OF							Z1PDI-SO-004-0910					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		93			93			95			92		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-006-0204			Z1PDI-SO-006-0810			Z1PDI-SO-009-0002			Z1PDI-SO-009-0406		
SDG: WE57-1	LAB_ID	SD5563-17			SD5563-18			SD5563-19			SD5563-20		
FRACTION: MISC	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	90.0			97.0			96.2			97.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		90			97			96			98		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**November 3, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC AND INORGANIC DATA VALIDATION- PAH, ETPH, AND SPLP LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-2

SAMPLES: 20/Soil/

Z1PDI-SO-007-0405	Z1PDI-SO-009-0809
Z1PDI-SO-010-0002	Z1PDI-SO-010-0405
Z1PDI-SO-011-0002	Z1PDI-SO-012-0002
Z1PDI-SO-012-0204	Z1PDI-SO-013-0002
Z1PDI-SO-013-0204	Z1PDI-SO-013-0204-D
Z7PDI-SO-014-0002	Z7PDI-SO-014-0204
Z7PDI-SO-015-0002	Z7PDI-SO-015-0002-D
Z7PDI-SO-015-0204	Z7PDI-SO-016-0002
Z7PDI-SO-016-0204	Z7PDI-SO-018-0002
Z7PDI-SO-018-0002-D	Z7PDI-SO-019-0002

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG WE57-2, consists of twenty (20) soil environmental samples. This SDG contained three field duplicate pairs: Z1PDI-SO-013-0204/Z1PDI-SO-013-0204-D, Z7PDI-SO-015-0002/Z7PDI-SO-015-0002-D, and Z7PDI-SO-018-0002/Z7PDI-SO-018-0002-D.

Samples Z1PDI-SO-009-0809, Z1PDI-SO-010-0002, Z1PDI-SO-010-0405, Z1PDI-SO-011-0002, Z1PDI-SO-012-0002, Z1PDI-SO-012-0204, Z7PDI-SO-014-0002, Z7PDI-SO-014-0204, Z7PDI-SO-015-0002, Z7PDI-SO-015-0002-D, Z7PDI-SO-015-0204, Z7PDI-SO-016-0002, Z7PDI-SO-016-0204, Z7PDI-SO-018-0002, Z7PDI-SO-018-0002-D, and Z7PDI-SO-019-0002 were analyzed for polyaromatic hydrocarbons (PAH). Samples Z1PDI-SO-007-0405, Z1PDI-SO-013-0002, Z1PDI-SO-013-0204, and Z1PDI-SO-013-0204-D were analyzed of extractable total petroleum hydrocarbons (ETPH). Samples Z7PDI-SO-015-0002, Z7PDI-SO-015-0002-D, and Z7PDI-SO-015-0204 was analyzed for synthetic precipitation leaching procedure (SPLP) lead. The samples were collected by Tetra Tech NUS on September 8, 2010 and were analyzed by Katahdin Analytical services. PAH analyses were conducted by method 8270 SIM. TPH analyses were conducted by Connecticut ETPA. SPLP metals analyses were conducted by method 6010B. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

*	• Data Completeness
*	• Holding Times
*	• GC/MS Tuning
	• Initial/Continuing Calibrations
*	• Laboratory Method/Field Blank Results
	• Internal Standard Recoveries
	• Surrogate Recoveries
	• Laboratory Control Spike/Laboratory Control Spike Duplicate Recoveries
*	• Matrix Spike/Matrix Spike Duplicate Recoveries
	• Field Duplicate Precision
*	• Analyte Quantitation
*	• Analyte Identification

* • 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 summarizes the validation qualifications which are based on the following information:

PAH:

The continuing calibration analyzed on 9/20/10 had a percent difference > 20% for carbazole. Sample Z1PDI-SO-011-0002 was the only sample affected. The non-detect carbazole result was qualified as estimated (UJ).

The initial calibration analyzed on 9/21/10 had a relative percent difference > 15% for chrysene. All samples except Z1PDI-SO-011-0002 were affected. Positive results were qualified as estimated (J) and non-detected results were qualified as estimated (UJ).

The continuing calibration analyzed on 9/23/10 had a percent difference > 20% for pyrene. Samples Z1PDI-SO-009-0809 and Z1PDI-SO-012-0002 were affected. Positive results were qualified as estimated (J) and non-detected results were qualified as estimated (UJ).

The continuing calibration analyzed on 9/27/10 had a percent difference >20% for indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene. Samples Z1PDI-SO-010-0002, Z7PDI-SO-014-0204, Z7PDI-SO-015-0002-D (DL), Z7PDI-SO-015-0002 (DL), Z7PDI-SO-015-0204 (DL), Z7PDI-SO-016-0002, , Z7PDI-SO-016-0002 (DL) Z7PDI-SO-016-0204, Z7PDI-SO-018-0002, Z7PDI-SO-018-0002-D, and Z7PDI-SO-019-0002 were affected. Positive results were qualified as estimated (J).

Samples Z7PDI-SO-015-0002, Z7PDI-SO-015-0002-D, and Z1PDI-SO-010-0405 (DL) had a percent recovery <50% for internal standard perylene-d12. Results for benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthrancene were affected. Positive results were qualified as estimated (J) and non-detected results were qualified as estimated (UJ). Sample Z1PDI-SO-010-0405 (DL) no affected compounds were reported from this analysis.

The field duplicate pair Z7PDI-SO-018-0002/Z7PDI-SO-018-0002-D had a relative percent difference > 50% for all compounds. All positive results were qualified as estimated (J).

ETPH:

All results were within quality control limits.

SPLP METALS:

All results were within quality control limits.

Notes:

The following samples were analyzed at dilutions to bring target analytes into calibration range:

Samples	Dilution Factor	Analytes
Z1PDI-SO-010-0405	3X	phenanthrene, pyrene
Z7PDI-SO-015-0002-D	4X	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, pyrene
Z7PDI-SO-015-0002	4X	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, pyrene
Z7PDI-SO-015-0204	5X	benzo(a)anthracene, benzo(a)pyrene benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, pyrene
Z7PDI-SO-016-0002	6X	benzo(a)anthracene, benzo(a)pyrene benzo(b)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, pyrene
Z7PDI-SO-016-0204	5X	benzo(a)anthracene, benzo(a)pyrene benzo(b)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, pyrene
Z7PDI-SO-018-0002-D	10X	benzo(a)anthracene, benzo(a)pyrene benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, phenanthrene pyrene
Z7PDI-SO-018-0002	25X	benzo(a)anthracene, benzo(a)pyrene benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, phenanthrene pyrene
Z7PDI-SO-019-0002	50X	benzo(a)anthracene, benzo(a)pyrene benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, phenanthrene pyrene
Z1PDI-SO-007-0405	10X	ETPH
Z1PDI-SO-013-0002	10X	ETPH

The MS/MSD percent recoveries associated with sample Z7PDI-SO-018-0002 were all noncompliant but the unspiked sample concentration was greater than 4X spike added concentration. No action was required.

The laboratory control spike for batch WG82165 had a percent recovery greater than the upper control limit for carbazole. Sample Z1PDI-SO-011-0002 was affected. No validation action was warranted as sample results were non-detect.

Samples Z1PDI-SO-010-0405 and Z1PDI-SO-011-0002 had a percent recovery greater than the upper quality control limit for surrogate 2-methylnaphthalene-d10. No action for one surrogate non-compliances.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Calibration non-compliances resulted in the qualification of sample results. Internal standard non-compliances for Z7PDI-SO-015-0002 and Z7PDI-SO-015-0002-D resulted in the qualification of sample results.

Other Factors Affecting Data Quality: Field duplicate non-compliances Z7PDI-SO-018-0002/Z7PDI-SO-018-0002-D for all PAH compounds resulted in the qualification of all results.

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96), Region I USEPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV (11/08), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist 1/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery 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 - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-009-0809			Z1PDI-SO-010-0002			Z1PDI-SO-010-0405			Z1PDI-SO-010-0405DL		
SDG: WE57-2	LAB_ID	SD5564-1			SD5564-2			SD5564-3			SD5564-3DL		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.4			94.3			91.8			91.8		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		10	U		28			160					
BENZO(A)PYRENE		10	U		40			190					
BENZO(B)FLUORANTHENE		10	U		55			240					
BENZO(K)FLUORANTHENE		10	U		20	J	P	93					
CARBAZOLE		10	U		3.1	J	P	10	U				
CHRYSENE		10	UJ	C	33	J	C	140	J	C			
DIBENZO(A,H)ANTHRACENE		10	U		15	J	CP	50					
INDENO(1,2,3-CD)PYRENE		10	U		36	J	C	180					
PHENANTHRENE		10	U		19	J	P				530		
PYRENE		10	UJ	C	50						390		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-011-0002			Z1PDI-SO-012-0002			Z1PDI-SO-012-0204			Z7PDI-SO-014-0002		
SDG: WE57-2	LAB_ID	SD5564-20			SD5564-4			SD5564-5			SD5564-9		
FRACTION: PAH	SAMP_DATE	9/9/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.4			93.3			95.0			93.3		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		43			140			10	U		63		
BENZO(A)PYRENE		58			120			10	U		83		
BENZO(B)FLUORANTHENE		83			180			10	U		100		
BENZO(K)FLUORANTHENE		32			82			10	U		46		
CARBAZOLE		11	UJ	C	2.9	J	P	10	U		6.1	J	P
CHRYSENE		49	J	C	120	J	C	10	UJ	C	76	J	C
DIBENZO(A,H)ANTHRACENE		13	J	P	19	J	P	10	U		21	J	P
INDENO(1,2,3-CD)PYRENE		46			65			10	U		65		
PHENANTHRENE		21	J	P	11	J	P	10	U		36		
PYRENE		53			120	J	C	10	U		160		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-014-0204			Z7PDI-SO-015-0002			Z7PDI-SO-015-0002-D			Z7PDI-SO-015-0002-DDL		
SDG: WE57-2	LAB_ID	SD5564-10			SD5564-11			SD5564-12			SD5564-12DL		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	93.8			92.8			94.0			94.0		
	DUP_OF							Z7PDI-SO-015-0002			Z7PDI-SO-015-0002		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		45									390		
BENZO(A)PYRENE		57									440		
BENZO(B)FLUORANTHENE		79									580		
BENZO(K)FLUORANTHENE		21			170	J	N	220	J	N			
CARBAZOLE		4.2	J	P	6.9	J	P	15	J	P			
CHRYSENE		48	J	C	250	J	C				300	J	C
DIBENZO(A,H)ANTHRACENE		17	J	CP	77	J	N	100	J	N			
INDENO(1,2,3-CD)PYRENE		46	J	C	230	J	N				340	J	C
PHENANTHRENE		24			120			120					
PYRENE		95									550		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-015-0002DL			Z7PDI-SO-015-0204			Z7PDI-SO-015-0204DL			Z7PDI-SO-016-0002		
SDG: WE57-2	LAB_ID	SD5564-11DL			SD5564-13			SD5564-13DL			SD5564-14		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	92.8			95.4			95.4			96.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		320						490					
BENZO(A)PYRENE		310						560					
BENZO(B)FLUORANTHENE		410						700					
BENZO(K)FLUORANTHENE								290			230		
CARBAZOLE					29						11	J	P
CHRYSENE								410	J	C			
DIBENZO(A,H)ANTHRACENE					140						150	J	C
INDENO(1,2,3-CD)PYRENE								380	J	C			
PHENANTHRENE					180						110		
PYRENE		500						600					

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-016-0002DL			Z7PDI-SO-016-0204			Z7PDI-SO-016-0204DL			Z7PDI-SO-018-0002-D		
SDG: WE57-2	LAB_ID	SD5564-14DL			SD5564-15			SD5564-15DL			SD5564-17		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	96.4			92.6			92.6			95.5		
	DUP_OF										Z7PDI-SO-018-0002		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		670						480					
BENZO(A)PYRENE		610						480					
BENZO(B)FLUORANTHENE		920						650					
BENZO(K)FLUORANTHENE					190								
CARBAZOLE					23						51	J	G
CHRYSENE		550	J	C				380	J	C			
DIBENZO(A,H)ANTHRACENE					110	J	C				130	J	CG
INDENO(1,2,3-CD)PYRENE		430	J	C				300					
PHENANTHRENE					220								
PYRENE		770						660					

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-018-0002-DDL			Z7PDI-SO-018-0002DL			Z7PDI-SO-019-0002DL		
SDG: WE57-2	LAB_ID	SD5564-17DL			SD5564-16DL			SD5564-18DL		
FRACTION: PAH	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	95.5			93.5			95.9		
	DUP_OF	Z7PDI-SO-018-0002								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		630	J	G	1900	J	G	3800		
BENZO(A)PYRENE		610	J	G	1700	J	G	2400		
BENZO(B)FLUORANTHENE		880	J	G	2500	J	G	3300		
BENZO(K)FLUORANTHENE		270	J	G	770	J	G	1700		
CARBAZOLE					320	J	GP	570	J	P
CHRYSENE		550	J	CG	1500	J	CG	2600	J	C
DIBENZO(A,H)ANTHRACENE					350	J	GP	410	J	P
INDENO(1,2,3-CD)PYRENE		390	J	G	1200	J	G	1100		
PHENANTHRENE		740	J	G	1800	J	G	5300		
PYRENE		1200	J	G	2700	J	G	6000		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-015-0002			Z7PDI-SO-015-0002-D			Z7PDI-SO-015-0204		
SDG: WE57-2	LAB_ID	SD5564-011T			SD5564-012T			SD5564-013T		
FRACTION: SPLPM	SAMP_DATE	9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L		
	PCT_SOLIDS	92.8			94.0			95.4		
	DUP_OF				Z7PDI-SO-015-0002					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		20.7			15.7			8.9		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-007-0405			Z1PDI-SO-013-0002			Z1PDI-SO-013-0204			Z1PDI-SO-013-0204-D		
SDG: WE57-2	LAB_ID	SD5564-19DL			SD5564-6DL			SD5564-7			SD5564-8		
FRACTION: PET	SAMP_DATE	9/9/2010			9/8/2010			9/8/2010			9/8/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.6			92.6			97.5			96.5		
	DUP_OF										Z1PDI-SO-013-0204		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		240			180			18			14		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**November 4, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION- TOTAL ANTIMONY AND LEAD, SPLP ANTIMONY AND LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-5

SAMPLES: 15/Soil/

Z7PDI-SO-003-0002	Z7PDI-SO-003-0002-D
Z7PDI-SO-003-0204	Z7PDI-SO-003-0204-D
Z7PDI-SO-003-0506	Z7PDI-SO-007-0002
Z7PDI-SO-007-0506	Z7PDI-SO-007-0506-D
Z7PDI-SO-008-0002	Z7PDI-SO-008-0507
Z7PDI-SO-010-0002	Z7PDI-SO-010-0002-D
Z7PDI-SO-010-0204	Z7PDI-SO-010-0204-D
Z7PDI-SO-011-0002	

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG WE57-5, consists of fifteen (15) soil environmental samples. This SDG contained five field duplicate pairs: Z7PDI-SO-003-0002/Z7PDI-SO-003-0002-D, Z7PDI-SO-003-0204/Z7PDI-SO-003-0204-D, Z7PDI-SO-007-0506/Z7PDI-SO-007-0506-D, Z7PDI-SO-010-0002/Z7PDI-SO-010-0002-D, and Z7PDI-SO-010-0204/Z7PDI-SO-010-0204-D.

Samples Z7PDI-SO-007-0002, Z7PDI-SO-007-0506, Z7PDI-SO-010-0204, Z7PDI-SO-010-0002-D, and Z7PDI-SO-010-0002 were analyzed for total antimony. Samples Z7PDI-SO-003-0002, Z7PDI-SO-003-0002-D, Z7PDI-SO-007-0002, Z7PDI-SO-007-0506, Z7PDI-SO-008-0002, Z7PDI-SO-008-0507, Z7PDI-SO-010-0002, Z7PDI-SO-010-0002-D, and Z7PDI-SO-011-0002 were analyzed for total lead. Samples Z7PDI-SO-003-0204, Z7PDI-SO-003-0204-D, Z7PDI-SO-003-0506, Z7PDI-SO-007-0002, Z7PDI-SO-007-0506, Z7PDI-SO-007-0506-D, Z7PDI-SO-010-0002, Z7PDI-SO-010-0204, and Z7PDI-SO-010-0204-D were analyzed for synthetic precipitation leaching procedure (SPLP) antimony. Samples Z7PDI-SO-007-0002, Z7PDI-SO-007-0506, Z7PDI-SO-007-0506-D, Z7PDI-SO-008-0507, Z7PDI-SO-010-0204, and Z7PDI-SO-010-0204-D were analyzed for synthetic precipitation leaching procedure (SPLP) lead. The samples were collected by Tetra Tech NUS on September 8, 2010 and were analyzed by Katahdin Analytical services. SPLP metals analyses were conducted by method 6010B. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

*	• Data Completeness
*	• Holding Times
*	• Initial/Continuing Calibrations
	• Laboratory Method Blank Results
*	• ICP Internal Standard Recoveries
	• Laboratory Control Spike/Laboratory Control Spike Duplicate Recoveries
*	• Matrix Spike/Matrix Spike Duplicate Recoveries
	• Field Duplicate Precision
*	• Analyte Quantitation
*	• Analyte Identification
*	• 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 summarizes the validation qualifications which are based on the following information:

TOTAL METALS:

The laboratory control spike for total metals had a percent recovery < 80% for antimony. Positive results were qualified as estimated (J).

SPLP METALS:

Field duplicate pair Z7PDI-SO-010-0204/Z7PDI-SO-010-0204-D had a relative percent difference > 50% for antimony. The sample pair was qualified as estimated (J). No other samples were qualified as all other field duplicate were within quality control limits.

Notes:

The following analytes were detected in a continuing calibration blank at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Antimony [(1)]	2.46 ug/L	12.3 ug/L
Lead [(1)]	-1.35 ug/L	6.75 ug/L
Lead [(2)]	3.63 ug/L	1.81 mg/kg

(1) Maximum concentration found in a continuing calibration blank affecting SPLP samples Z7PDI-SO-003-0204, Z7PDI-SO-003-0204-D, Z7PDI-SO-003-0506, Z7PDI-SO-007-0002, Z7PDI-SO-007-0506, Z7PDI-SO-007-0506-D, Z7PDI-SO-010-0002, Z7PDI-SO-010-0204, Z7PDI-SO-010-0204-D.

(2) Maximum concentration found in a continuing calibration blank affecting samples Z7PDI-SO-008-0002, Z7PDI-SO-008-0507, and Z7PDI-SO-011-0002.

Action levels of 5X the maximum contaminant concentration for were established to evaluate blank contamination. Dilution factors, percent solids, and sample aliquots were taken into consideration during the application of all action levels. No validation action was taken because sample results were greater than the blank action level.

The following samples were analyzed at dilutions to bring target analytes into calibration range:

Samples	Dilution Factor	Analytes
Z7PDI-SO-003-0002	2X	Lead
Z7PDI-SO-003-0002-D	2X	Lead
Z7PDI-SO-007-0002	50X	Antimony, Lead
Z7PDI-SO-007-0506	20X	Antimony, Lead
Z7PDI-SO-010-0002	2X	Antimony, Lead
Z7PDI-SO-010-0002-D	2X	Antimony, Lead
Z7PDI-SO-010-0204	10X	Antimony

EXECUTIVE SUMMARY

Laboratory Performance Issues: Laboratory control spike non-compliances resulted in the qualification of sample results.

Other Factors Affecting Data Quality: Field duplicate pair Z7PDI-SO-010-0204/Z7PDI-SO-010-0204-D was qualified for antimony non-compliances.

The data for these analyses were reviewed with reference to the Region I USEPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV (11/08), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

TetraTech NUS
Megan Carson
Chemist 1/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery 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 - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-003-0002			Z7PDI-SO-003-0002-D			Z7PDI-SO-007-0002			Z7PDI-SO-007-0506		
SDG: WE57-5	LAB_ID	SD5615-001			SD5615-002			SD5615-006			SD5615-008		
FRACTION: M	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	90.1			91.9			95.2			85.5		
	DUP_OF				Z7PDI-SO-003-0002								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY								50.6	J	E	118	J	E
LEAD		2120			1780			31400			23800		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-008-0002			Z7PDI-SO-008-0507			Z7PDI-SO-010-0002			Z7PDI-SO-010-0002-D		
SDG: WE57-5	LAB_ID	SD5615-011			SD5615-012			SD5615-014			SD5615-016		
FRACTION: M	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.7			98.4			95.1			94.1		
	DUP_OF										Z7PDI-SO-010-0002		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY								8.5	J	E	12.4	J	E
LEAD		16			4.3			1810			1870		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-010-0204			Z7PDI-SO-011-0002		
SDG: WE57-5	LAB_ID	SD5615-017			SD5615-020		
FRACTION: M	SAMP_DATE	9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	84.0			97.2		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		110	J	E			
LEAD					262		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-003-0204			Z7PDI-SO-003-0204-D			Z7PDI-SO-003-0506			Z7PDI-SO-007-0002		
SDG: WE57-5	LAB_ID	SD5615-003T			SD5615-004T			SD5615-005T			SD5615-007T		
FRACTION: SPLPM	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				Z7PDI-SO-003-0204								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		19.1			14.1			48.7			120		
LEAD											1040		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-007-0506			Z7PDI-SO-007-0506-D			Z7PDI-SO-008-0507			Z7PDI-SO-010-0002		
SDG: WE57-5	LAB_ID	SD5615-009T			SD5615-010T			SD5615-013T			SD5615-015T		
FRACTION: SPLPM	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				Z7PDI-SO-007-0506								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		26.4			21.3						377		
LEAD		18.2			11.8			1.9	J	P			

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-010-0204			Z7PDI-SO-010-0204-D		
SDG: WE57-5	LAB_ID	SD5615-018T			SD5615-019T		
FRACTION: SPLPM	SAMP_DATE	9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF				Z7PDI-SO-010-0204		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		627	J	G	344	J	G
LEAD		1820			1410		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 4, 2010**
FROM:	**TERRI L. SOLOMON**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION –PAH, ETPH, TOTAL SOLIDS**
CTO WE57 NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) – WE57-3

SAMPLES: 21/Soil/

Z1PDI-SO-011-0405	Z5PD1-SO-001-0002
Z5PDI-SO-001-0204	Z5PD1-SO-001-0204-D
Z5PDI-SO-002-0002	Z5PD1-SO-002-0002-D
Z5PDI-SO-002-0204	Z5PD1-SO-003-0002
Z5PDI-SO-003-0204	Z5PD1-SO-004-0002
Z5PDI-SO-004-0204	Z5PD1-SO-004-0204-D
Z5PDI-SO-005-0002	Z5PD1-SO-005-0204
Z6PDI-SO-001-0002	Z6PD1-SO-001-0405
Z6PDI-SO-001-0405-D	Z6PD1-SO-002-0002
Z6PDI-SO-002-0405	Z6PD1-SO-004-0002
Z6PDI-SO-004-0204	

Overview

The sample set for NSB New London, CTO WE57, SDG WE57-3, consists of twenty-one (21) soil environmental samples. Four (4) field duplicate pairs (Z5PDI-SO-001-0204 / Z5PD1-SO-001-0204-D, Z5PDI-SO-002-0002 / Z5PD1-SO-002-0002-D, Z5PDI-SO-004-0204 / Z5PD1-SO-004-0204-D and Z6PD1-SO-001-0405 / Z6PDI-SO-001-0405-D) are included within this SDG.

All samples with the exception of Z1PDI-SO-011-0405 were analyzed for extractable total petroleum hydrocarbons (ETPH), and total solids. Sample Z1PDI-SO-011-0405 was analyzed for select polycyclic aromatic hydrocarbons (PAHs). The samples were collected by Tetra Tech NUS on September 9, 2010 and analyzed by Katahdin Analytical Services under Naval Facilities Engineering Service Center (NFESC) Quality Assurance / Quality Control (QA/QC) criteria. PAH analyses were conducted using SW-846 method 8270C SIM. ETPH analyses were conducted using Connecticut ETPH. Total solids analyses were conducted using Standard method 2540G.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Tuning
• Initial and Continuing Calibrations
* • Laboratory Method Blank Analyses
• Surrogate Recoveries
• Laboratory Control Sample / Laboratory Control Sample Duplicate Results
• Matrix Spike / Matrix Spike Duplicate Results
* • Internal Standard Recoveries

* • Detection Limits
* • Analyte Quantitation

* - 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. Appendix D contains the documentation to support the findings as discussed in this validation report.

PAHs

The continuing calibration percent difference (%D) on 09/20/07 at 12:24 instrument GCMS-R was > 20% quality control limit for carbazole. The nondetected result reported for carbazole was qualified as estimated, "UJ".

The initial calibration % relative standard deviation on 09/21/10 was > 15% quality control limit for chrysene. The positive result reported for chrysene was qualified as estimated, "J".

The surrogate recovery for 2-methylnaphthalene-D10 was above the quality control limit for the original analysis of sample Z1PDI-SO-011-0405. No validation action was required as only one surrogate recovery was outside the quality control limit.

The surrogate recovery for pyrene-D10 was below the quality control limit for the diluted analysis of sample Z1PDI-SO-011-0405. No validation action was required as the surrogate was diluted out of the sample.

The laboratory control sample duplicate percent recovery for carbazole was greater than the quality control limit. No validation actions were warranted as the sample result for carbazole was nondetected.

TPH

The matrix spike percent recovery for ETPH was greater than the quality control limit for sample Z5PDI-SO-004-0002. The positive result reported for ETPH in the affected sample was qualified as estimated, "J".

Four pairs of matrix spike / matrix spike duplicate samples were included in this SDG.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, "J".

Notes

The original analysis for sample Z1PDI-SO-011-0405 exceeded the calibration range of the instrument for pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene and indeno(1,2,3-cd)pyrene. The laboratory reanalyzed the sample at a 9X dilution. The sample results from the dilution for the aforementioned compounds were chosen for validation purposes.

The matrix spike / matrix spike duplicate percent recoveries for ETPH were noncompliant for samples Z6PDI-SO-001-0002 and Z5PDI-SO-005-0002. No validation actions were required as the concentration of the unspiked sample was > 4X the spike added.

The following samples were analyzed at dilutions for the TPH analyses: Z5PDI-SO-003-0002 (10X), Z5PDI-SO-004-0204 (40X), Z5PDI-SO-004-0204-D (20X), Z5PDI-SO-005-0002 (2X), Z5PDI-SO-005-0204 (2X), Z6PDI-SO-001-0002 (10X) and Z6PDI-SO-002-0002 (10X).

Executive Summary

Laboratory Performance: The continuing calibration %D on 09/20/07 at 12:24 instrument GCMS-R was > 20% quality control limit for carbazole. The initial calibration % relative standard deviation on 09/21/10 was > 15% quality control limit for chrysene.

Other Factors Affecting Data Quality: The matrix spike percent recovery for TPH was greater than the quality control limit for sample Z5PDI-SO-004-0002. Positive results reported below the RL but above the MDL were qualified as estimated.

The data for these analyses were reviewed with reference to the EPA Region I "Functional Guidelines for Organic Data Validation", December 1996, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

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

Terri L. Solomon

Tetra Tech NUS
Terri L. Solomon
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C – Region I Worksheets
4. Appendix D – Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O - Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DOT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-011-0405			Z1PDI-SO-011-0405DL		
SDG: WE57-3	LAB_ID	SD5565-1			SD5565-1DL		
FRACTION: PAH	SAMP_DATE	9/9/2010			9/9/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	89.1			89.1		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					660		
BENZO(A)PYRENE					1200		
BENZO(B)FLUORANTHENE					1600		
BENZO(K)FLUORANTHENE					550		
CARBAZOLE		11	UJ	C			
CHRYSENE					620	J	C
DIBENZO(A,H)ANTHRACENE		260					
INDENO(1,2,3-CD)PYRENE					1000		
PHENANTHRENE		28					
PYRENE					910		

PROJ_NO: 02630 SDG: WE57-3 FRACTION: PET MEDIA: SOIL	NSAMPLE	Z5PDI-SO-001-0002			Z5PDI-SO-001-0204			Z5PDI-SO-001-0204-D			Z5PDI-SO-002-0002		
	LAB_ID	SD5565-2			SD5565-3			SD5565-4			SD5565-5		
	SAMP_DATE	9/9/2010			9/9/2010			9/9/2010			9/9/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.4			92.4			92.7			96.4		
	DUP_OF							Z5PDI-SO-001-0204					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		57			2.9	J	P	4.1	U		83		

PROJ_NO: 02630 SDG: WE57-3 FRACTION: PET MEDIA: SOIL	NSAMPLE	Z5PDI-SO-002-0002-D			Z5PDI-SO-002-0204			Z5PDI-SO-003-0002			Z5PDI-SO-003-0204		
	LAB_ID	SD5565-6			SD5565-7			SD5565-8DL			SD5565-9		
	SAMP_DATE	9/9/2010			9/9/2010			9/9/2010			9/9/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	95.9			96.2			95.0			95.7		
	DUP_OF	Z5PDI-SO-002-0002											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		86			8.2			180			2.9	J	P

PROJ_NO: 02630	NSAMPLE	Z5PDI-SO-004-0002			Z5PDI-SO-004-0204			Z5PDI-SO-004-0204-D			Z5PDI-SO-005-0002		
SDG: WE57-3	LAB_ID	SD5565-10			SD5565-11DL			SD5565-12DL			SD5565-13DL		
FRACTION: PET	SAMP_DATE	9/9/2010			9/9/2010			9/9/2010			9/9/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	96.4			94.2			92.2			95.5		
	DUP_OF							Z5PDI-SO-004-0204					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		35	J	D	2100			1400			110		

PROJ_NO: 02630	NSAMPLE	Z5PDI-SO-005-0204			Z6PDI-SO-001-0002			Z6PDI-SO-001-0405			Z6PDI-SO-001-0405-D		
SDG: WE57-3	LAB_ID	SD5565-14DL			SD5565-15DL			SD5565-16			SD5565-17		
FRACTION: PET	SAMP_DATE	9/9/2010			9/9/2010			9/9/2010			9/9/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.9			97.1			94.4			94.3		
	DUP_OF										Z6PDI-SO-001-0405		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		150			570			5.1	J	P	8.5		

PROJ_NO: 02630	NSAMPLE	Z6PDI-SO-002-0002			Z6PDI-SO-002-0405			Z6PDI-SO-004-0002			Z6PDI-SO-004-0204		
SDG: WE57-3	LAB_ID	SD5565-18DL			SD5565-19			SD5565-20			SD5565-21		
FRACTION: PET	SAMP_DATE	9/9/2010			9/9/2010			9/9/2010			9/9/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	97.2			94.7			94.5			94.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		180			3.8	U		55			46		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 4, 2010**
FROM:	**JOSEPH KALINYAK**	**COPIES:**	**DV FILE**
SUBJECT:	**ORGANIC DATA VALIDATION – PAH** **NSB NEW LONDON, CTO WE57** **SDG WE57-5**		
SAMPLES:	5 / Soil / PAH		

Z7PDI-SO-003-0002 Z7PDI-SO-007-0002 Z7PDI-SO-008-0002
Z7PDI-SO-010-0002 Z7PDI-SO-011-0002

Overview

The sample set for NSB New London, CTO WE57, SDG WE57-5 consisted of five (5) soil environmental samples. The soil samples were analyzed for polynuclear aromatic hydrocarbons (PAH). No field duplicate sample pairs were included in the sample delivery group (SDG).

The samples were collected by Tetra Tech on September 10, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Method 8270C SIM analytical and reporting protocols. The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Instrument Tuning and System Performance
* • Blank Results
  • Initial and Continuing Calibration
  • Blank Spike Results
  • Surrogate Spike Recoveries
  • Internal Standard Recoveries
* • Detection Limits
* • Compound Identification and Quantification

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

PAH

The initial calibration relative standard deviation (RSD) was greater than the 15% quality control limit for chrysene on 09/21/10 on instrument GCMS-R affecting the undiluted sample analysis for samples Z7PDI-SO-003-0002, Z7PDI-SO-007-0002, Z7PDI-SO-008-0002, and Z7PDI-SO-011-0002. All chrysene positive results were qualified estimated, (J).

The internal standard recovery was less than the 50% quality control limit for perylene-d12 for samples Z7PDI-SO-003-0002, Z7PDI-SO-007-0002, Z7PDI-SO-008-0002, Z7PDI-SO-011-0002, Z7PDI-SO-007-0002 re-analysis, and Z7PDI-SO-010-0002DL dilution analysis. The samples Z7PDI-SO-003-0002 and Z7PDI-SO-008-0002 PAH results were not qualified as the affected analytes were reported from the dilution re-analysis for the samples. The sample Z7PDI-SO-007-0002 was re-analyzed and the re-analysis results had a similar less than the 50% quality control limit for perylene-d12. Therefore the re-analysis results were not reported for the sample Z7PDI-SO-007-0002 and the sample Z7PDI-SO-007-0002 positive results for benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were qualified estimated, (J). Sample Z7PDI-SO-011-0002 was re-analyzed at a dilution of 2X for pyrene and the internal standard %Rs were within the quality control limits, therefore, only the dilution analysis results for the PAH analytes for the sample were reported. The sample Z7PDI-SO-010-0002 dilution re-analysis analytes which were reported for the sample were not affected by the less than the quality control limit internal standard recovery and no validation action was required for the dilution sample.

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

Notes

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for carbazole on 09/20/10 @ 12:24 on instrument GCMS-R affecting the method blank WG82165 and the laboratory control sample (LCS) and LCS duplicate (LCSD). No samples were affected and no action was taken for this issue.

Samples were diluted for the PAH analyses due to analyte results that exceeded the highest calibration level in the undiluted analyses. The samples and dilutions are listed below.

Samples	Dilution
Z7PDI-SO-003-0002	1X, 50X
Z7PDI-SO-008-0002L	1X, 20X
Z7PDI-SO-010-0002	1X, 10X
Z7PDI-SO-011-0002	1X, 2X

The PAH laboratory control sample duplicate (LCSD) percent recovery (%R) was greater than the quality control limit for carbazole for LCSD WG82165-3. No action was taken as the laboratory control sample (LCS) had a within the quality control limit %R for carbazole and the RPD for the LCS/LCSD was within the quality control limits.

The LCSD had a surrogate %R for 2-methylnaphthalene-d1 that was greater than the quality control limit. No action was taken as sample results were not affected by this issue.

The LCS had a recovery for the internal standard chysene-d12 greater than the quality control limit. No action was taken as sample results were not affected by this issue.

Executive Summary

Laboratory Performance: PAH chrysene results were qualified due to an initial calibration RSD quality control limit exceedance. Sample PAH results were qualified due to internal standard quality control limit exceedances.

Other Factors Affecting Data Quality: Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the USEPA the "USEPA Region 1 Laboratory Data Validation Functional Guidelines – Part II" (12/96) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630 SDG: WE57-5 FRACTION: PAH MEDIA: SOIL	NSAMPLE	Z7PDI-SO-003-0002			Z7PDI-SO-003-0002DL			Z7PDI-SO-007-0002			Z7PDI-SO-008-0002		
	LAB_ID	SD5615-1			SD5615-1DL			SD5615-6			SD5615-11		
	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	90.1			90.1			95.2			94.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					7800			69					
BENZO(A)PYRENE					8400			81	J	N			
BENZO(B)FLUORANTHENE					15000			120	J	N			
BENZO(K)FLUORANTHENE					6300			36	J	N			
CARBAZOLE		46						2.1	J	P	35		
CHRYSENE					7700			74	J	C			
DIBENZO(A,H)ANTHRACENE					3100			21	J	NP			
INDENO(1,2,3-CD)PYRENE					8100			61	J	N			
PHENANTHRENE					550	J	P	24			150		
PYRENE					8500			130					

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-008-0002DL			Z7PDI-SO-010-0002			Z7PDI-SO-010-0002DL			Z7PDI-SO-011-0002DL		
SDG: WE57-5	LAB_ID	SD5615-11DL			SD5615-14			SD5615-14DL			SD5615-20DL		
FRACTION: PAH	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.7			95.1			95.1			97.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		1500						1000			130		
BENZO(A)PYRENE		1600						1300			140		
BENZO(B)FLUORANTHENE		2300						1800			220		
BENZO(K)FLUORANTHENE		920						700			65		
CARBAZOLE					46						12	J	P
CHRYSENE		1300						920			140		
DIBENZO(A,H)ANTHRACENE		420						350			39	J	P
INDENO(1,2,3-CD)PYRENE		1200						1200			130		
PHENANTHRENE					140						89		
PYRENE		1700						1600			290		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**JOSEPH KALINYAK**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – ETPH**
INORGANIC DATA VALIDATION – LEAD
NSB NEW LONDON, CTO WE57
SDG WE57-4

SAMPLES: 9 / Soil / ETPH

Z1PDI-SO-014-0002	Z1PDI-SO-014-0204	Z1PDI-SO-014-0608
Z1PDI-SO-014-0810	Z4PDI-SO-001-0002	Z4PDI-SO-001-0405
Z4PDI-SO-002-0002	Z4PDI-SO-002-0204	Z4PDI-SO-002-0405

5 / Soil / Lead

Z4PDI-SO-001-0002	Z4PDI-SO-001-0002-D	Z4PDI-SO-001-0405
Z4PDI-SO-006-0002	Z4PDI-SO-007-0002	

8 / SPLP (Aqueous Leachate) / Lead

Z1PDI-SO-001-0002	Z4PDI-SO-001-0002-D	Z4PDI-SO-001-0405
Z4PDI-SO-006-0002	Z4PDI-SO-006-0406	Z4PDI-SO-006-0406-D
Z4PDI-SO-007-0002	Z4PDI-SO-007-0204	

Overview

The sample set for NSB New London, CTO WE57, SDG WE57-4 consisted of twelve (12) soil environmental samples and eight (8) aqueous SPLP leachate samples. Nine (9) of the soil samples were analyzed for extractible total petroleum hydrocarbons (ETPH), five (5) soil samples were analyzed for lead, and eight (8) SPLP samples were analyzed for lead. Three field duplicate sample pairs were included in the sample delivery group (SDG); Z4PDI-SO-001-0002 / Z4PDI-SO-001-0002-D soil samples, Z4PDI-SO-001-0002 / Z4PDI-SO-001-0002-D SPLP aqueous leachate samples, and Z4PDI-SO-006-0406-D / Z4PDI-SO-006-0406 SPLP aqueous leachate samples.

The samples were collected by Tetra Tech on September 10, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Methods 6010B, EPA Method 1312, and Connecticut extractable petroleum hydrocarbons (CTETPH) analytical and reporting protocols. The ETPH data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Initial and Continuing Calibration
* • Blank Results
* • Blank Spike Results
* • Surrogate Spike Recoveries
* • Internal Standard Recoveries
* • Matrix Spike / Matrix Spike Duplicate Results
* • Detection Limits
* • Analyte Identification and Quantification

The inorganic lead soil and aqueous leachate sample data was evaluated based on the following parameters:

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

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

ETPH

No issues were identified.

Lead

The following lead contaminant was detected in a continuing calibration blank (CCB) at the following maximum concentration:

Analyte	Maximum Conc. µg/L	Action Level mg/Kg
Lead [1]	3.63	1.8

[1] Maximum concentration detected in the CCB blank on 09/16/10 @ 17:10 preparation batch affecting all the soil samples.

An action level of five times the level for the laboratory contaminant has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. No samples were qualified due to CCB blank contamination.

The field duplicate sample relative percent difference (RPD) was greater than the quality control limit for the field duplicate sample pair Z4PDI-SO-001-0002 / Z4PDI-SO-001-0002-D soil samples for lead. All lead results were qualified estimated, (J).

The field duplicate sample RPD was greater than the quality control limit for the field duplicate sample pair Z4PDI-SO-001-0002 / Z4PDI-SO-001-0002-D SPLP aqueous leachate samples for lead. Positive results in the aforementioned samples were qualified estimated, (J).

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

Notes

Some samples were diluted for the TPH analysis as listed below.

Samples	Dilution
Z1PDI-SO-014-0002	10X
Z1PDI-SO-014-0204	2X
Z1PDI-SO-014-0810	10X
Z4PDI-SO-001-0002	10X

Executive Summary

Laboratory Performance: No lab performance issues were noted.

Other Factors Affecting Data Quality: Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J). Field duplicate sample lead results and field duplicate leachate lead sample results were qualified due to RPD quality control limit exceedance.

The data for these analyses were reviewed with reference to the EPA Region I, "National Functional Guidelines for Inorganic Review", November 2008, EPA "Functional Guidelines for Organic Data Validation (Dec. 1996)", and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
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Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-014-0002			Z1PDI-SO-014-0204			Z1PDI-SO-014-0608			Z1PDI-SO-014-0810		
SDG: WE57-4	LAB_ID	SD5614-1REDL2			SD5614-2REDL2			SD5614-3RE			SD5614-4REDL		
FRACTION: PET	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	84.7			93.0			93.5			88.1		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		250			120			45			520		

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-001-0002			Z4PDI-SO-001-0405			Z4PDI-SO-002-0002			Z4PDI-SO-002-0204		
SDG: WE57-4	LAB_ID	SD5614-5REDL			SD5614-9RE			SD5614-11RE			SD5614-12RE		
FRACTION: PET	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.1			89.2			95.4			94.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		220			60			5	J	P	4.2	U	

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-002-0405		
SDG: WE57-4	LAB_ID	SD5614-13RE		
FRACTION: PET	SAMP_DATE	9/10/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	MG/KG		
	PCT_SOLIDS	82.9		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
TPH (C09-C36)		4.8	U	

PROJ_NO: 02630 SDG: WE57-4 FRACTION: M MEDIA: SOIL	NSAMPLE	Z4PDI-SO-001-0002			Z4PDI-SO-001-0002-D			Z4PDI-SO-001-0405			Z4PDI-SO-006-0002		
	LAB_ID	SD5614-005			SD5614-007			SD5614-009			SD5614-014		
	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.1			92.6			89.2			95.1		
	DUP_OF				Z4PDI-SO-001-0002								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		367	J	G	726	J	G	128	J	G	369	J	G

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-007-0002		
SDG: WE57-4	LAB_ID	SD5614-018		
FRACTION: M	SAMP_DATE	9/10/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	MG/KG		
	PCT_SOLIDS	93.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
LEAD		160	J	G

PROJ_NO: 02630 SDG: WE57-4 FRACTION: SPLPM MEDIA: SOIL	NSAMPLE	Z4PDI-SO-001-0002			Z4PDI-SO-001-0002-D			Z4PDI-SO-001-0405			Z4PDI-SO-006-0002		
	LAB_ID	SD5614-006T			SD5614-008T			SD5614-010T			SD5614-015T		
	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				Z4PDI-SO-001-0002								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		54.5	J	G	133	J	G	41.6			182		

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-006-0406			Z4PDI-SO-006-0406-D			Z4PDI-SO-007-0002			Z4PDI-SO-007-0204		
SDG: WE57-4	LAB_ID	SD5614-016T			SD5614-017T			SD5614-019T			SD5614-020T		
FRACTION: SPLPM	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				Z4PDI-SO-006-0406								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		5			5			5.2			3.4	J	P

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**JOSEPH KALINYAK**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PAH / TPH**
NSB NEW LONDON, CTO WE57
SDG WE57-6

SAMPLES: 15 / Soil / PAH

Z1PDI-SO-002-0002	Z1PDI-SO-002-0204	Z4PDI-SO-004-0002
Z4PDI-SO-005-0002	Z4PDI-SO-009-0002	Z7PDI-SO-001-0002
Z7PDI-SO-011-0204	Z7PDI-SO-012-0002	Z7PDI-SO-012-0002-D
Z7PDI-SO-013-0002	Z7PDI-SO-013-0002-D	Z7PDI-SO-013-0406
Z7PDI-SO-020-0002	Z7PDI-SO-020-0002-D	Z7PDI-SO-020-0406

2 / Soil / ETPH

Z1PDI-SO-002-0002	Z1PDI-SO-002-0204

Overview

The sample set for NSB New London, CTO WE57, SDG WE57-6 consisted of fifteen (15) soil environmental samples. Fifteen (15) of the soil samples were analyzed for polynuclear aromatic hydrocarbons (PAH) and two (2) of the soil samples were analyzed for extractable total petroleum hydrocarbons (ETPH). Three field duplicate sample pairs were included in the sample delivery group (SDG); Z7PDI-SO-012-0002-D / Z7PDI-SO-012-0002, Z7PDI-SO-013-0002-D / Z7PDI-SO-013-0002, and Z7PDI-SO-020-0002-D / Z7PDI-SO-020-0002.

The samples were collected by Tetra Tech on September 10 and 11, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Methods 8270C SIM and Connecticut extractable petroleum hydrocarbons (CTETPH) analytical and reporting protocols. The data was evaluated based on the following parameters:

- * Data Completeness
- * Holding Times
- * GC/MS Instrument Tuning and System Performance
- * Blank Results
- Initial and Continuing Calibration
- Blank Spike Results
- Surrogate Spike Recoveries
- Internal Standard Recoveries
- Field Duplicate Results
- * Detection Limits
- * Compound Identification and Quantification

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

PAH

The initial calibration relative standard deviation (RSD) was greater than the 15% quality control limit for chrysene on 09/21/10 on instrument GCMS-R affecting samples Z7PDI-SO-012-0002, Z4PDI-SO-004-0002, Z4PDI-SO-005-0002, Z7PDI-SO-012-0002-D, Z4PDI-SO-009-0002, Z7PDI-SO-012-0002-D re-analysis, Z1PDI-SO-002-0002DL, and Z1PDI-SO-002-0204DL. The aforementioned sample positive chrysene results were qualified estimated, (J).

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for carbazole on 09/20/10 @ 12:24 on instrument GCMS-R affecting samples Z7PDI-SO-011-0204, Z7PDI-SO-013-0002, Z7PDI-SO-013-0406, Z7PDI-SO-020-0002, Z7PDI-SO-020-0002-D, and Z7PDI-SO-020-0406. The aforementioned sample positive and non-detected carbazole results were qualified estimated, (J) and (UJ), respectively.

The surrogate fluorene-d10 %R was 0% for sample Z1PDI-SO-002-0204 9X dilution analysis. The positive PAH results reported from this dilution analysis were qualified estimated, (J), for sample Z1PDI-SO-002-0204.

The internal standard recovery was less than the 50% quality control limit for perylene-d12 for sample Z7PDI-SO-012-0002-D. The sample was re-analyzed with a similar result for perylene and also a less than the 50% quality control limit %R for chrysene-d12. The initial analysis results were reported as there was no improvement in the internal standard %R for perylene-d12.

The internal standard recovery was less than the 50% quality control limit for perylene-d12 for samples Z1PDI-SO-002-0204, Z1PDI-SO-002-0002DL, and Z1PDI-SO-002-0204DL. The positive PAH results quantitated from perylene-d12 (benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene) were qualified estimated, (J).

The field duplicate sample relative percent difference (RPD) was greater than the quality control limit for all the PAHs for the field duplicate sample pair Z7PDI-SO-012-0002-D / Z7PDI-SO-012-0002. The positive sample PAH results were qualified estimated, (J).

The field duplicate sample RPD was greater than the quality control limit for all the PAHs for the field duplicate sample pair Z7PDI-SO-013-0002-D / Z7PDI-SO-013-0002. The positive aforementioned sample PAH results were qualified estimated, (J).

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

TPH

No issues were identified.

Notes

Samples were diluted for the PAH analyses due to analyte result that exceeded the highest calibration level in the undiluted analyses. Only the PAH results that exceeded the highest calibration level in the undiluted analyses were reported. The samples and dilutions are listed below.

Samples	Dilution
Z1PDI-SO-002-0002DL	5X
Z1PDI-SO-002-0204DL	9X
Z4PDI-SO-009-0002DL	2X
Z7PDI-SO-001-0002DL	12X
Z7PDI-SO-012-0002DL	3X
Z7PDI-SO-013-0002-DDL	6X
Z7PDI-SO-013-0406DL	3X

Samples were diluted for the ETPH analyses. The samples and dilutions are listed below.

Samples	Dilution
Z1PDI-SO-002-0002	5X
Z1PDI-SO-002-0204	10X

The PAH laboratory control sample duplicate (LCSD) percent recovery (%R) was greater than the quality control limit for carbazole for LCSD WG82165-3. No action was taken as the laboratory control sample (LCS) had a within the quality control limit %R for carbazole and the RPD for the LCS/LCSD was within the quality control limits.

The PAH RPD for the LCS/LCSD was greater than the 20% quality control limit for benzo(b)fluoranthene for the batch WG82192 LCS and LCSD. No action was taken as the LCS and the LCSD %Rs were within the quality control limits for benzo(b)fluoranthene.

The %Rs were greater than the quality control limit for 2-methylnaphthalene-d10 for samples Z7PDI-SO-020-0002-D, Z7PDI-SO-020-0406, and Z7PDI-SO-013-0002-D 3X dilution analyses. No action was taken for single surrogate quality control limit %Rs greater than the quality control limit.

Executive Summary

Laboratory Performance: PAH chrysene results were qualified due to an initial calibration RSD quality control limit exceedance. PAH carbazole results were qualified due to a CCV %D quality control limit exceedance. Sample Z1PDI-SO-002-0204 PAH results reported from the dilution analysis were qualified due to a 0% surrogate recovery. Sample PAH results were qualified due to internal standard quality control limit exceedances. Field duplicate sample PAH results were qualified due to RPD quality control limit exceedances.

Other Factors Affecting Data Quality: Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

The data for these analyses were reviewed with reference to the "USEPA Region 1 Laboratory Data Validation Functional Guidelines – Part II" (12/96) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

Appendix A

Qualified Analytical Results

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-002-0002			Z1PDI-SO-002-0002DL			Z1PDI-SO-002-0204			Z1PDI-SO-002-0204DL		
SDG: WE57-6	LAB_ID	SD5616-11			SD5616-11DL			SD5616-12			SD5616-12DL		
FRACTION: PAH	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	89.8			89.8			90.4			90.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					430						580	J	R
BENZO(A)PYRENE		290									520	J	NR
BENZO(B)FLUORANTHENE					460	J	N				630	J	NR
BENZO(K)FLUORANTHENE		150						190	J	N			
CARBAZOLE		140									200	J	R
CHRYSENE					350	J	C				550	J	CR
DIBENZO(A,H)ANTHRACENE		76						100	J	N			
INDENO(1,2,3-CD)PYRENE		210									320	J	NR
PHENANTHRENE					550						860	J	R
PYRENE					940						1400	J	R

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-004-0002			Z4PDI-SO-005-0002			Z4PDI-SO-009-0002			Z4PDI-SO-009-0002DL		
SDG: WE57-6	LAB_ID	SD5616-14			SD5616-15			SD5616-19			SD5616-19DL		
FRACTION: PAH	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	97.5			94.3			93.1			93.1		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		17	J	P	22			120					
BENZO(A)PYRENE		24			27			190					
BENZO(B)FLUORANTHENE		34			48						340		
BENZO(K)FLUORANTHENE		10	J	P	15	J	P	96					
CARBAZOLE		10	U		2.8	J	P	28					
CHRYSENE		17	J	CP	26	J	C	160	J	C			
DIBENZO(A,H)ANTHRACENE		5.8	J	P	9.2	J	P	66					
INDENO(1,2,3-CD)PYRENE		19	J	P	35			190					
PHENANTHRENE		6.5	J	P	20	J	P	110					
PYRENE		30			50			210					

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-001-0002			Z7PDI-SO-001-0002DL			Z7PDI-SO-011-0204			Z7PDI-SO-012-0002		
SDG: WE57-6	LAB_ID	SD5616-20			SD5616-20DL			SD5616-1			SD5616-3		
FRACTION: PAH	SAMP_DATE	9/11/2010			9/11/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	97.3			97.3			91.4			95.7		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					830			12	J	P	200	J	G
BENZO(A)PYRENE					930			13	J	P	200	J	G
BENZO(B)FLUORANTHENE					1400			22					
BENZO(K)FLUORANTHENE					400			6.8	J	P	110	J	G
CARBAZOLE		27						10	UJ	C	11	J	P
CHRYSENE					840			13	J	P	190	J	CG
DIBENZO(A,H)ANTHRACENE		130						3.2	J	P	53	J	G
INDENO(1,2,3-CD)PYRENE					660			11	J	P	150	J	G
PHENANTHRENE		240						7.9	J	P	94	J	G
PYRENE					1700			18	J	P			

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-012-0002-D			Z7PDI-SO-012-0002DL			Z7PDI-SO-013-0002			Z7PDI-SO-013-0002-D		
SDG: WE57-6	LAB_ID	SD5616-4			SD5616-3DL			SD5616-5			SD5616-6		
FRACTION: PAH	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.7			95.7			94.6			93.5		
	DUP_OF	Z7PDI-SO-012-0002									Z7PDI-SO-013-0002		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		71	J	G				140	J	G			
BENZO(A)PYRENE		87	J	GN				170	J	G			
BENZO(B)FLUORANTHENE		120	J	GN	310	J	G	260	J	G			
BENZO(K)FLUORANTHENE		39	J	GN				82	J	G			
CARBAZOLE		10	U					12	J	CGP	56	J	G
CHRYSENE		73	J	CG				150	J	G			
DIBENZO(A,H)ANTHRACENE		26	J	GN				40	J	G	110	J	G
INDENO(1,2,3-CD)PYRENE		63	J	GN				150	J	G			
PHENANTHRENE		25	J	G				84	J	G			
PYRENE		120	J	G	370	J	G	260	J	G			

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-013-0002-DDL			Z7PDI-SO-013-0406			Z7PDI-SO-013-0406DL			Z7PDI-SO-020-0002		
SDG: WE57-6	LAB_ID	SD5616-6DL			SD5616-7			SD5616-7DL			SD5616-8		
FRACTION: PAH	SAMP_DATE	9/10/2010			9/10/2010			9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	93.5			92.9			92.9			94.6		
	DUP_OF	Z7PDI-SO-013-0002											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		530	J	G	260						21		
BENZO(A)PYRENE		660	J	G	230						28		
BENZO(B)FLUORANTHENE		1000	J	G				360			46		
BENZO(K)FLUORANTHENE		310	J	G	120						16	J	P
CARBAZOLE					50	J	C				10	UJ	C
CHRYSENE		560	J	G	220						28		
DIBENZO(A,H)ANTHRACENE					52						8.1	J	P
INDENO(1,2,3-CD)PYRENE		540	J	G	200						29		
PHENANTHRENE		510	J	G				310			16	J	P
PYRENE		1100	J	G				540			42		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-020-0002-D			Z7PDI-SO-020-0406		
SDG: WE57-6	LAB_ID	SD5616-9			SD5616-10		
FRACTION: PAH	SAMP_DATE	9/10/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	93.7			93.7		
	DUP_OF	Z7PDI-SO-020-0002					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		18	J	P	10	U	
BENZO(A)PYRENE		24			10	U	
BENZO(B)FLUORANTHENE		38			10	U	
BENZO(K)FLUORANTHENE		13	J	P	10	U	
CARBAZOLE		10	UJ	C	10	UJ	C
CHRYSENE		23			10	U	
DIBENZO(A,H)ANTHRACENE		6.6	J	P	10	U	
INDENO(1,2,3-CD)PYRENE		25			10	U	
PHENANTHRENE		10	J	P	10	U	
PYRENE		35			10	U	

PROJ_NO: 02630 SDG: WE57-6 FRACTION: PET MEDIA: SOIL	NSAMPLE	Z1PDI-SO-002-0002			Z1PDI-SO-002-0204		
	LAB_ID	SD5616-11REDL			SD5616-12REDL		
	SAMP_DATE	9/11/2010			9/11/2010		
	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	89.8			90.4		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		170			300		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**JOSEPH KALINYAK**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PAH / ETPH**
NSB NEW LONDON, CTO WE57
SDG WE57-8

SAMPLES: 1 / Soil / PAH

Z2PDI-SO-001-0002

5 / Soil / ETPH

Z1PDI-SO-005-0002	Z1PDI-SO-005-0305	Z1PDI-SO-005-0507
Z2PDI-SO-001-0204	Z2PDI-SO-001-0506	Z2PDI-SO-001-0002

Overview

The sample set for NSB New London, CTO WE57, SDG WE57-8 consisted of six (6) soil environmental samples. One (1) of the soil samples were analyzed for polynuclear aromatic hydrocarbons (PAH) and six (6) soil samples were analyzed for extractable total petroleum hydrocarbons (ETPH). No field duplicate sample pairs were included in the sample delivery group (SDG).

The samples were collected by Tetra Tech on September 12, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Methods 8270C SIM and Connecticut extractable petroleum hydrocarbons (CTETPH) analytical and reporting protocols. The data was evaluated based on the following parameters:

*	•	Data Completeness
	•	Holding Times
*	•	GC/MS Instrument Tuning and System Performance
*	•	Blank Results
*	•	Initial and Continuing Calibration
*	•	Blank Spike Results
*	•	Surrogate Spike Recoveries
*	•	Internal Standard Recoveries
*	•	Detection Limits
*	•	Compound Identification and Quantification

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

PAH

No significant issues were identified.

ETPH

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

The hold time was exceeded for sample Z2PDI-SO-001-0002 due to an error on the chain of custody form inadvertently mislabeling the sample and therefore associating the wrong analyses. Upon discovery of this error during the data validation process the laboratory was contacted to analyze the sample for ETPH. The hold time had already been exceeded for the ETPH analysis for the sample. The positive result for the sample was qualified estimated, (J).

Notes

Sample Z2PDI-SO-001-0002 was inadvertently mislabeled on the chain of custody (COC) as Z7PDI-SO-001-0002 and analyzed per an email for lead, antimony, SPLP metals lead & antimony, and PAHs. The sample was supposed to have been analyzed for TPH only. The COC error was discovered during the data validation process and the laboratory was contacted to analyze the remaining portion of the saved sample for ETPH (analysis out of hold time).

The initial COC mis-identified the three samples Z1PDI-SO-005-0002, Z1PDI-SO-005-0305, and Z1PDI-SO-005-0507 as Z1PDI-SO-001-0002, Z1PDI-SO-001-0305, and Z1PDI-SO-001-0507. The error was discovered by the laboratory and the COC was manually corrected. The sample analyses were not affected.

The sample Z2PDI-SO-001-0002 was diluted 5X for the PAH analyses due to analyte results that exceeded the highest calibration level in the undiluted analyses. Only the PAH results that exceeded the highest calibration level in the undiluted analysis were reported from the dilution analysis.

Sample Z1PDI-SO-005-0507 was diluted 40X for the TPH analysis.

The initial calibration relative standard deviation (RSD) was greater than the 15% quality control limit for chrysene on 09/21/10 on instrument GCMS-R affecting the method blank and the LCS and LCSD. No action was taken for this issue.

The continuing calibration verification (CCV) percent difference (%D) was greater than the 20% quality control limit for phenanthrene on 10/01/10 @ 15:43 on instrument GCMS-R affecting sample Z7PDI-SO-001-0002DL dilution analysis. The sample phenanthrene result was not qualified as the result was reported from the undiluted analysis for the analyte.

The PAH RPD for the LCS/LCSD was greater than the 20% quality control limit for benzo(b)fluoranthene for the batch WG82192 LCS and LCSD. No action was taken as the LCS and the LCSD %Rs were within the quality control limits for benzo(b)fluoranthene.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J). The sample Z7PDI-SO-001-0002 positive TPH result was qualified due to a hold time exceedance.

The data for these analyses were reviewed with reference to the "USEPA Region 1 Laboratory Data Validation Functional Guidelines – Part II" (12/96) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

Tetra Tech NUS
Joseph Kalinyak
Chemist/Data Validator

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Joseph A. Samchuck
Quality Assurance Officer

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APPENDIX A

QUALIFIED LABORATORY RESULTS

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z2PDI-SO-001-0002			Z2PDI-SO-001-0002DL		
SDG: WE57-8	LAB_ID	SD5618-15			SD5618-15DL		
FRACTION: PAH	SAMP_DATE	9/12/2010			9/12/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	86.6			86.6		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		260					
BENZO(A)PYRENE		270					
BENZO(B)FLUORANTHENE					510		
BENZO(K)FLUORANTHENE		150					
CARBAZOLE		44					
CHRYSENE		270					
DIBENZO(A,H)ANTHRACENE		60					
INDENO(1,2,3-CD)PYRENE		200					
PHENANTHRENE		290					
PYRENE					610		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-005-0002			Z1PDI-SO-005-0305			Z1PDI-SO-005-0507			Z2PDI-SO-001-0002		
SDG: WE57-8	LAB_ID	SD5618-19			SD5618-20			SD5618-21DL			SD6700-1		
FRACTION: PET	SAMP_DATE	9/12/2010			9/12/2010			9/12/2010			9/12/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.5			95.8			89.5			86.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		43			7			2500			37	J	H

PROJ_NO: 02630 SDG: WE57-8 FRACTION: PET MEDIA: SOIL	NSAMPLE	Z2PDI-SO-001-0204			Z2PDI-SO-001-0506		
	LAB_ID	SD5618-17			SD5618-18		
	SAMP_DATE	9/12/2010			9/12/2010		
	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	95.9			97.4		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		19			3.3	J	P

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**LEANNE M. GANSER**	**COPIES:**	**DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION- PAH AND ETPH**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-9

SAMPLES: 5/Soil/

Z1PDISO-008-0002 Z1PDISO-008-0405 Z1PDISO-008-0910
Z6PDISO-003-0002 Z6PDISO-003-0304

2/Aqueous/

RB091410-01 RB091410-02

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG WE57-9, consists of five (5) soil environmental samples and two (2) rinsate blanks. No field duplicate pairs were included in this SDG.

All samples were analyzed for extractable total petroleum hydrocarbons (ETPH). Samples Z1PDISO-008-0002, Z1PDISO-008-0405, RB091410-01, and RB091410-02 were also analyzed for polycyclic aromatic hydrocarbons (PAHs). The samples were collected by Tetra Tech NUS on September 14, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 Method 8270C SIM and Connecticut ETPH method. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	GC/MS Tuning
	•	Initial/Continuing Calibrations
*	•	Laboratory Method Blank Results
*	•	Surrogate Recoveries
*	•	Laboratory Control Spike/Laboratory Control Spike Duplicate Results
	•	Internal Standards
*	•	Compound Quantitation
*	•	Compound Identification
*	•	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.

Initial/Continuing Calibrations

Initial calibration relative standard deviation on 09/21/10 for chrysene was greater than 15% quality control limit affecting samples RB091410-01, RB091410-02, Z1PDISO-008-0002 (original analysis), and Z1PDISO-008-0405 (original analysis). Nondetected results for chrysene were qualified as estimated, "UJ". No action was taken for samples Z1PDISO-008-0002 and Z1PDISO-008-0405 because results were reported from the diluted samples.

Continuing calibration percent difference (%D) on 9/23/10 at 11:22 for pyrene was greater than 20% quality control limit affecting samples RB091410-01 and RB091410-02. Nondetected results for pyrene were qualified as estimated, "UJ".

Internal Standards

The area of internal standard perylene-d12 was outside of quality control limits for sample Z1PDISO-008-0405 (original analysis). Positive results for benzo(k)fluoranthene and dibenzo(a,h)anthracene were qualified as estimated, "J". No action was taken for benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene as results were reported from the diluted sample.

Comments

Nondetected results were reported to the Limit of Detection (LOD).

Several samples were analyzed at dilution to bring target compounds into calibration range.

Laboratory Control Spike (LCS)/LCS Duplicate (LCSD) relative percent difference (RPD) was greater than quality control limits for benzo(b)fluoranthene. No action was taken as LCS and LCSD percent recoveries were compliant.

The area of internal standards chyrene-d12 and perylene-d12 were outside of quality control limits for sample Z1PDISO-008-0002 (original analysis). No action was taken as affected results were reported by the diluted sample.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Calibration noncompliance was noted for chrysene and pyrene. Internal standard noncompliance was noted for sample Z1PDISO-008-0405.

Other Factors Affecting Data Quality: None.

TO: C. RICH – PAGE 3
DATE: NOVEMBER 5, 2010

The data for these analyses were reviewed with reference to the Region I EPA "Data Validation Functional Guidelines - Part II" (12/96) and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Leanne M. Ganser
Environmental Scientist/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z1PDISO-008-0002			Z1PDISO-008-0002DL			Z1PDISO-008-0405			Z1PDISO-008-0405DL		
SDG: WE57-9	LAB_ID	SD5650-1			SD5650-1DL			SD5650-2			SD5650-2DL		
FRACTION: PAH	SAMP_DATE	9/14/2010			9/14/2010			9/14/2010			9/14/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.1			94.1			93.0			93.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE					2600						340		
BENZO(A)PYRENE					2600						420		
BENZO(B)FLUORANTHENE					3700						600		
BENZO(K)FLUORANTHENE					1400			160	J	N			
CARBAZOLE		85						21					
CHRYSENE					2400						360		
DIBENZO(A,H)ANTHRACENE					560	J	P	100	J	N			
INDENO(1,2,3-CD)PYRENE					2100						300		
PHENANTHRENE					1100			190					
PYRENE					3800						600		

PROJ_NO: 02630 SDG: WE57-9 FRACTION: PAH MEDIA: WATER	NSAMPLE	RB091410-01			RB091410-02		
	LAB_ID	SD5650-12			SD5650-14		
	SAMP_DATE	9/14/2010			9/14/2010		
	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
BENZO(A)ANTHRACENE		0.094	U		0.095	U	
BENZO(A)PYRENE		0.094	U		0.095	U	
BENZO(B)FLUORANTHENE		0.094	U		0.095	U	
BENZO(K)FLUORANTHENE		0.094	U		0.095	U	
CARBAZOLE		0.094	U		0.095	U	
CHRYSENE		0.094	UJ	C	0.095	UJ	C
DIBENZO(A,H)ANTHRACENE		0.094	U		0.095	U	
INDENO(1,2,3-CD)PYRENE		0.094	U		0.095	U	
PHENANTHRENE		0.094	U		0.095	U	
PYRENE		0.094	UJ	C	0.095	UJ	C

PROJ_NO: 02630	NSAMPLE	Z1PDISO-008-0002			Z1PDISO-008-0405			Z1PDISO-008-0910			Z6PDISO-003-0002		
SDG: WE57-9	LAB_ID	SD5650-1DL			SD5650-2DL			SD5650-3DL			SD5650-10		
FRACTION: PET	SAMP_DATE	9/14/2010			9/14/2010			9/14/2010			9/14/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.1			93.0			91.3			96.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		710			160			420			21		

PROJ_NO: 02630	NSAMPLE	Z6PDISO-003-0304		
SDG: WE57-9	LAB_ID	SD5650-11		
FRACTION: PET	SAMP_DATE	9/14/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	MG/KG		
	PCT_SOLIDS	92.2		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
TPH (C09-C36)		4.8	J	P

PROJ_NO: 02630 SDG: WE57-9 FRACTION: PET MEDIA: WATER	NSAMPLE	RB091410-01			RB091410-02		
	LAB_ID	SD5650-12			SD5650-14		
	SAMP_DATE	9/14/2010			9/14/2010		
	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
TPH (C09-C36)		21	J	P	32	J	P

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**LEANNE M. GANSER**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – ANTIMONY, LEAD, SPLP ANTIMONY, AND SPLP LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-9

SAMPLES: 2/Soil/Total Metals

Z3PDISO-001-0002 Z3PDISO-003-0002

4/Soil/SPLP Metals

Z3PDISO-001-0002 Z3PDISO-001-0204 Z3PDISO-003-0002
Z3PDISO-003-0204

2/Aqueous/Total Metals and SPLP Metals

RB091410-01 RB091410-02

Overview

The sample set for CTO WE57, SDG WE57-9, NSB New London, consists of two (2) soil samples analyzed for total lead and SPLP lead, four (4) soil samples analyzed for SPLP lead, seven (7) soil samples were analyzed for total solids, and two (2) rinsate blanks analyzed for total antimony and lead and SPLP antimony and lead. No field duplicates were included in this SDG.

The samples were collected by Tetra Tech NUS on September 14, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 method 6010B for total metals and SW-846 1312/6010B for SPLP metals.

All samples in this SDG were validated to EPA Region I Tier III protocol.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Initial and Continuing Calibrations
• Laboratory Method / Preparation Blanks
* • ICP Interference Analysis
* • Laboratory Control Sample Results
* • Matrix Spike Results
* • Laboratory Duplicate Results
* • ICP Serial Dilution Results
* • Detection Limits
* • Analyte Quantitation

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

Laboratory method blanks

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

Analyte	Maximum Concentration	Action Level
Antimony(1)	2.43 ug/L	12.15 ug/L
Antimony(2)	1.686 ug/L	8.43 ug/L
Lead(3)	0.005 mg/L	25 ug/L

(1) Maximum concentration present in calibration blank affecting samples RB091410-01 and RB091410-02 analyzed for total and SPLP antimony.
(2) Maximum concentration present in preparation blank (batch AI20ICW1) affecting samples analyzed for total and SPLP antimony.
(3) Maximum concentration present in extraction fluid blank affecting samples analyzed for SPLP lead.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results less than the blank action level were qualified as nondetected, "U".

Notes

Positive results between the method detection limit (MDL) and the project quanitation limit (PQL) were qualified as estimated, "J", as a result of uncertainty near the detection limit.

Executive Summary

Laboratory Performance: Antimony and lead were present in laboratory blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to EPA Region I, "National Functional Guidelines for Inorganic Review", November 2008. The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Leanne M. Ganser
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

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

APPENDIX A
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G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS-GFAA MSA's r < 0.995 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z3PDISO-001-0002			Z3PDISO-003-0002		
SDG: WE57-9	LAB_ID	SD5650-004			SD5650-007		
FRACTION: M	SAMP_DATE	9/14/2010			9/14/2010		
MEDIA: SOIL	QC_TYPE	NM			NM		
	UNITS	MG/KG			MG/KG		
	PCT_SOLIDS	95.2			95.3		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		106			473		

PROJ_NO: 02630	NSAMPLE	Z3PDISO-001-0002			Z3PDISO-001-0204			Z3PDISO-003-0002			Z3PDISO-003-0204		
SDG: WE57-9	LAB_ID	SD5650-005T			SD5650-006T			SD5650-008T			SD5650-009T		
FRACTION: SPLPM	SAMP_DATE	9/14/2010			9/14/2010			9/14/2010			9/14/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
LEAD		0.99	U	A	7.5	U	A	127			598		

PROJ_NO: 02630	NSAMPLE	RB091410-01			RB091410-02		
SDG: WE57-9	LAB_ID	SD5650-012			SD5650-014		
FRACTION: M	SAMP_DATE	9/14/2010			9/14/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		5	U		5	U	
LEAD		4	U		4	U	

PROJ_NO: 02630	NSAMPLE	RB091410-01			RB091410-02		
SDG: WE57-9	LAB_ID	SD5650-013T			SD5650-015T		
FRACTION: SPLPM	SAMP_DATE	9/14/2010			9/14/2010		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF						
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		2.2	J	P	5	U	
LEAD		4	U		4	U	

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**LEANNE M. GANSER**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – ANTIMONY, LEAD, SPLP ANTIMONY, AND SPLP LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-7

SAMPLES:

11/Soil/Total Metals

Z7PDI-SO-001-0204	Z7PDI-SO-001-0607	Z7PDI-SO-002-0002
Z7PDI-SO-002-0607	Z7PDI-SO-004-0002	Z7PDI-SO-004-0304
Z7PDI-SO-004-0406	Z7PDI-SO-005-0002	Z7PDI-SO-005-0204
Z7PDI-SO-006-0002	Z7PDI-SO-009-0002	

9/Soil/SPLP Metals

Z7PDI-SO-001-0204	Z7PDI-SO-001-0607	Z7PDI-SO-002-0002
Z7PDI-SO-002-0607	Z7PDI-SO-002-0607-D	Z7PDI-SO-004-0002
Z7PDI-SO-004-0304	Z7PDI-SO-004-0406	Z7PDI-SO-009-0002

Overview

The sample set for CTO WE57, SDG WE57-7, NSB New London, consists of eleven (11) soil environmental samples analyzed for total metals and nine (9) soil environmental samples analyzed for SPLP metals. Two field duplicate pairs were included in this SDG: Z7PDI-SO-002-0607 / Z7PDI-SO-002-0607-D and Z7PDI-SO-009-0002/ Z7PDI-SO-009-0002-D. Sample Z7PDI-SO-009-0002-D is included in SDG WE57-8.

All solid environmental samples analyzed for total metals were analyzed for total lead, except samples Z7PDI-SO-004-0304 and Z7PDI-SO-004-0406. All solid environmental samples analyzed for total metals were analyzed for total antimony, except samples Z7PDI-SO-005-0002, Z7PDI-SO-005-0204, and Z7PDI-SO-006-0002. All samples analyzed for SPLP metals were analyzed for SPLP antimony and SPLP lead. The samples were collected by Tetra Tech NUS on September 11, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 method 6010B for total metals and SW-846 1312/6010B for SPLP metals.

All samples in this SDG were validated to EPA Region I Tier III protocol.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Initial and Continuing Calibrations
  • Laboratory Method / Preparation Blanks
* • ICP Interference Analysis
* • Laboratory Control Sample Results

- Matrix Spike Results
- * Laboratory Duplicate Results
- * ICP Serial Dilution Results
- * Field Duplicate Results
- * Detection Limits
- * Analyte Quantitation

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

Laboratory method blanks

The following contaminant was detected in the laboratory method blanks at the following maximum concentration:

Analyte	Maximum Concentration	Action Level
Lead(1)	0.005 mg/L	25 ug/L

(1) Maximum concentration present in extraction fluid blank.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. SPLP lead results less than the blank action level were qualified as nondetected, "U".

Matrix Spike Results

Matrix spike percent recovery for antimony was <75% quality control limit. The post digestion spike was compliant. The positive and nondetected results reported for total antimony were qualified as estimated, "J" and "UJ", respectively.

Notes

Positive results between the method detection limit (MDL) and the project quanitation limit (PQL) were qualified as estimated, "J", as a result of uncertainty near the detection limit.

Executive Summary

Laboratory Performance: Lead was present in the extraction fluid blank.

Other Factors Affecting Data Quality: The matrix spike percent recovery was outside quality control limits for antimony in total metal analysis.

The data for these analyses were reviewed with reference to EPA Region I, "National Functional Guidelines for Inorganic Review", November 2008. The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Leanne M. Ganser
Environmental Scientist

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E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
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R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-001-0204			Z7PDI-SO-001-0607			Z7PDI-SO-002-0002			Z7PDI-SO-002-0607		
SDG: WE57-7	LAB_ID	SD5617-001			SD5617-003			SD5617-005			SD5617-007		
FRACTION: M	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	96.6			94.2			94.2			94.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.35	UJ	D	0.37	J	DP	2.1	J	D	4.6	J	D
LEAD		11.1			608			1220			2690		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-004-0002			Z7PDI-SO-004-0304			Z7PDI-SO-004-0406			Z7PDI-SO-005-0002		
SDG: WE57-7	LAB_ID	SD5617-012			SD5617-014			SD5617-016			SD5617-018		
FRACTION: M	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	97.7			96.0			92.2			91.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		2.6	J	D	5.2	J	D	5.3	J	D			
LEAD		308									204		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-005-0204			Z7PDI-SO-006-0002			Z7PDI-SO-009-0002		
SDG: WE57-7	LAB_ID	SD5617-019			SD5617-020			SD5617-021		
FRACTION: M	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.6			95.2			92.7		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY								0.63	J	D
LEAD		103			8.2			257		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-001-0204			Z7PDI-SO-001-0607			Z7PDI-SO-002-0002			Z7PDI-SO-002-0607		
SDG: WE57-7	LAB_ID	SD5617-002T			SD5617-004T			SD5617-006T			SD5617-008T		
FRACTION: SPLPM	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		3.4	J	P	2.7	J	P	14.6			18.9		
LEAD		2.5	U	A	29.1			456			218		

PROJ_NO: 02630 SDG: WE57-7 FRACTION: SPLPM MEDIA: SOIL	NSAMPLE	Z7PDI-SO-002-0607-D			Z7PDI-SO-004-0002			Z7PDI-SO-004-0304			Z7PDI-SO-004-0406		
	LAB_ID	SD5617-009T			SD5617-013T			SD5617-015T			SD5617-017T		
	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	Z7PDI-SO-002-0607											
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		19			9.4			15.8			28.4		
LEAD		132			102			30			262		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-009-0002		
SDG: WE57-7	LAB_ID	SD5617-022T		
FRACTION: SPLPM	SAMP_DATE	9/11/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ANTIMONY		11.6		
LEAD				

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-001-0204			Z7PDI-SO-001-0607			Z7PDI-SO-002-0002			Z7PDI-SO-002-0607		
SDG: WE57-7	LAB_ID	SD5617-1			SD5617-3			SD5617-5			SD5617-7		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	96.6			94.2			94.2			94.4		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		97			94			94			94		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-004-0002			Z7PDI-SO-004-0304			Z7PDI-SO-004-0406			Z7PDI-SO-005-0002		
SDG: WE57-7	LAB_ID	SD5617-12			SD5617-14			SD5617-16			SD5617-18		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	97.7			96.0			92.2			91.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		98			96			92			91		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-005-0204			Z7PDI-SO-006-0002			Z7PDI-SO-009-0002		
SDG: WE57-7	LAB_ID	SD5617-19			SD5617-20			SD5617-21		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	%			%			%		
	PCT_SOLIDS	94.6			95.2			92.7		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		94			95			93		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**NOVEMBER 5, 2010**
FROM:	**LEANNE M. GANSER**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION – ANTIMONY, LEAD, SPLP ANTIMONY, AND SPLP LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-8

SAMPLES: 8/Soil/Total Metals

Z2PDI-SO-001-0002	Z3PDI-SO-002-0002	Z3PDI-SO-005-0002
Z7PDI-SO-009-0002-D	Z7PDI-SO-009-0607	Z7PDI-SO-009-0607-D
Z7PDI-SO-017-0002	Z7PDI-SO-017-0406	

8/Soil/SPLP Metals

Z2PDI-SO-001-0002	Z2PDI-SO-002-0204	Z3PDI-SO-002-0002
Z3PDI-SO-002-0406	Z3PDI-SO-005-0002	Z7PDI-SO-009-0607
Z7PDI-SO-017-0002	Z7PDI-SO-017-0406	

Overview

The sample set for CTO WE57, SDG WE57-8, NSB New London, consists of eight (8) soil environmental samples analyzed for total metals, and eight (8) soil environmental samples analyzed for SPLP metals. Two field duplicate pairs were included in this SDG: Z7PDI-SO-009-0607/Z7PDI-SO-009-0607-D and Z7PDI-SO-009-0002/ Z7PDI-SO-009-0002-D. Sample Z7PDI-SO-009-0002 is included in SDG WE57-7.

Six soil environmental samples (Z2PDI-SO-001-0002, Z3PDI-SO-002-0002, Z3PDI-SO-005-0002, Z7PDI-SO-009-0002-D, Z7PDI-SO-009-0607, and Z7PDI-SO-017-0406) were analyzed for lead. Six soil environmental samples (Z2PDI-SO-001-0002, Z7PDI-SO-009-0002-D, Z7PDI-SO-009-0607, Z7PDI-SO-009-0607-D, Z7PDI-SO-017-0002, and Z7PDI-SO-017-0406) were analyzed for antimony. All soil samples analyzed for SPLP metals, except Z7PDI-SO-017-0002, were analyzed for SPLP lead. Samples Z2PDI-SO-001-0002, Z7PDI-SO-009-0607, Z7PDI-SO-017-0002, and Z7PDI-SO-017-0406 were analyzed for SPLP antimony. The samples were collected by Tetra Tech NUS on September 11-12, 2010 and analyzed by Katahdin Analytical Services. All analyses were conducted in accordance with SW-846 method 6010B for total metals and SW-846 1312/6010B for SPLP metals.

All samples in this SDG were validated to EPA Region I Tier III protocol.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Initial and Continuing Calibrations

- Laboratory Method / Preparation Blanks
- * ICP Interference Analysis
- * Laboratory Control Sample Results
- Matrix Spike Results
- * Laboratory Duplicate Results
- * ICP Serial Dilution Results
- Field Duplicate Results
- * Detection Limits
- * Analyte Quantitation

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

Laboratory method blanks

The following contaminant was detected in the laboratory method blanks at the following maximum concentration:

Analyte	Maximum Concentration	Action Level
Antimony(1)	1.97 ug/L	9.85 ug/L
Antimony(2)	1.725 ug/L	8.63 ug/L

(1) Maximum concentration present in calibration blank affecting samples analyzed for SPLP antimony.
(2) Maximum concentration present in preparation blank (batch AI21ICW1) affecting samples analyzed for SPLP antimony.

An action level of 5X the maximum contaminant level has been used to evaluate sample data for blank contamination. Sample aliquot, percent solids, and dilution factors, if applicable, were taken into consideration when evaluating for blank contamination. Positive results for SPLP antimony less than the blank action level were qualified as nondetected, "U".

Matrix Spike Results

Matrix spike percent recovery for antimony was <75% quality control limit. The post digestion spike was compliant. The positive results reported for total antimony were qualified as estimated, "J".

Field Duplicate Results

Field duplicate imprecision (RPD > 50%) was noted for antimony in field duplicate pair Z7PDI-SO-009-0607/Z7PDI-SO-009-0607-D. Results for antimony were qualified as estimated in only field duplicate pair Z7PDI-SO-009-0607 and Z7PDI-SO-009-0607-D because the second field duplicate pair was compliant.

Notes

Positive results between the method detection limit (MDL) and the project quanitation limit (PQL) were qualified as estimated, "J", as a result of uncertainty near the detection limit.

Sample Z2PDI-SO-001-0002 was analyzed for lead, antimony, SPLP lead, and SPLP antimony, and PAHs because the sample was mislabeled on the COC. Sample Z2PDI-SO-001-0002 should have been analyzed for EPTH. The mislabeled sample ID on the COC, resulted in an error during the QA of the COC in which the analytical parameters for the sample were changed.

Executive Summary

Laboratory Performance: Antimony was present in laboratory blanks.

Other Factors Affecting Data Quality: The matrix spike percent recovery was outside quality control limits for antimony in total metal analysis. Field duplicate imprecision was noted for antimony in field duplicate pair Z7PDI-SO-009-0607/Z7PDI-SO-009-0607-D.

The data for these analyses were reviewed with reference to EPA Region I, "National Functional Guidelines for Inorganic Review", November 2008. The text of this report has been formulated to address only those problem areas affecting data quality.

Tetra Tech NUS
Leanne M. Ganser
Environmental Scientist

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:

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

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z2PDI-SO-001-0002			Z3PDI-SO-002-0002			Z3PDI-SO-005-0002			Z7PDI-SO-009-0002-D		
SDG: WE57-8	LAB_ID	SD5618-015			SD5618-009			SD5618-012			SD5618-001		
FRACTION: M	SAMP_DATE	9/12/2010			9/12/2010			9/12/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	86.6			94.7			95.8			91.9		
	DUP_OF										Z7PDI-SO-009-0002		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		0.3	J	DP							0.55	J	DP
LEAD		110			156			1540			266		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-009-0607			Z7PDI-SO-009-0607-D			Z7PDI-SO-017-0002			Z7PDI-SO-017-0406		
SDG: WE57-8	LAB_ID	SD5618-002			SD5618-004			SD5618-005			SD5618-007		
FRACTION: M	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.4			96.0			94.3			92.7		
	DUP_OF				Z7PDI-SO-009-0607								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		10.7	J	DG	6.2	J	DG	0.22	J	DP	0.68	J	DP
LEAD		3320									168		

PROJ_NO: 02630 SDG: WE57-8 FRACTION: SPLPM MEDIA: SOIL	NSAMPLE	Z2PDI-SO-001-0002			Z2PDI-SO-002-0204			Z3PDI-SO-002-0002			Z3PDI-SO-002-0406		
	LAB_ID	SD5618-022T			SD5618-014T			SD5618-010T			SD5618-011T		
	SAMP_DATE	9/12/2010			9/12/2010			9/12/2010			9/12/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY		2.1	U	A									
LEAD		26.3			184			4	U		13.4		

PROJ_NO: 02630 SDG: WE57-8 FRACTION: SPLPM MEDIA: SOIL	NSAMPLE	Z3PDI-SO-005-0002			Z7PDI-SO-009-0607			Z7PDI-SO-017-0002			Z7PDI-SO-017-0406		
	LAB_ID	SD5618-013T			SD5618-003T			SD5618-006T			SD5618-008T		
	SAMP_DATE	9/12/2010			9/11/2010			9/11/2010			9/11/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY					53.9			8	U	A	7.4	U	A
LEAD		500			1270						40.5		

PROJ_NO: 02630	NSAMPLE	Z1PDI-SO-005-0002			Z1PDI-SO-005-0305			Z1PDI-SO-005-0507			Z2PDI-SO-001-0204		
SDG: WE57-8	LAB_ID	SD5618-19			SD5618-20			SD5618-21			SD5618-17		
FRACTION: MISC	SAMP_DATE	9/12/2010			9/12/2010			9/12/2010			9/12/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	93.5			95.8			89.5			95.9		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		94			96			89			96		

PROJ_NO: 02630	NSAMPLE	Z2PDI-SO-001-0506			Z3PDI-SO-002-0002			Z3PDI-SO-005-0002			Z7PDI-SO-001-0002-RE		
SDG: WE57-8	LAB_ID	SD5618-18			SD5618-9			SD5618-12			SD5618-15		
FRACTION: MISC	SAMP_DATE	9/12/2010			9/12/2010			9/12/2010			9/12/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	97.4			94.7			95.8			86.6		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		97			95			96			87		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-009-0002-D			Z7PDI-SO-009-0607			Z7PDI-SO-009-0607-D			Z7PDI-SO-017-0002		
SDG: WE57-8	LAB_ID	SD5618-1			SD5618-2			SD5618-4			SD5618-5		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	%			%			%			%		
	PCT_SOLIDS	91.9			94.4			96.0			94.3		
	DUP_OF	Z7PDI-SO-009-0002						Z7PDI-SO-009-0607					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
TOTAL SOLIDS		92			94			96			94		

PROJ_NO: 02630	NSAMPLE	Z7PDI-SO-017-0406		
SDG: WE57-8	LAB_ID	SD5618-7		
FRACTION: MISC	SAMP_DATE	9/11/2010		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	%		
	PCT_SOLIDS	92.7		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
TOTAL SOLIDS		93		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**November 5, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION- TOTAL ANTIMONY AND LEAD, SPLP ANTIMONY AND LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) WE57-6

SAMPLES: 5/Soil/

Z4PDI-SO-003-0002	Z4PDI-SO-008-0002
Z4PDI-SO-008-0204	Z7PDI-SO-001-0002
Z7PDI-SO-011-0204	

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG WE57-6, consists of five (5) soil environmental samples. This SDG contained no field duplicate pairs for the metals fractions.

Sample Z7PDI-SO-001-0002 was analyzed for total antimony. Samples Z4PDI-SO-003-0002, Z4PDI-SO-008-0002, and Z7PDI-SO-001-0002 were analyzed for total lead. Sample Z7PDI-SO-001-0002 was analyzed for synthetic precipitation leaching procedure (SPLP) antimony. Samples Z4PDI-SO-008-0002, Z4PDI-SO-008-0204, Z7PDI-SO-001-0002, and Z7PDI-SO-011-0204 were analyzed for synthetic precipitation leaching procedure (SPLP) lead. The samples were collected by Tetra Tech NUS on September 10th and 11th, 2010 and were analyzed by Katahdin Analytical services. The metals and SPLP metals analyses were conducted by method 6010B. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

*	•	Data Completeness
*	•	Holding Times
*	•	Initial/Continuing Calibrations
	•	Laboratory Method Blank Results
*	•	Laboratory Control Spike/Laboratory Control Spike Duplicate Recoveries
*	•	Matrix Spike/Matrix Spike Duplicate Recoveries
*	•	Analyte Quantitation
*	•	AnalyteIdentification
*	•	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 summarizes the validation qualifications which are based on the following information:

TOTAL METALS:

All results were within quality control limits.

SPLP METALS:

All results were within quality control limits.

Notes:

EXECUTIVE SUMMARY

Laboratory Performance Issues: No lab performance issues were noted.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I USEPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV (11/08), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist 1/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery 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 - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-003-0002			Z4PDI-SO-008-0002			Z7PDI-SO-001-0002		
SDG: WE57-6	LAB_ID	SD5616-013			SD5616-016			SD5616-020		
FRACTION: M	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	93.8			96.0			97.3		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY								0.34	U	
LEAD		982			1370			24.1		

PROJ_NO: 02630	NSAMPLE	Z4PDI-SO-008-0002			Z4PDI-SO-008-0204			Z7PDI-SO-001-0002			Z7PDI-SO-011-0204		
SDG: WE57-6	LAB_ID	SD5616-017T			SD5616-018T			SD5616-021T			SD5616-002T		
FRACTION: SPLPM	SAMP_DATE	9/11/2010			9/11/2010			9/11/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ANTIMONY								2.7	J	P			
LEAD		2180			546			8.5			122		

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**November 8, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION- TOTAL CHROMIUM, HEXAVALENT CHROMIUM, TRIVALENT CHROMIUM, AND ORP**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) C0I140450

SAMPLES: 11/Soil/

Z4 PDI-SO-003-0002	Z4 PDI-SO-006-0406
Z4 PDI-SO-006-0406-D	Z4 PDI-SO-008-0204
Z7 PDI-SO-001-0002	Z7 PDI-SO-003-0204
Z7 PDI-SO-005-0002	Z7 PDI-SO-005-0204
Z7 PDI-SO-009-0607	Z7 PDI-SO-017-0406
Z7 PDI-SO-020-0406	

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG C0I140450, consists of eleven (11) soil environmental samples. This SDG contained one field duplicate pair: Z4 PDI-SO-006-0406/Z4 PDI-SO-006-0406-D.

All samples were analyzed for total chromium, hexavalent chromium, trivalent chromium, and oxidation reduction potential (ORP). The samples were collected by Tetra Tech NUS on September 9th and 10th, 2010 and were analyzed by TestAmercia Laboratories Inc. The chromium analyses were conducted by SW-846 method 6800. A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • ICP/MS Tune
* • Initial/Continuing Calibrations
* • Laboratory Method Blank Results
* • Laboratory Control Spike/Laboratory Control Spike Duplicate Recoveries
* • Matrix Spike/Matrix Spike Duplicate Recoveries
* • Lab Duplicate Precision
* • Field Duplicate Precision
* • Analyte Quantitation
* • Analyte Identification
* • 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 summarizes the validation qualifications which are based on the following information:

Total Chromium:

All sample results were within quality control limits.

Trivalent Chromium and Hexavalent Chromium:

Instrumentation for the determination of hexavalent chromium was calibrated according to method requirements. Individual isotopic standards for ^{50}Cr, ^{52}Cr, and ^{53}Cr for both valence states, trivalent chromium and hexavalent chromium, were used for calibration.

ORP:

All sample results were within quality control limits.

Notes:

Hexavalent chromium was analyzed for by method 6800. Trivalent chromium was determined by subtracting hexavalent chromium from the total chromium results.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I USEPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV (11/08), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist 1/ Data Validator

TetraTech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

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Appendix B – Results as Reported by the Laboratory
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APPENDIX A

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D	=	MS/MSD Recovery Noncompliance
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G	=	Field Duplicate Imprecision
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I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS - GFAA MSA's $r < 0.995$
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
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P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	Z4 PDI-SO-003-0002			Z4 PDI-SO-006-0406			Z4 PDI-SO-006-0406-D			Z4 PDI-SO-008-0204		
SDG: C0I140450	LAB_ID	C0I140450005			C0I140450002			C0I140450001			C0I140450006		
FRACTION: M	SAMP_DATE	9/11/2010			9/10/2010			9/10/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.9			92.8			93.7			94.3		
	DUP_OF							Z4 PDI-SO-006-0406					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHROMIUM		12.7			6.5			7.1			9.8		
CHROMIUM III		12.7			6.5			7.1			9.8		
HEXAVALENT CHROMIUM		0.11	U		0.11	U		0.11	U		0.11	U	

PROJ_NO: 02630	NSAMPLE	Z7 PDI-SO-001-0002			Z7 PDI-SO-003-0204			Z7 PDI-SO-005-0002			Z7 PDI-SO-005-0204		
SDG: C0I140450	LAB_ID	C0I140450007			C0I140450003			C0I140450008			C0I140450009		
FRACTION: M	SAMP_DATE	9/11/2010			9/10/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	97.4			88.0			91.9			94.1		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHROMIUM		10.3			10.7			18.1			10.7		
CHROMIUM III		10.3			10.2			17.4			10.7		
HEXAVALENT CHROMIUM		0.1	U		0.53			0.78			0.11	U	

PROJ_NO: 02630 SDG: C0I140450 FRACTION: M MEDIA: SOIL	NSAMPLE	Z7 PDI-SO-009-0607			Z7 PDI-SO-017-0406			Z7 PDI-SO-020-0406		
	LAB_ID	C0I140450010			C0I140450011			C0I140450004		
	SAMP_DATE	9/11/2010			9/11/2010			9/10/2010		
	QC_TYPE	NM			NM			NM		
	UNITS	MG/KG			MG/KG			MG/KG		
	PCT_SOLIDS	94.6			90.6			94.5		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
CHROMIUM		8.8			12.3			8.1		
CHROMIUM III		8.6			12.3			8.1		
HEXAVALENT CHROMIUM		0.13			0.11	U		0.11	U	

PROJ_NO: 02630	NSAMPLE	Z4 PDI-SO-003-0002			Z4 PDI-SO-006-0406			Z4 PDI-SO-006-0406-D			Z4 PDI-SO-008-0204		
SDG: C0I140450	LAB_ID	C0I140450005			C0I140450002			C0I140450001			C0I140450006		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/10/2010			9/10/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MV			MV			MV			MV		
	PCT_SOLIDS	94.9			92.8			93.7			94.3		
	DUP_OF							Z4 PDI-SO-006-0406					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
OXIDATION REDUCTION POTENTIAL		115			200			184			128		

PROJ_NO: 02630	NSAMPLE	Z7 PDI-SO-001-0002			Z7 PDI-SO-003-0204			Z7 PDI-SO-005-0002			Z7 PDI-SO-005-0204		
SDG: C0I140450	LAB_ID	C0I140450007			C0I140450003			C0I140450008			C0I140450009		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/10/2010			9/11/2010			9/11/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	MV			MV			MV			MV		
	PCT_SOLIDS	97.4			88.0			91.9			94.1		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
OXIDATION REDUCTION POTENTIAL		153			196			157			168		

PROJ_NO: 02630	NSAMPLE	Z7 PDI-SO-009-0607			Z7 PDI-SO-017-0406			Z7 PDI-SO-020-0406		
SDG: C0I140450	LAB_ID	C0I140450010			C0I140450011			C0I140450004		
FRACTION: MISC	SAMP_DATE	9/11/2010			9/11/2010			9/10/2010		
MEDIA: SOIL	QC_TYPE	NM			NM			NM		
	UNITS	MV			MV			MV		
	PCT_SOLIDS	94.6			90.6			94.5		
	DUP_OF									
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
OXIDATION REDUCTION POTENTIAL		169			173			177		

C.2 GROUNDWATER

C.2.1 ROUND 1

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO: C. RICH **DATE:** June 28, 2010

FROM: DANIELLE M. BAUGHMAN **COPIES:** DV FILE

SUBJECT: **INORGANIC DATA VALIDATION – SELECT METALS**
CTO WE57 NSB NEW LONDON
SAMPLE DELIVERY GROUPS (SDGs) – K1004012

SAMPLES: 17/Aqueous

LS1 GW MW1-1PDI-10-01	LS1-GW-13MW19-10-01	LS1-GW-13MW20-10-01
LS1-GW-13MW21-10-01	LS1-GW-FOMW14-10-01	LS1-GW-FOMW14-10-01-D
LS4 GW MW1-4PDI-10-01	LS4-GW-13MW13-10-01	LS4-GW-13MW14-10-01
LS4-GW-NES010-10-01	LS4-GW-NES011-10-01	LS5-GW-19MW3-10-01
LS5-GW-MW1-5PDI-10-1	LS7 GW MW1-7PDI-10-01	LS7-GW-MW3-7RI-10-01
LS7-GW-MW3-7RI-10-01-D	LS7-GW-MW4-7RI-10-01	

Overview

The sample set for NSB NEW LONDON, CTO WE57, SDGs K1004012, consists of seventeen (17) aqueous environmental samples.

All samples were analyzed for total and dissolved arsenic, copper, and lead. The samples were collected by Tetra Tech NUS on April 22, 23, 24, and 30, 2010.and analyzed by Columbia Analytical Services and under Naval Facilities Engineering Service Center (NFESC) Quality Assurance / Quality Control (QA/QC) criteria. Metals analyses were conducted using SW-846 method 6020.

These data were evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • Initial and Continuing Calibrations
* • Laboratory Method / Preparation Blanks
* • ICP Interference Analysis
* • Laboratory Control Sample Results
* • Matrix Spike Results
* • Laboratory Duplicate Results
* • Field Duplicate Results
* • ICP Serial Dilution Results
* • Detection Limits
* • Analyte Quantitation

* - 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. Appendix D contains the documentation to support the findings as discussed in this validation report.

Positive results reported below the reporting limit (RL) but above the method detection limit (MDL) were qualified as estimated, "J".

Notes

None.

Executive Summary

Laboratory Performance: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Region I, "National Functional Guidelines for Inorganic Review", November 2008, and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories", January 2006.

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 DoD QSM."

Tetra Tech NUS
Danielle M. Baughman
Project Engineer

Tetra Tech NUS
Joseph A. Samchuck
Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as reported by the Laboratory
3. Appendix C – Region I Worksheets
4. Appendix D – Support Documentation

APPENDIX A
QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery 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 / ICP PDS Recovery Noncompliance
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O - Poor Instrument Performance (e.g. base-line drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; e.g. chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DOT and Endrin
U = % Difference between columns/detectors >25% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient r < 0.995
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630	NSAMPLE	LS1 GW MW1-1PDI-10-01			LS1-GW-13MW19-10-01			LS1-GW-13MW20-10-01			LS1-GW-13MW21-10-01		
SDG: K1004012	LAB_ID	K1004012-017			K1004012-004			K1004012-005			K1004012-006		
FRACTION: M	SAMP_DATE	4/30/2010			4/23/2010			4/23/2010			4/23/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0.			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		1.35			1.27			0.76			0.39	J	P
COPPER		2.55			1.27			4.57			1.42		
LEAD		1.42			0.587			3.09			7.3		

PROJ_NO: 02630 SDG: K1004012 FRACTION: M MEDIA: WATER	NSAMPLE	LS1-GW-FOMW14-10-01			LS1-GW-FOMW14-10-01-D			LS4 GW MW1-4PDI-10-01			LS4-GW-13MW13-10-01		
	LAB_ID	K1004012-002			K1004012-003			K1004012-016			K1004012-001		
	SAMP_DATE	4/23/2010			4/23/2010			4/30/2010			4/22/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				LS1-GW-FOMW14-10-01								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		0.18	J	P	0.18	J	P	0.97			2.6		
COPPER		2.24			2.22			1.67			1.09		
LEAD		1.28			1.19			10.2			0.542		

PROJ_NO: 02630	NSAMPLE	LS4-GW-13MW14-10-01			LS4-GW-NES010-10-01			LS4-GW-NES011-10-01			LS5-GW-19MW3-10-01		
SDG: K1004012	LAB_ID	K1004012-010			K1004012-013			K1004012-012			K1004012-009		
FRACTION: M	SAMP_DATE	4/24/2010			4/24/2010			4/24/2010			4/24/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		0.27	J	P	0.65			0.74			1.43		
COPPER		2.18			0.671			57			4.66		
LEAD		5.84			0.611			43.5			0.803		

PROJ_NO: 02630	NSAMPLE	LS5-GW-MW1-5PDI-10-1			LS7 GW MW1-7PDI-10-01			LS7-GW-MW3-7RI-10-01			LS7-GW-MW3-7RI-10-01-D		
SDG: K1004012	LAB_ID	K1004012-014			K1004012-015			K1004012-007			K1004012-008		
FRACTION: M	SAMP_DATE	4/26/2010			4/30/2010			4/24/2010			4/24/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		3.2			0.76			0.23	J	P	0.21	J	P
COPPER		5.14			0.208			0.417			0.404		
LEAD		2.15			0.074			0.092			0.062		

PROJ_NO: 02630	NSAMPLE	LS7-GW-MW4-7RI-10-01		
SDG: K1004012	LAB_ID	K1004012-011		
FRACTION: M	SAMP_DATE	4/24/2010		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ARSENIC		1.12		
COPPER		0.433		
LEAD		0.031		

PROJ_NO: 02630	NSAMPLE	LS1 GW MW1-1PDI-10-01			LS1-GW-13MW19-10-01			LS1-GW-13MW20-10-01			LS1-GW-13MW21-10-01		
SDG: K1004012	LAB_ID	K1004012-017DISS			K1004012-004DISS			K1004012-005DISS			K1004012-006DISS		
FRACTION: MF	SAMP_DATE	4/30/2010			4/23/2010			4/23/2010			4/23/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		1.63			1.37			0.72			0.37	J	P
COPPER		0.256			0.648			1.27			0.332		
LEAD		0.089			0.203			0.126			0.504		

PROJ_NO: 02630	NSAMPLE	LS1-GW-FOMW14-10-01			LS1-GW-FOMW14-10-01-D			LS4 GW MW1-4PDI-10-01			LS4-GW-13MW13-10-01		
SDG: K1004012	LAB_ID	K1004012-002DISS			K1004012-003DISS			K1004012-016DISS			K1004012-001DISS		
FRACTION: MF	SAMP_DATE	4/23/2010			4/23/2010			4/30/2010			4/22/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				LS1-GW-FOMW14-10-01								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		0.18	J	P	0.19	J	P	0.83			2.37		
COPPER		2.12			1.97			0.701			0.331		
LEAD		0.963			0.977			3.12			0.077		

PROJ_NO: 02630 SDG: K1004012 FRACTION: MF MEDIA: WATER	NSAMPLE	LS4-GW-13MW14-10-01			LS4-GW-NES010-10-01			LS4-GW-NES011-10-01			LS5-GW-19MW3-10-01		
	LAB_ID	K1004012-010DISS			K1004012-013DISS			K1004012-012DISS			K1004012-009DISS		
	SAMP_DATE	4/24/2010			4/24/2010			4/24/2010			4/24/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		0.27	J	P	0.58			0.79			1.28		
COPPER		0.844			0.467			37.7			2.51		
LEAD		0.512			0.121			10.5			0.194		

PROJ_NO: 02630 SDG: K1004012 FRACTION: MF MEDIA: WATER	NSAMPLE	LS5-GW-MW1-5PDI-10-1			LS7 GW MW1-7PDI-10-01			LS7-GW-MW3-7RI-10-01			LS7-GW-MW3-7RI-10-01-D		
	LAB_ID	K1004012-014DISS			K1004012-015DISS			K1004012-007DISS			K1004012-008DISS		
	SAMP_DATE	4/26/2010			4/30/2010			4/24/2010			4/24/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		3.33			0.78			0.16	J	P	0.17	J	P
COPPER		0.871			0.089	J	P	0.369			0.41		
LEAD		0.368			0.025			0.018	J	P	0.051		

PROJ_NO: 02630	NSAMPLE	LS7-GW-MW4-7RI-10-01		
SDG: K1004012	LAB_ID	K1004012-011DISS		
FRACTION: MF	SAMP_DATE	4/24/2010		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ARSENIC		1.1		
COPPER		0.34		
LEAD		0.019	J	P

C.2.2 ROUND 2

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**C. RICH**	**DATE:**	**November 5, 2010**
FROM:	**MEGAN CARSON**	**COPIES:**	**DV FILE**

SUBJECT: **INORGANIC DATA VALIDATION- TOTAL AND DISSOLVED ARSENIC, COPPER, AND LEAD**
CTO WE57, NSB NEW LONDON
SAMPLE DELIVERY GROUP (SDG) K1009322

SAMPLES: 17/Water/

LS1-GW-13MW19-10-02	LS1-GW-13MW20-10-02
LS1-GW-13MW21-10-02	LS1-GW-FOMW14-10-02
LS1-GW-MW1-1PDI-10-02	LS4-GW-13MW13-10-02
LS4-GW-13MW14-10-02	LS4-GW-MW1-4PDI-10-02
LS4-GW-NES010-10-02	LS4-GW-NES011-10-02
LS5-GW-19MW3-10-02	LS5-GW-MW1-5PDI-10-02
LS5-GW-MW1-5PDI-10-02-D	LS7-GW-MW1-7PDI-10-02
LS7-GW-MW3-7RI-10-02	LS7-GW-MW3-7RI-10-02-D
LS7-GW-MW4-7RI-10-02	

OVERVIEW

The sample set for CTO WE57, NSB New London, SDG K1009322, consists of seventeen (17) aqueous environmental samples. This SDG contained two field duplicate pairs: LS5-GW-MW1-5PDI-10-02/ LS5-GW-MW1-5PDI-10-02-D and LS7-GW-MW3-7RI-10-02/ LS7-GW-MW3-7RI-10-02-D.

All samples were analyzed for total and dissolved arsenic, copper, and lead. The samples were collected by Tetra Tech NUS on August 26th, 27th, 28th, 29th, 30th, 2010 and were analyzed by Columbia Analytical services. The metals analyses were conducted by method SW-846 methods 1640 (preparation)/ 6020B (analytical). A Tier 3 data validation was performed on the referenced samples. The data contained in this SDG were validated with regard to the following parameters:

* • Data Completeness
* • Holding Times
* • Initial/Continuing Calibrations
• Laboratory Method Blank Results
* • Laboratory Control Spike/Laboratory Control Spike Duplicate Recoveries
* • Matrix Spike/Matrix Spike Duplicate Recoveries
• ICP Serial Dilution Results
* • ICP Interference Check Sample Results
* • Field Duplicate Results
* • Detection Limits
* • Sample Quantitation

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

TOTAL AND DISSOLVED METALS:

The following analytes were detected in a preparation blanks at the following maximum concentrations:

Analyte	Maximum Concentration	Action Level
Copper [1]	0.006 ug/L	0.03 ug/L
Copper [2]	0.006 ug/L	0.03 ug/L
Lead [2]	0.133 ug/L	0.66 ug/L

[1] Maximum concentration found in a preparation blank affecting samples in preparation batch 120659.
[2] Maximum concentration found in a preparation blank affecting samples in preparation batch 120660.

Action levels of 5X the maximum contaminant concentration for were established to evaluate blank contamination. Dilution factors and sample aliquots were taken into consideration during the application of all action levels. Positive results less than the blank action level were qualified as non-detected (U).

The serial dilution for sample LS7-GW-MW1-7PDI-10-02 had a percent difference >10% for lead. Samples in preparation batch 120660 were affected. Positive lead results for samples LS1-GW-MW1-1PDI-10-02, LS1-GW-FOMW14-10-02, and LS1-GW-MW1-1PDI-10-02 were qualified as estimated (J) because all other sample results were qualified for blank contamination.

Notes:

The following sample was analyzed at a dilution:

Sample	Dilution Factor	Analytes
LS4-GW-NES010-10-02	20X	Copper, Lead

EXECUTIVE SUMMARY

Laboratory Performance Issues: Preparation blank contamination resulted in the qualification of several lead results in preparation batch 120660. Serial dilution non-compliances for lead resulted in the qualification of samples LS1-GW-MW1-1PDI-10-02, LS1-GW-FOMW14-10-02, and LS1-GW-MW1-1PDI-10-02.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the Region I USEPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, Part IV (11/08), and the Department of Defense (DoD) document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (January 2006). The text of this report has been formulated to address only those problem areas affecting data quality.

Megan Carson

Tetra Tech NUS
Megan Carson
Chemist 1/ Data Validator

Tetra Tech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Data Validation Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (e.g. % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery 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 - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (e.g. base-line drifting)
P	=	Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q	=	Other problems (can be any number of issues; e.g. poor chromatography,interferences, etc.)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	% Difference between columns/detectors >25% for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids <30%
Z	=	Uncertainty at 2 sigma deviation is greater than sample activity

PROJ_NO: 02630 SDG: K1009322 FRACTION: M MEDIA: WATER	NSAMPLE	LS1-GW-13MW19-10-02			LS1-GW-13MW20-10-02			LS1-GW-13MW21-10-02			LS1-GW-FOMW14-10-02		
	LAB_ID	K1009322-015			K1009322-006			K1009322-007			K1009322-017		
	SAMP_DATE	8/29/2010			8/27/2010			8/27/2010			8/30/2010		
	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		1.21			0.9			0.48	J	P	0.76		
COPPER		1.4			7.28			1.28			2		
LEAD		0.427	U	A	2.83			1.17			1.12	J	I

PROJ_NO: 02630	NSAMPLE	LS1-GW-MW1-1PDI-10-02			LS4-GW-13MW13-10-02			LS4-GW-13MW14-10-02			LS4-GW-MW1-4PDI-10-02		
SDG: K1009322	LAB_ID	K1009322-016			K1009322-004			K1009322-009			K1009322-008		
FRACTION: M	SAMP_DATE	8/30/2010			8/27/2010			8/28/2010			8/28/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		0.6			3.49			0.24	J	P	1.15		
COPPER		4.17			3.51			1.86			3.63		
LEAD		2.33	J	I	1.2			4.57			11.5		

PROJ_NO: 02630	NSAMPLE	LS4-GW-NES010-10-02			LS4-GW-NES011-10-02			LS5-GW-19MW3-10-02			LS5-GW-MW1-5PDI-10-02		
SDG: K1009322	LAB_ID	K1009322-014			K1009322-005			K1009322-001			K1009322-002		
FRACTION: M	SAMP_DATE	8/29/2010			8/27/2010			8/26/2010			8/26/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		1.45			0.96			0.83			5.76		
COPPER		3.72			71			1.98			1.18		
LEAD		1.22	J	I	72.6			1.24			0.846		

PROJ_NO: 02630	NSAMPLE	LS5-GW-MW1-5PDI-10-02-D			LS7-GW-MW1-7PDI-10-02			LS7-GW-MW3-7RI-10-02			LS7-GW-MW3-7RI-10-02-D		
SDG: K1009322	LAB_ID	K1009322-003			K1009322-012			K1009322-010			K1009322-011		
FRACTION: M	SAMP_DATE	8/26/2010			8/28/2010			8/28/2010			8/28/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	LS5-GW-MW1-5PDI-10-02									LS7-GW-MW3-7RI-10-02		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		5.64			1.56			0.22	J	P	0.23	J	P
COPPER		1.18			0.389			0.814			0.755		
LEAD		0.882			0.184	U	A	0.266			0.057	U	A

PROJ_NO: 02630	NSAMPLE	LS7-GW-MW4-7RI-10-02		
SDG: K1009322	LAB_ID	K1009322-013		
FRACTION: M	SAMP_DATE	8/29/2010		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ARSENIC		15		
COPPER		0.249		
LEAD		0.106	U	A

PROJ_NO: 02630	NSAMPLE	LS1-GW-13MW19-10-02			LS1-GW-13MW20-10-02			LS1-GW-13MW21-10-02			LS1-GW-FOMW14-10-02		
SDG: K1009322	LAB_ID	K1009322-015DISS			K1009322-006DISS			K1009322-007DISS			K1009322-017DISS		
FRACTION: MF	SAMP_DATE	8/29/2010			8/27/2010			8/27/2010			8/30/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		1.18			0.83			0.47	J	P	0.67		
COPPER		0.782			1.18			0.872			0.866		
LEAD		0.088	U	A	0.202			0.47			0.331	U	A

PROJ_NO: 02630	NSAMPLE	LS1-GW-MW1-1PDI-10-02			LS4-GW-13MW13-10-02			LS4-GW-13MW14-10-02			LS4-GW-MW1-4PDI-10-02		
SDG: K1009322	LAB_ID	K1009322-016DISS			K1009322-004DISS			K1009322-009DISS			K1009322-008DISS		
FRACTION: MF	SAMP_DATE	8/30/2010			8/27/2010			8/28/2010			8/28/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		0.49	J	P	2.84			0.24	J	P	1.01		
COPPER		0.131			0.258			0.282			0.271		
LEAD		0.188	U	A	0.034			0.175			0.103		

PROJ_NO: 02630	NSAMPLE	LS4-GW-NES010-10-02			LS4-GW-NES011-10-02			LS5-GW-19MW3-10-02			LS5-GW-MW1-5PDI-10-02		
SDG: K1009322	LAB_ID	K1009322-014DISS			K1009322-005DISS			K1009322-001DISS			K1009322-002DISS		
FRACTION: MF	SAMP_DATE	8/29/2010			8/27/2010			8/26/2010			8/26/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		1.46			0.82			0.91			5.59		
COPPER		0.351			36.3			0.627			0.127		
LEAD		0.068	U	A	16			0.258			0.051		

PROJ_NO: 02630	NSAMPLE	LS5-GW-MW1-5PDI-10-02-D			LS7-GW-MW1-7PDI-10-02			LS7-GW-MW3-7RI-10-02			LS7-GW-MW3-7RI-10-02-D		
SDG: K1009322	LAB_ID	K1009322-003DISS			K1009322-012DISS			K1009322-010DISS			K1009322-011DISS		
FRACTION: MF	SAMP_DATE	8/26/2010			8/28/2010			8/28/2010			8/28/2010		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/L			UG/L			UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF	LS5-GW-MW1-5PDI-10-02									LS7-GW-MW3-7RI-10-02		
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
ARSENIC		5.88			1.47			0.18	J	P	0.21	J	P
COPPER		0.11			0.046	J	P	0.81			0.766		
LEAD		0.056			0.017	U	A	0.018	J	P	0.023	U	A

PROJ_NO: 02630	NSAMPLE	LS7-GW-MW4-7RI-10-02		
SDG: K1009322	LAB_ID	K1009322-013DISS		
FRACTION: MF	SAMP_DATE	8/29/2010		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	UG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
ARSENIC		15.1		
COPPER		0.075	J	P
LEAD		0.018	U	A

APPENDIX D

ANALYTICAL RESULTS

D.1 SOIL

D.2 GROUNDWATER

APPENDIX D.1

SOIL

APPENDIX D.1.1

ZONE 1

TABLE D.1-1

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-001 Z1PDI-SO-001-0002 20100908	Z1PDI-002 Z1PDI-SO-002-0002 20100911	Z1PDI-003 Z1PDI-SO-003-0002 20100908	Z1PDI-004 Z1PDI-SO-004-0002 20100908	Z1PDI-005 Z1PDI-SO-005-0002 20100912
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	477.85	NA	7955.3	NA
BENZO(A)ANTHRACENE	NA	430	NA	4100	NA
BENZO(A)PYRENE	NA	290	NA	5500	NA
BENZO(B)FLUORANTHENE	NA	460 J	NA	7000	NA
BENZO(K)FLUORANTHENE	NA	150	NA	3200	NA
CARBAZOLE	NA	140	NA	34	NA
CHRYSENE	NA	350 J	NA	3300 J	NA
DIBENZO(A,H)ANTHRACENE	NA	76	NA	1000 J	NA
INDENO(1,2,3-CD)PYRENE	NA	210	NA	3100	NA
PHENANTHRENE	NA	550	NA	240	NA
PYRENE	NA	940	NA	4500	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	45 J	170	37 J	390 J	43
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	90	90	78	93	94

TABLE D.1-1

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-006 Z1PDI-SO-006-0002 20100908	Z1PDI-008 Z1PDI-SO-008-0002 20100914	Z1PDI-009 Z1PDI-SO-009-0002 20100908	Z1PDI-010 Z1PDI-SO-010-0002 20100908	Z1PDI-011 Z1PDI-SO-011-0002 20100909
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	4016.4	131.417	67.133	88.569
BENZO(A)ANTHRACENE	NA	2600	71	28	43
BENZO(A)PYRENE	NA	2600	86	40	58
BENZO(B)FLUORANTHENE	NA	3700	120	55	83
BENZO(K)FLUORANTHENE	NA	1400	45	20 J	32
CARBAZOLE	NA	85	7.7 J	3.1 J	11 UJ
CHRYSENE	NA	2400	67 J	33 J	49 J
DIBENZO(A,H)ANTHRACENE	NA	560 J	20 J	15 J	13 J
INDENO(1,2,3-CD)PYRENE	NA	2100	58	36 J	46
PHENANTHRENE	NA	1100	39	19 J	21 J
PYRENE	NA	3800	130 J	50	53
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	2200 J	710	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	92	94	96	94	92

TABLE D.1-1

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-012 Z1PDI-SO-012-0002 20100908	Z1PDI-013 Z1PDI-SO-013-0002 20100908	Z1PDI-014 Z1PDI-SO-014-0002 20100910
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)			
BAP EQUIVALENT	178.44	NA	NA
BENZO(A)ANTHRACENE	140	NA	NA
BENZO(A)PYRENE	120	NA	NA
BENZO(B)FLUORANTHENE	180	NA	NA
BENZO(K)FLUORANTHENE	82	NA	NA
CARBAZOLE	2.9 J	NA	NA
CHRYSENE	120 J	NA	NA
DIBENZO(A,H)ANTHRACENE	19 J	NA	NA
INDENO(1,2,3-CD)PYRENE	65	NA	NA
PHENANTHRENE	11 J	NA	NA
PYRENE	120 J	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)			
TPH (C09-C36)	NA	180	250
MISCELLANEOUS PARAMETERS (%)			
TOTAL SOLIDS	93	93	85

TABLE D.1-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-001		Z1PDI-002	Z1PDI-003	
	Z1PDI-SO-001-0204	Z1PDI-SO-001-0810	Z1PDI-SO-002-0204	Z1PDI-SO-003-0406	Z1PDI-SO-003-0809
	20100908	20100908	20100911	20100908	20100908
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	775.45	NA	NA
BENZO(A)ANTHRACENE	NA	NA	580 J	NA	NA
BENZO(A)PYRENE	NA	NA	520 J	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	630 J	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	190 J	NA	NA
CARBAZOLE	NA	NA	200 J	NA	NA
CHRYSENE	NA	NA	550 J	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	100 J	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	320 J	NA	NA
PHENANTHRENE	NA	NA	860 J	NA	NA
PYRENE	NA	NA	1400 J	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	630 J	82 J	300	16 J	150 J
SPLP METALS (UG/L)					
LEAD	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	95	94	90	93	94

TABLE D.1-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-003				Z1PDI-004
	Z1PDI-SO-003-0910 20100908	Z1PDI-SO-003-1012 20100908	Z1PDI-SO-003-1012-D 20100908	Z1PDI-SO-003-1214 20100908	Z1PDI-SO-004-0406 20100908
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	NA	NA	2539.7
BENZO(A)ANTHRACENE	NA	NA	NA	NA	1400
BENZO(A)PYRENE	NA	NA	NA	NA	1700
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	2300
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	850
CARBAZOLE	NA	NA	NA	NA	21
CHRYSENE	NA	NA	NA	NA	1200 J
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	360
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	1000
PHENANTHRENE	NA	NA	NA	NA	250
PYRENE	NA	NA	NA	NA	1800
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	10000 J	8100 J	7800 J	8200 J	54 J
SPLP METALS (UG/L)					
LEAD	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	93	90	93	90	93

TABLE D.1-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-004			Z1PDI-005	
	Z1PDI-SO-004-0809 20100908	Z1PDI-SO-004-0910 20100908	Z1PDI-SO-004-0910-D 20100908	Z1PDI-SO-005-0305 20100912	Z1PDI-SO-005-0507 20100912
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	183.44	NA	NA	NA	NA
BENZO(A)ANTHRACENE	120	NA	NA	NA	NA
BENZO(A)PYRENE	120 J	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	180 J	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	54 J	NA	NA	NA	NA
CARBAZOLE	27	NA	NA	NA	NA
CHRYSENE	100 J	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	25 J	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	78 J	NA	NA	NA	NA
PHENANTHRENE	180	NA	NA	NA	NA
PYRENE	240	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	180 J	1800 J	1900 J	7	2500
SPLP METALS (UG/L)					
LEAD	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	93	93	95	96	89

TABLE D.1-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-006		Z1PDI-007	Z1PDI-008	
	Z1PDI-SO-006-0204	Z1PDI-SO-006-0810	Z1PDI-SO-007-0405	Z1PDI-SO-008-0405	Z1PDI-SO-008-0910
	20100908	20100908	20100909	20100914	20100914
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	NA	645.96	NA
BENZO(A)ANTHRACENE	NA	NA	NA	340	NA
BENZO(A)PYRENE	NA	NA	NA	420	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	600	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	160 J	NA
CARBAZOLE	NA	NA	NA	21	NA
CHRYSENE	NA	NA	NA	360	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	100 J	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	300	NA
PHENANTHRENE	NA	NA	NA	190	NA
PYRENE	NA	NA	NA	600	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	29 J	3.8 UJ	240	160	420
SPLP METALS (UG/L)					
LEAD	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	90	97	94	93	91

TABLE D.1-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-009		Z1PDI-010	Z1PDI-011	Z1PDI-012
	Z1PDI-SO-009-0406	Z1PDI-SO-009-0809	Z1PDI-SO-010-0405	Z1PDI-SO-011-0405	Z1PDI-SO-012-0204
	20100908	20100908	20100908	20100909	20100908
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	11.5517	10 U	299.07	1792.12	10 U
BENZO(A)ANTHRACENE	10 U	10 U	160	660	10 U
BENZO(A)PYRENE	10 U	10 U	190	1200	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	240	1600	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	93	550	10 U
CARBAZOLE	10 U	10 U	10 U	11 UJ	10 U
CHRYSENE	1.7 J	10 UJ	140 J	620 J	10 UJ
DIBENZO(A,H)ANTHRACENE	10 U	10 U	50	260	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	180	1000	10 U
PHENANTHRENE	10 U	10 U	530	28	10 U
PYRENE	2.8 J	10 UJ	390	910	10 U
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	NA	NA	NA	NA	NA
SPLP METALS (UG/L)					
LEAD	2.7 J	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	98	94	92	89	95

TABLE D.1-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z1PDI-013		Z1PDI-014		
	Z1PDI-SO-013-0204	Z1PDI-SO-013-0204-D	Z1PDI-SO-014-0204	Z1PDI-SO-014-0608	Z1PDI-SO-014-0810
	20100908	20100908	20100910	20100910	20100910
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA
CARBAZOLE	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA
PYRENE	NA	NA	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	18	14	120	45	520
SPLP METALS (UG/L)					
LEAD	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	97	96	93	93	88

APPENDIX D.1.2

ZONE 2

TABLE D.1-3
SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 2 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z2PDI-001 Z2PDI-SO-001-0002 20100912
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	
BAP EQUIVALENT	428.77
BENZO(A)ANTHRACENE	260
BENZO(A)PYRENE	270
BENZO(B)FLUORANTHENE	510
BENZO(K)FLUORANTHENE	150
CARBAZOLE	44
CHRYSENE	270
DIBENZO(A,H)ANTHRACENE	60
INDENO(1,2,3-CD)PYRENE	200
PHENANTHRENE	290
PYRENE	610
METALS (MG/KG)	
ANTIMONY	0.3 J
LEAD	110
PETROLEUM HYDROCARBONS (MG/KG)	
TPH (C09-C36)	37 J
SPLP METALS (UG/L)	
ANTIMONY	2.1 U
LEAD	26.3
MISCELLANEOUS PARAMETERS (%)	
TOTAL SOLIDS	87

TABLE D.1-4

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 2 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z2PDI-001	
	Z2PDI-SO-001-0204 20100912	Z2PDI-SO-001-0506 20100912
PETROLEUM HYDROCARBONS (MG/KG)		
TPH (C09-C36)[1]	19	3.3 J
SPLP METALS (UG/L)		
LEAD	NA	NA
MISCELLANEOUS PARAMETERS (%)		
TOTAL SOLIDS	96	97

1 - ETPH analytical method.

APPENDIX D.1.3

ZONE 3

TABLE D.1-5

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 3 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z3PDI-001 Z3PDI-SO-001-0002 20100914	Z3PDI-002 Z3PDI-SO-002-0002 20100912	Z3PDI-003 Z3PDI-SO-003-0002 20100914	Z3PDI-005 Z3PDI-SO-005-0002 20100912
METALS (MG/KG)				
LEAD	106	156	473	1540
SPLP METALS (UG/L)				
LEAD	0.99 U	4 U	127	500
MISCELLANEOUS PARAMETERS (%)				
TOTAL SOLIDS	95	95	95	96

TABLE D.1-6

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 3 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z3PDI-001 Z3PDI-SO-001-0204 20100914	Z3PDI-002 Z3PDI-SO-002-0406 20100912	Z3PDI-003 Z3PDI-SO-003-0204 20100914	Z2PDI-002 Z2PDI-SO-002-0204 20100912
SPLP METALS (UG/L)				
LEAD	7.5 U	13.4	598	184

APPENDIX D.1.4

ZONE 4

TABLE D.1-7
SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z4PDI-001		Z4PDI-002	Z4PDI-003	Z4PDI-004
	Z4PDI-SO-001-0002	Z4PDI-SO-001-0002-D	Z4PDI-SO-002-0002	Z4PDI-SO-003-0002	Z4PDI-SO-004-0002
	20100910	20100910	20100910	20100911	20100911
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	NA	NA	36.917
BENZO(A)ANTHRACENE	NA	NA	NA	NA	17 J
BENZO(A)PYRENE	NA	NA	NA	NA	24
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	34
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	10 J
CARBAZOLE	NA	NA	NA	NA	10 U
CHRYSENE	NA	NA	NA	NA	17 J
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	5.8 J
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	19 J
PHENANTHRENE	NA	NA	NA	NA	6.5 J
PYRENE	NA	NA	NA	NA	30
METALS (MG/KG)					
CHROMIUM	NA	NA	NA	12.7	NA
CHROMIUM III	NA	NA	NA	12.7	NA
HEXAVALENT CHROMIUM	NA	NA	NA	0.11 U	NA
LEAD	367 J	726 J	NA	982	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	220	NA	5 J	NA	NA
SPLP METALS (UG/L)					
LEAD	54.5 J	133 J	NA	NA	NA
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	115	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	93	93	95	94	98

TABLE D.1-7
SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z4PDI-005 Z4PDI-SO-005-0002 20100911	Z4PDI-006 Z4PDI-SO-006-0002 20100910	Z4PDI-007 Z4PDI-SO-007-0002 20100910	Z4PDI-008 Z4PDI-SO-008-0002 20100911	Z4PDI-009 Z4PDI-SO-009-0002 20100911
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	46.876	NA	NA	NA	322.12
BENZO(A)ANTHRACENE	22	NA	NA	NA	120
BENZO(A)PYRENE	27	NA	NA	NA	190
BENZO(B)FLUORANTHENE	48	NA	NA	NA	340
BENZO(K)FLUORANTHENE	15 J	NA	NA	NA	96
CARBAZOLE	2.8 J	NA	NA	NA	28
CHRYSENE	26 J	NA	NA	NA	160 J
DIBENZO(A,H)ANTHRACENE	9.2 J	NA	NA	NA	66
INDENO(1,2,3-CD)PYRENE	35	NA	NA	NA	190
PHENANTHRENE	20 J	NA	NA	NA	110
PYRENE	50	NA	NA	NA	210
METALS (MG/KG)					
CHROMIUM	NA	NA	NA	NA	NA
CHROMIUM III	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	NA	369 J	160 J	1370	NA
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	NA	NA	NA	NA	NA
SPLP METALS (UG/L)					
LEAD	NA	182	5.2	2180	NA
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	94	95	93	96	93

TABLE D.1-8
SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z4PDI-001	Z4PDI-002		Z4PDI-006
	Z4PDI-SO-001-0405	Z4PDI-SO-002-0204	Z4PDI-SO-002-0405	Z4PDI-SO-006-0406
	20100910	20100910	20100910	20100910
METALS (MG/KG)				
CHROMIUM	NA	NA	NA	6.5
CHROMIUM III	NA	NA	NA	6.5
HEXAVALENT CHROMIUM	NA	NA	NA	0.11 U
LEAD	128 J	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)				
TPH (C09-C36)	60	4.2 U	4.8 U	NA
SPLP METALS (UG/L)				
LEAD	41.6	NA	NA	5
MISCELLANEOUS PARAMETERS (MV)				
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	200
MISCELLANEOUS PARAMETERS (%)				
TOTAL SOLIDS	89	94	83	NA

TABLE D.1-8
SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z4PDI-006 Z4PDI-SO-006-0406-D 20100910	Z4PDI-007 Z4PDI-SO-007-0204 20100910	Z4PDI-008 Z4PDI-SO-008-0204 20100911
METALS (MG/KG)			
CHROMIUM	7.1	NA	9.8
CHROMIUM III	7.1	NA	9.8
HEXAVALENT CHROMIUM	0.11 U	NA	0.11 U
LEAD	NA	NA	NA
PETROLEUM HYDROCARBONS (MG/KG)			
TPH (C09-C36)	NA	NA	NA
SPLP METALS (UG/L)			
LEAD	5	3.4 J	546
MISCELLANEOUS PARAMETERS (MV)			
OXIDATION REDUCTION POTENTIAL	184	NA	128
MISCELLANEOUS PARAMETERS (%)			
TOTAL SOLIDS	NA	NA	NA

APPENDIX D.1.5

ZONE 5

TABLE D.1-9

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 5 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z5PDI-001	Z5PDI-002		Z5PDI-003	Z5PDI-004	Z5PDI-005
	Z5PDI-SO-001-0002	Z5PDI-SO-002-0002	Z5PDI-SO-002-0002-D	Z5PDI-SO-003-0002	Z5PDI-SO-004-0002	Z5PDI-SO-005-0002
	20100909	20100909	20100909	20100909	20100909	20100909
PETROLEUM HYDROCARBONS (MG/KG)						
TPH (C09-C36)	57	83	86	180	35 J	110
MISCELLANEOUS PARAMETERS (%)						
TOTAL SOLIDS	94	96	96	95	96	95

TABLE D.1-10

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 5 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z5PDI-001		Z5PDI-002	Z5PDI-003
	Z5PDI-SO-001-0204	Z5PDI-SO-001-0204-D	Z5PDI-SO-002-0204	Z5PDI-SO-003-0204
	20100909	20100909	20100909	20100909
PETROLEUM HYDROCARBONS (MG/KG)				
TPH (C09-C36)	2.9 J	4.1 U	8.2	2.9 J
MISCELLANEOUS PARAMETERS (%)				
TOTAL SOLIDS	92	93	96	96

TABLE D.1-10

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 5 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z5PDI-004		Z5PDI-005
	Z5PDI-SO-004-0204 20100909	Z5PDI-SO-004-0204-D 20100909	Z5PDI-SO-005-0204 20100909
PETROLEUM HYDROCARBONS (MG/KG)			
TPH (C09-C36)	2100	1400	150
MISCELLANEOUS PARAMETERS (%)			
TOTAL SOLIDS	94	92	95

APPENDIX D.1.6

ZONE 6

TABLE D.1-11

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 6 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z6PDI-001 Z6PDI-SO-001-0002 20100909	Z6PDI-002 Z6PDI-SO-002-0002 20100909	Z6PDI-003 Z6PDI-SO-003-0002 20100914	Z6PDI-004 Z6PDI-SO-004-0002 20100909
PETROLEUM HYDROCARBONS (MG/KG)				
TPH (C09-C36)	570	180	21	55
MISCELLANEOUS PARAMETERS (%)				
TOTAL SOLIDS	97	97	96	94

TABLE D.1-12

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 6 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z6PDI-001		Z6PDI-002	Z6PDI-003	Z6PDI-004
	Z6PDI-SO-001-0405	Z6PDI-SO-001-0405-D	Z6PDI-SO-002-0405	Z6PDI-SO-003-0304	Z6PDI-SO-004-0204
	20100909	20100909	20100909	20100914	20100909
PETROLEUM HYDROCARBONS (MG/KG)					
TPH (C09-C36)	5.1 J	8.5	3.8 U	4.8 J	46
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	94	94	95	92	95

APPENDIX D.1.7

ZONE 7

TABLE D.1-13

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-001	Z7PDI-002	Z7PDI-003		Z7PDI-004
	Z7PDI-SO-001-0002	Z7PDI-SO-002-0002	Z7PDI-SO-003-0002	Z7PDI-SO-003-0002-D	Z7PDI-SO-004-0002
	20100911	20100911	20100910	20100910	20100911
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	1353.84	7784.9	14660.7	NA	9037.2
BENZO(A)ANTHRACENE	830	5000	7800	NA	5500
BENZO(A)PYRENE	930	5100	8400	NA	5800
BENZO(B)FLUORANTHENE	1400	6900	15000	NA	8600
BENZO(K)FLUORANTHENE	400	3000	6300	NA	3200
CARBAZOLE	27	180	46	NA	370 J
CHRYSENE	840	4900	7700 J	NA	5200
DIBENZO(A,H)ANTHRACENE	130	1100	3100	NA	1400 J
INDENO(1,2,3-CD)PYRENE	660	3600	8100	NA	3900
PHENANTHRENE	240	2000	550 J	NA	2100
PYRENE	1700	9100	8500	NA	9600
METALS (MG/KG)					
ANTIMONY	0.34 U	2.1 J	NA	NA	2.6 J
CHROMIUM	10.3	NA	NA	NA	NA
CHROMIUM III	10.3	NA	NA	NA	NA
HEXAVALENT CHROMIUM	0.1 U	NA	NA	NA	NA
LEAD	24.1	1220	2120	1780	308
SPLP METALS (UG/L)					
ANTIMONY	2.7 J	14.6	NA	NA	9.4
LEAD	8.5	456	NA	NA	102
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	153	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	97	94	90	92	98

TABLE D.1-13

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-005 Z7PDI-SO-005-0002 20100911	Z7PDI-006 Z7PDI-SO-006-0002 20100911	Z7PDI-007 Z7PDI-SO-007-0002 20100910	Z7PDI-008 Z7PDI-SO-008-0002 20100910	Z7PDI-009 Z7PDI-SO-009-0002 20100911
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	3221.8	NA	127.434	2530.5	3393.2
BENZO(A)ANTHRACENE	2000	NA	69	1500	2100
BENZO(A)PYRENE	2100	NA	81 J	1600	2200
BENZO(B)FLUORANTHENE	3100	NA	120 J	2300	3300
BENZO(K)FLUORANTHENE	1000	NA	36 J	920	1100
CARBAZOLE	220 J	NA	2.1 J	35	380 J
CHRYSENE	1800	NA	74 J	1300 J	2200
DIBENZO(A,H)ANTHRACENE	470 J	NA	21 J	420	520 J
INDENO(1,2,3-CD)PYRENE	1300	NA	61 J	1200	1200
PHENANTHRENE	2000 J	NA	24	150	2400 J
PYRENE	3600	NA	130	1700	3000
METALS (MG/KG)					
ANTIMONY	NA	NA	50.6 J	NA	0.63 J
CHROMIUM	18.1	NA	NA	NA	NA
CHROMIUM III	17.4	NA	NA	NA	NA
HEXAVALENT CHROMIUM	0.78	NA	NA	NA	NA
LEAD	204	8.2	31400	16	257
SPLP METALS (UG/L)					
ANTIMONY	NA	NA	120	NA	11.6
LEAD	NA	NA	1040	NA	NA
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	157	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	91	95	95	95	93

TABLE D.1-13

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-009	Z7PDI-010		Z7PDI-011	Z7PDI-012
	Z7PDI-SO-009-0002-D	Z7PDI-SO-010-0002	Z7PDI-SO-010-0002-D	Z7PDI-SO-011-0002	Z7PDI-SO-012-0002
	20100911	20100913	20100913	20100913	20100913
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	2057.92	NA	227.79	320.29
BENZO(A)ANTHRACENE	NA	1000	NA	130	200 J
BENZO(A)PYRENE	NA	1300	NA	140	200 J
BENZO(B)FLUORANTHENE	NA	1800	NA	220	310 J
BENZO(K)FLUORANTHENE	NA	700	NA	65	110 J
CARBAZOLE	NA	46	NA	12 J	11 J
CHRYSENE	NA	920 J	NA	140 J	190 J
DIBENZO(A,H)ANTHRACENE	NA	350	NA	39 J	53 J
INDENO(1,2,3-CD)PYRENE	NA	1200	NA	130	150 J
PHENANTHRENE	NA	140	NA	89	94 J
PYRENE	NA	1600	NA	290	370 J
METALS (MG/KG)					
ANTIMONY	0.55 J	8.5 J	12.4 J	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
CHROMIUM III	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	266	1810	1870	262	NA
SPLP METALS (UG/L)					
ANTIMONY	NA	377	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	92	95	94	97	96

TABLE D.1-13

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-012	Z7PDI-013		Z7PDI-014	Z7PDI-015
	Z7PDI-SO-012-0002-D	Z7PDI-SO-013-0002	Z7PDI-SO-013-0002-D	Z7PDI-SO-014-0002	Z7PDI-SO-015-0002
	20100913	20100913	20100913	20100908	20100908
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	138.863	265.97	980.66	127.336	484.95
BENZO(A)ANTHRACENE	71 J	140 J	530 J	63	320
BENZO(A)PYRENE	87 J	170 J	660 J	83	310
BENZO(B)FLUORANTHENE	120 J	260 J	1000 J	100	410
BENZO(K)FLUORANTHENE	39 J	82 J	310 J	46	170 J
CARBAZOLE	10 U	12 J	56 J	6.1 J	6.9 J
CHRYSENE	73 J	150 J	560 J	76 J	250 J
DIBENZO(A,H)ANTHRACENE	26 J	40 J	110 J	21 J	77 J
INDENO(1,2,3-CD)PYRENE	63 J	150 J	540 J	65	230 J
PHENANTHRENE	25 J	84 J	510 J	36	120
PYRENE	120 J	260 J	1100 J	160	500
METALS (MG/KG)					
ANTIMONY	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
CHROMIUM III	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
SPLP METALS (UG/L)					
ANTIMONY	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	20.7
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	95	94	93	93	93

TABLE D.1-13

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-015	Z7PDI-016	Z7PDI-017	Z7PDI-018	
	Z7PDI-SO-015-0002-D	Z7PDI-SO-016-0002	Z7PDI-SO-017-0002	Z7PDI-SO-018-0002	Z7PDI-SO-018-0002-D
	20100908	20100908	20100911	20100908	20100908
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	673.5	964.85	NA	2619.2	933.25
BENZO(A)ANTHRACENE	390	670	NA	1900 J	630 J
BENZO(A)PYRENE	440	610	NA	1700 J	610 J
BENZO(B)FLUORANTHENE	580	920	NA	2500 J	880 J
BENZO(K)FLUORANTHENE	220 J	230	NA	770 J	270 J
CARBAZOLE	15 J	11 J	NA	320 J	51 J
CHRYSENE	300 J	550 J	NA	1500 J	550 J
DIBENZO(A,H)ANTHRACENE	100 J	150 J	NA	350 J	130 J
INDENO(1,2,3-CD)PYRENE	340 J	430 J	NA	1200 J	390 J
PHENANTHRENE	120	110	NA	1800 J	740 J
PYRENE	550	770	NA	2700 J	1200 J
METALS (MG/KG)					
ANTIMONY	NA	NA	0.22 J	NA	NA
CHROMIUM	NA	NA	NA	NA	NA
CHROMIUM III	NA	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
SPLP METALS (UG/L)					
ANTIMONY	NA	NA	8 U	NA	NA
LEAD	15.7	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	94	96	94	94	96

TABLE D.1-13

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-019	Z7PDI-020	
	Z7PDI-SO-019-0002	Z7PDI-SO-020-0002	Z7PDI-SO-020-0002-D
	20100908	20100910	20100910
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)			
BAP EQUIVALENT	3649.6	45.888	38.853
BENZO(A)ANTHRACENE	3800	21	18 J
BENZO(A)PYRENE	2400	28	24
BENZO(B)FLUORANTHENE	3300	46	38
BENZO(K)FLUORANTHENE	1700	16 J	13 J
CARBAZOLE	570 J	10 UJ	10 UJ
CHRYSENE	2600 J	28	23
DIBENZO(A,H)ANTHRACENE	410 J	8.1 J	6.6 J
INDENO(1,2,3-CD)PYRENE	1100	29	25
PHENANTHRENE	5300	16 J	10 J
PYRENE	6000	42	35
METALS (MG/KG)			
ANTIMONY	NA	NA	NA
CHROMIUM	NA	NA	NA
CHROMIUM III	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA
LEAD	NA	NA	NA
SPLP METALS (UG/L)			
ANTIMONY	NA	NA	NA
LEAD	NA	NA	NA
MISCELLANEOUS PARAMETERS (MV)			
OXIDATION REDUCTION POTENTIAL	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)			
TOTAL SOLIDS	96	95	94

TABLE D.1-14

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-001		Z7PDI-002	
	Z7PDI-SO-001-0204	Z7PDI-SO-001-0607	Z7PDI-SO-002-0607	Z7PDI-SO-002-0607-D
	20100911	20100911	20100911	20100911
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)				
BAP EQUIVALENT	NA	NA	728.68	NA
BENZO(A)ANTHRACENE	NA	NA	430	NA
BENZO(A)PYRENE	NA	NA	480	NA
BENZO(B)FLUORANTHENE	NA	NA	690	NA
BENZO(K)FLUORANTHENE	NA	NA	220	NA
CARBAZOLE	NA	NA	38	NA
CHRYSENE	NA	NA	480	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	100	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	340	NA
PHENANTHRENE	NA	NA	310	NA
PYRENE	NA	NA	900	NA
METALS (MG/KG)				
ANTIMONY	0.35 UJ	0.37 J	4.6 J	NA
CHROMIUM	NA	NA	NA	NA
CHROMIUM III	NA	NA	NA	NA
HEXAVALENT CHROMIUM	NA	NA	NA	NA
LEAD	11.1	608	2690	NA
SPLP METALS (UG/L)				
ANTIMONY	3.4 J	2.7 J	18.9	19
LEAD	2.5 U	29.1	218	132
MISCELLANEOUS PARAMETERS (MV)				
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)				
TOTAL SOLIDS	97	94	94	NA

TABLE D.1-14

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-003			Z7PDI-004	
	Z7PDI-SO-003-0204	Z7PDI-SO-003-0204-D	Z7PDI-SO-003-0506	Z7PDI-SO-004-0304	Z7PDI-SO-004-0406
	20100910	20100910	20100910	20100911	20100911
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	NA	NA	167.99
BENZO(A)ANTHRACENE	NA	NA	NA	NA	110
BENZO(A)PYRENE	NA	NA	NA	NA	110
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	150
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	69
CARBAZOLE	NA	NA	NA	NA	16 J
CHRYSENE	NA	NA	NA	NA	100
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	23
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	82
PHENANTHRENE	NA	NA	NA	NA	100
PYRENE	NA	NA	NA	NA	220
METALS (MG/KG)					
ANTIMONY	NA	NA	NA	5.2 J	5.3 J
CHROMIUM	10.7	NA	NA	NA	NA
CHROMIUM III	10.2	NA	NA	NA	NA
HEXAVALENT CHROMIUM	0.53	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA
SPLP METALS (UG/L)					
ANTIMONY	19.1	14.1	48.7	15.8	28.4
LEAD	NA	NA	NA	30	262
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	196	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	NA	NA	NA	96	92

TABLE D.1-14

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-005	Z7PDI-007		Z7PDI-008
	Z7PDI-SO-005-0204	Z7PDI-SO-007-0506	Z7PDI-SO-007-0506-D	Z7PDI-SO-008-0507
	20100911	20100910	20100910	20100910
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)				
BAP EQUIVALENT	4568	NA	NA	NA
BENZO(A)ANTHRACENE	3400	NA	NA	NA
BENZO(A)PYRENE	2900	NA	NA	NA
BENZO(B)FLUORANTHENE	4600	NA	NA	NA
BENZO(K)FLUORANTHENE	1500	NA	NA	NA
CARBAZOLE	420 J	NA	NA	NA
CHRYSENE	3000	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	670 J	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	1800	NA	NA	NA
PHENANTHRENE	6200 J	NA	NA	NA
PYRENE	6100	NA	NA	NA
METALS (MG/KG)				
ANTIMONY	NA	118 J	NA	NA
CHROMIUM	10.7	NA	NA	NA
CHROMIUM III	10.7	NA	NA	NA
HEXAVALENT CHROMIUM	0.11 U	NA	NA	NA
LEAD	103	23800	NA	4.3
SPLP METALS (UG/L)				
ANTIMONY	NA	26.4	21.3	NA
LEAD	NA	18.2	11.8	1.9 J
MISCELLANEOUS PARAMETERS (MV)				
OXIDATION REDUCTION POTENTIAL	168	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)				
TOTAL SOLIDS	94	85	NA	98

TABLE D.1-14

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-009		Z7PDI-010		Z7PDI-011
	Z7PDI-SO-009-0607	Z7PDI-SO-009-0607-D	Z7PDI-SO-010-0204	Z7PDI-SO-010-0204-D	Z7PDI-SO-011-0204
	20100911	20100911	20100913	20100913	20100913
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)					
BAP EQUIVALENT	NA	NA	NA	NA	20.781
BENZO(A)ANTHRACENE	NA	NA	NA	NA	12 J
BENZO(A)PYRENE	NA	NA	NA	NA	13 J
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	22
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	6.8 J
CARBAZOLE	NA	NA	NA	NA	10 UJ
CHRYSENE	NA	NA	NA	NA	13 J
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	3.2 J
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	11 J
PHENANTHRENE	NA	NA	NA	NA	7.9 J
PYRENE	NA	NA	NA	NA	18 J
METALS (MG/KG)					
ANTIMONY	10.7 J	6.2 J	110 J	NA	NA
CHROMIUM	8.8	NA	NA	NA	NA
CHROMIUM III	8.6	NA	NA	NA	NA
HEXAVALENT CHROMIUM	0.13	NA	NA	NA	NA
LEAD	3320	NA	NA	NA	NA
SPLP METALS (UG/L)					
ANTIMONY	53.9	NA	627 J	344 J	NA
LEAD	1270	NA	1820	1410	122
MISCELLANEOUS PARAMETERS (MV)					
OXIDATION REDUCTION POTENTIAL	169	NA	NA	NA	NA
MISCELLANEOUS PARAMETERS (%)					
TOTAL SOLIDS	94	96	84	NA	91

TABLE D.1-14

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7 SUBSURFACE SOIL
LOWER SUBASE SOIL AND GROUNDWATER PDI REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	Z7PDI-013 Z7PDI-SO-013-0406 20100913	Z7PDI-014 Z7PDI-SO-014-0204 20100908	Z7PDI-015 Z7PDI-SO-015-0204 20100908	Z7PDI-016 Z7PDI-SO-016-0204 20100908	Z7PDI-017 Z7PDI-SO-017-0406 20100911	Z7PDI-020 Z7PDI-SO-020-0406 20100910
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)						
BAP EQUIVALENT	365.42	91.258	860.31	735.28	NA	10 U
BENZO(A)ANTHRACENE	260	45	490	480	NA	10 U
BENZO(A)PYRENE	230	57	560	480	NA	10 U
BENZO(B)FLUORANTHENE	360	79	700	650	NA	10 U
BENZO(K)FLUORANTHENE	120	21	290	190	NA	10 U
CARBAZOLE	50 J	4.2 J	29	23	NA	10 UJ
CHRYSENE	220	48 J	410 J	380 J	NA	10 U
DIBENZO(A,H)ANTHRACENE	52	17 J	140	110 J	NA	10 U
INDENO(1,2,3-CD)PYRENE	200	46 J	380 J	300	NA	10 U
PHENANTHRENE	310	24	180	220	NA	10 U
PYRENE	540	95	600	660	NA	10 U
METALS (MG/KG)						
ANTIMONY	NA	NA	NA	NA	0.68 J	NA
CHROMIUM	NA	NA	NA	NA	12.3	8.1
CHROMIUM III	NA	NA	NA	NA	12.3	8.1
HEXAVALENT CHROMIUM	NA	NA	NA	NA	0.11 U	0.11 U
LEAD	NA	NA	NA	NA	168	NA
SPLP METALS (UG/L)						
ANTIMONY	NA	NA	NA	NA	7.4 U	NA
LEAD	NA	NA	8.9	NA	40.5	NA
MISCELLANEOUS PARAMETERS (MV)						
OXIDATION REDUCTION POTENTIAL	NA	NA	NA	NA	173	177
MISCELLANEOUS PARAMETERS (%)						
TOTAL SOLIDS	93	94	95	92	93	94

APPENDIX D.2

GROUNDWATER

APPENDIX D.2.1

ZONE 1

TABLE D.2-1

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	13MW19 LS1-GW-13MW19-10-01 20100423	13MW20 LS1-GW-13MW20-10-01 20100423	13MW21 LS1-GW-13MW21-10-01 20100423
INORGANICS (UG/L)			
ARSENIC	1.27	0.76	0.39 J
COPPER	1.27	4.57	1.42
LEAD	0.587	3.09	7.3
INORGANICS, FILTERED (UG/L)			
ARSENIC	1.37	0.72	0.37 J
COPPER	0.648	1.27	0.332
LEAD	0.203	0.126	0.504
FIELD (C)			
TEMPERATURE	21.01	16.95	14.42
FIELD (MG/L)			
DISSOLVED OXYGEN	0.95	0.71	0.63
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	2.097	0.997	1.097
FIELD (NTU)			
TURBIDITY	2	4.9	4.3
FIELD (PPT)			
SALINITY	1.19	0.59	0.63
FIELD (S.U.)			
pH	8.11	7.19	8.78

TABLE D.2-1

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	FOMW14		MW1-1PDI
	LS1-GW-FOMW14-10-01 20100423	LS1-GW-FOMW14-10-01-D 20100423	LS1-GW-MW1-1PDI-10-01 20100430
INORGANICS (UG/L)			
ARSENIC	0.18 J	0.18 J	1.35
COPPER	2.24	2.22	2.55
LEAD	1.28	1.19	1.42
INORGANICS, FILTERED (UG/L)			
ARSENIC	0.18 J	0.19 J	1.63
COPPER	2.12	1.97	0.256
LEAD	0.963	0.977	0.089
FIELD (C)			
TEMPERATURE	12.36	NA	15.17
FIELD (MG/L)			
DISSOLVED OXYGEN	0.34	NA	1.2
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	2.173	NA	2.306
FIELD (NTU)			
TURBIDITY	1	NA	9
FIELD (PPT)			
SALINITY	1.5	NA	1.48
FIELD (S.U.)			
pH	6.75	NA	8.46

TABLE D.2-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	13MW19 LS1-GW-13MW19-10-02 20100829	13MW20 LS1-GW-13MW20-10-02 20100827	13MW21 LS1-GW-13MW21-10-02 20100827
INORGANICS (UG/L)			
ARSENIC	1.21	0.9	0.48 J
COPPER	1.4	7.28	1.28
LEAD	0.427 U	2.83	1.17
INORGANICS, FILTERED (UG/L)			
ARSENIC	1.18	0.83	0.47 J
COPPER	0.782	1.18	0.872
LEAD	0.088 U	0.202	0.47
FIELD (C)			
TEMPERATURE	26.12	23.21	24.3
FIELD (MG/L)			
DISSOLVED OXYGEN	0.8	0.36	0.42
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	1.382	1.351	8.178
FIELD (MV)			
OXIDATION REDUCTION POTENTIAL	159.4	0	65
FIELD (NTU)			
TURBIDITY	5.2	1.2	0.5
FIELD (PPT)			
SALINITY	0.7	0.68	4.52
FIELD (S.U.)			
pH	7.63	7.21	8.15

TABLE D.2-2

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 1, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	FOMW14 LS1-GW-FOMW14-10-02 20100830	MW1-1PDI LS1-GW-MW1-1PDI-10-02 20100829
INORGANICS (UG/L)		
ARSENIC	0.76	0.6
COPPER	2	4.17
LEAD	1.12 J	2.33 J
INORGANICS, FILTERED (UG/L)		
ARSENIC	0.67	0.49 J
COPPER	0.866	0.131
LEAD	0.331 U	0.188 U
FIELD (C)		
TEMPERATURE	20.6	23.8
FIELD (MG/L)		
DISSOLVED OXYGEN	4.37	0.31
FIELD (MS/CM)		
SPECIFIC CONDUCTANCE	1.012	3.399
FIELD (MV)		
OXIDATION REDUCTION POTENTIAL	6.2	-120
FIELD (NTU)		
TURBIDITY	2.6	12
FIELD (PPT)		
SALINITY	0.48	1.78
FIELD (S.U.)		
pH	6.92	8.57

APPENDIX D.2.2

ZONE 4

TABLE D.2-3

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	13MW13 LS4-GW-13MW13-10-01 20100422	13MW14 LS4-GW-13MW14-10-01 20100424	MW1-4PDI LS4-GW-MW1-4PDI-10-01 20100430
INORGANICS (UG/L)			
ARSENIC	2.6	0.27 J	0.97
COPPER	1.09	2.18	1.67
LEAD	0.542	5.84	10.2
INORGANICS, FILTERED (UG/L)			
ARSENIC	2.37	0.27 J	0.83
COPPER	0.331	0.844	0.701
LEAD	0.077	0.512	3.12
FIELD (C)			
TEMPERATURE	16.02	20.45	10.1
FIELD (MG/L)			
DISSOLVED OXYGEN	0.22	0.95	5.8
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	0.621	12.36	14.74
FIELD (NTU)			
TURBIDITY	4	1	4.8
FIELD (PPT)			
SALINITY	0.37	7.81	12.34
FIELD (S.U.)			
pH	6.83	6.63	6.73

TABLE D.2-3

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	NESO10 LS4-GW-NESO10-10-01 20100424	NESO11 LS4-GW-NESO11-10-01 20100424
INORGANICS (UG/L)		
ARSENIC	0.65	0.74
COPPER	0.671	57
LEAD	0.611	43.5
INORGANICS, FILTERED (UG/L)		
ARSENIC	0.58	0.79
COPPER	0.467	37.7
LEAD	0.121	10.5
FIELD (C)		
TEMPERATURE	14.2	17.46
FIELD (MG/L)		
DISSOLVED OXYGEN	1.1	1.4
FIELD (MS/CM)		
SPECIFIC CONDUCTANCE	4.33	4.452
FIELD (NTU)		
TURBIDITY	9.4	3.5
FIELD (PPT)		
SALINITY	3.3	1.56
FIELD (S.U.)		
pH	6.94	6.63

TABLE D.2-4

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	13MW13 LS4-GW-13MW13-10-02 20100827	13MW14 LS4-GW-13MW14-10-02 20100828	MW1-4PDI LS4-GW-MW1-4PDI-10-02 20100828
INORGANICS (UG/L)			
ARSENIC	3.49	0.24 J	1.15
COPPER	3.51	1.86	3.63
LEAD	1.2	4.57	11.5
INORGANICS, FILTERED (UG/L)			
ARSENIC	2.84	0.24 J	1.01
COPPER	0.258	0.282	0.271
LEAD	0.034	0.175	0.103
FIELD (C)			
TEMPERATURE	22	23.18	20.2
FIELD (MG/L)			
DISSOLVED OXYGEN	0.3	0.48	0.63
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	0.662	28.52	27
FIELD (MV)			
OXIDATION REDUCTION POTENTIAL	27	61.6	75.2
FIELD (NTU)			
TURBIDITY	2.5	0	2.5
FIELD (PPT)			
SALINITY	0.32	17.61	16.61
FIELD (S.U.)			
pH	6.76	6.79	6.75

TABLE D.2-4

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 4, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	NESO10 LS4-GW-NESO10-10-02 20100829	NESO11 LS4-GW-NESO11-10-02 20100827
INORGANICS (UG/L)		
ARSENIC	1.45	0.96
COPPER	3.72	71
LEAD	1.22 J	72.6
INORGANICS, FILTERED (UG/L)		
ARSENIC	1.46	0.82
COPPER	0.351	36.3
LEAD	0.068 U	16
FIELD (C)		
TEMPERATURE	23.6	24.42
FIELD (MG/L)		
DISSOLVED OXYGEN	0.74	0.43
FIELD (MS/CM)		
SPECIFIC CONDUCTANCE	3.886	0.652
FIELD (MV)		
OXIDATION REDUCTION POTENTIAL	39	148.7
FIELD (NTU)		
TURBIDITY	2.3	2
FIELD (PPT)		
SALINITY	2.18	0.32
FIELD (S.U.)		
pH	6.7	6.25

APPENDIX D.2.3

ZONE 5

TABLE D.2-5

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 5, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	19MW3 LS5-GW-19MW3-10-01 20100424	MW1-5PDI LS5-GW-MW1-5PDI-10-01 20100426
INORGANICS (UG/L)		
ARSENIC	1.43	3.2
COPPER	4.66	5.14
LEAD	0.803	2.15
INORGANICS, FILTERED (UG/L)		
ARSENIC	1.28	3.33
COPPER	2.51	0.871
LEAD	0.194	0.368
FIELD (C)		
TEMPERATURE	14.48	15.01
FIELD (MG/L)		
DISSOLVED OXYGEN	0.36	0.17
FIELD (MS/CM)		
SPECIFIC CONDUCTANCE	0.604	3.109
FIELD (NTU)		
TURBIDITY	2	3.8
FIELD (PPT)		
SALINITY	0.37	2.04
FIELD (S.U.)		
pH	6.21	6.37

TABLE D.2-6

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 5, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	19MW3	MW1-5PDI	
	LS5-GW-19MW3-10-02	LS5-GW-MW1-5PDI-10-02	LS5-GW-MW1-5PDI-10-02-D
	20100826	20100826	20100826
INORGANICS (UG/L)			
ARSENIC	0.83	5.76	5.64
COPPER	1.98	1.18	1.18
LEAD	1.24	0.846	0.882
INORGANICS, FILTERED (UG/L)			
ARSENIC	0.91	5.59	5.88
COPPER	0.627	0.127	0.11
LEAD	0.258	0.051	0.056
FIELD (C)			
TEMPERATURE	24	24.97	NA
FIELD (MG/L)			
DISSOLVED OXYGEN	0.47	0.12	NA
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	0.448	1.425	NA
FIELD (MV)			
OXIDATION REDUCTION POTENTIAL	48.1	25.9	NA
FIELD (NTU)			
TURBIDITY	3	2.6	NA
FIELD (PPT)			
SALINITY	0.21	0.71	NA
FIELD (S.U.)			
pH	6.3	6.4	NA

APPENDIX D.2.4

ZONE 7

TABLE D.2-7

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	MW1-7PDI	MW3-7RI	
	LS7-GW-MW1-7PDI-10-01	LS7-GW-MW3-7RI-10-01	LS7-GW-MW3-7RI-10-01-D
	20100430	20100424	20100424
INORGANICS (UG/L)			
ARSENIC	0.76	0.23 J	0.21 J
COPPER	0.208	0.417	0.404
LEAD	0.074	0.092	0.062
INORGANICS, FILTERED (UG/L)			
ARSENIC	0.78	0.16 J	0.17 J
COPPER	0.089 J	0.369	0.41
LEAD	0.025	0.018 J	0.051
FIELD (C)			
TEMPERATURE	12.63	14.29	NA
FIELD (MG/L)			
DISSOLVED OXYGEN	0.65	1.25	NA
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	0.191	1.586	NA
FIELD (NTU)			
TURBIDITY	3.8	2	NA
FIELD (PPT)			
SALINITY	0.12	1.01	NA
FIELD (S.U.)			
pH	7.22	6.94	NA

TABLE D.2-7

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7, ROUND 1 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	MW4-7RI LS7-GW-MW4-7RI-10-01 20100424
INORGANICS (UG/L)	
ARSENIC	1.12
COPPER	0.433
LEAD	0.031
INORGANICS, FILTERED (UG/L)	
ARSENIC	1.1
COPPER	0.34
LEAD	0.019 J
FIELD (C)	
TEMPERATURE	17.81
FIELD (MG/L)	
DISSOLVED OXYGEN	0.83
FIELD (MS/CM)	
SPECIFIC CONDUCTANCE	1.789
FIELD (NTU)	
TURBIDITY	3.9
FIELD (PPT)	
SALINITY	1.07
FIELD (S.U.)	
pH	7.15

TABLE D.2-8

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	MW1-7PDI	MW3-7RI	
	LS7-GW-MW1-7PDI-10-02	LS7-GW-MW3-7RI-10-02	LS7-GW-MW3-7RI-10-02-D
	20100828	20100828	20100828
INORGANICS (UG/L)			
ARSENIC	1.56	0.22 J	0.23 J
COPPER	0.389	0.814	0.755
LEAD	0.184 U	0.266	0.057 U
INORGANICS, FILTERED (UG/L)			
ARSENIC	1.47	0.18 J	0.21 J
COPPER	0.046 J	0.81	0.766
LEAD	0.017 U	0.018 J	0.023 U
FIELD (C)			
TEMPERATURE	24.7	25.83	NA
FIELD (MG/L)			
DISSOLVED OXYGEN	0.32	1.23	NA
FIELD (MS/CM)			
SPECIFIC CONDUCTANCE	0.494	1.763	NA
FIELD (MV)			
OXIDATION REDUCTION POTENTIAL	-12.6	166.4	NA
FIELD (NTU)			
TURBIDITY	3.2	0	NA
FIELD (PPT)			
SALINITY	0.24	0.89	NA
FIELD (S.U.)			
pH	6.97	6.7	NA

TABLE D.2-8

SUMMARY OF ANALYTICAL PDI RESULTS FOR ZONE 7, ROUND 2 GROUNDWATER
LOWER SUBASE SOIL AND GROUNDWATER PDI COMPLETION REPORT AND FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

PARAMETER	MW4-7RI LS7-GW-MW4-7RI-10-02 20100829
INORGANICS (UG/L)	
ARSENIC	15
COPPER	0.249
LEAD	0.106 U
INORGANICS, FILTERED (UG/L)	
ARSENIC	15.1
COPPER	0.075 J
LEAD	0.018 U
FIELD (C)	
TEMPERATURE	23.75
FIELD (MG/L)	
DISSOLVED OXYGEN	0.38
FIELD (MS/CM)	
SPECIFIC CONDUCTANCE	0.924
FIELD (MV)	
OXIDATION REDUCTION POTENTIAL	-39.8
FIELD (NTU)	
TURBIDITY	1.1
FIELD (PPT)	
SALINITY	0.45
FIELD (S.U.)	
pH	7.07

APPENDIX E

KRIGING AND UNCERTAINTY ANALYSIS

E.1 KRIGING
E.2 UNCERTAINTY ANALYSIS

E.1 KRIGING

TECHNICAL MEMORANDUM
KRIGING OF SOIL DATA FOR LOWER SUBASE SOIL PDI COMPLETION REPORT AND LOWER SUBASE FS ADDENDUM
NSB-NLON, GROTON, CONNECTICUT

By: S. Paxton/Betty Li

Date: December 29, 2010 revised September 7, 2011

INTRODUCTION

In support of the Lower Subase Soil Pre-Design Investigation (PDI) Completion Report and Lower Subase Feasibility Study Addendum, three-dimensional modeling was performed using C Tech's Mining Visualization System (MVS) software, Version 9.22. MVS is a state-of-the-art visualization software package with a robust series of modules to assist in the creation of three-dimensional volumetric models for environmental analysis. This software was used to create estimated concentration distribution maps for polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), and lead in soil at Zones 1 through 4 and Zone 7 at the Lower Subase.

EXTENT OF CONTAMINATION

Kriging is a group of statistical techniques for estimating the value of an attribute at any unsampled location using a number of available data near the unsampled location. The process essentially provides weights for the available data in the local neighborhood and uses linear regression estimators to estimate the data values at unsampled locations. During the interpolation process, the estimation or error variance is minimized. MVS conducts the kriging process automatically. MVS uses the ordinary kriging method for interpolation. Ordinary kriging is a specific type of kriging technique which allows one to account for variations of local means of data.

When conducting kriging using MVS, input data (i.e., analytical results with x-, y-, z- coordinates) need to be provided and kriging parameters need to be specified. This input information is discussed below in detail.

Input Data

For this project, the soil data from Zones 1 through 4 were assessed together and the data from Zone 7 were assessed separately. Zones 1 through 4 were analyzed together due to the proximity of the zones to each other and the spatial correlation among the data. Zone 7 was assessed separately due to its spatial detachment from Zones 1 through 4. Zones 5 and 6 did not have good data coverage spatially

and the spatial correlation of the data could not be quantified due to a limited number of data, so it was decided that modeling in the two zones would not be beneficial.

The input data provided to MVS for kriging include the following:

- X and Y coordinates for each sample location
- Elevation in feet for each sample location
- Sample result in mg/kg
- Ground Surface Elevation in feet for each sample location

All available data were provided to MVS. For locations where there were duplicate results, the software first calculates an average and then only uses the average as the data point. After the averaging, all data points were assumed to be equally weighted for kriging.

Kriging Parameters

Grid

Based on the data density, it was agreed that the grid spacing is five-foot in both x- and y- directions horizontally and two-foot vertically. Provided below are the number of nodes of the kriging domains for the two established zones (i.e., Zone 1 through 4 and Zone 7):

- Zones 1 through 4
  x = 201
  y = 364
  z = 10

- Zone 7
  x = 94
  y = 159
  z = 10

The same grid was used for Uncertainty Analysis (discussed in separate memorandum). After kriging, the kriging results were exported into a text format file and imported into the Geostatistical Software Library (GSLIB) for the Uncertainty Analysis. Because GSLIB uses cell data for analysis while MVS uses nodal data, the kriging domain is slightly smaller than the domain for uncertainty analysis; however, these differences were noticed and accounted for in the uncertainty analysis.

Searching Mechanism

When kriging, it is important to specify reasonable Reach and Point values. The Reach and Point values together define a searching window that controls how many sample data will be used in kriging at a specific location. The Reach indicates a radial distance from any model node and essentially controls the size of the searching window. Samples outside of the searching window will not be used in interpolation at the specific location. The Point parameter indicates the maximum number of closest sample data that will be used within the searching window during analysis

The Reach value for kriging was generated automatically by the MVS software. By setting zero (default value) for the Reach in MVS, the software automatically calculates a Reach value that is approximately two-thirds of the longest distance between any two data points in the data set. In this way, the Reach value for each zone and parameter is unique. Examination of data values and data density and preliminary contouring suggested that local data variation (i.e., from a contaminated zone to a clean zone) was relatively significant; therefore, the Point value was set to 6 for the pre-PDI kriging and 8 for the after PDI kriging and kept uniform for each model, which means the 6 or 8 nearest data points were used for kriging at a specific location within the radius of the Reach (see the “Sensitivity Analysis” below for more information).

Semivariogram

The MVS software contains an algorithm that can assess the user’s dataset and automatically determine the semivariogram based on a best fit of the data. A semivariogram is essentially the quantification of spatial correlation of data, where the quantified spatial correlation will then be used in kriging. A semivariogram model is typically determined as follows: 1) the dataset is evaluated to calculate the differences between all data pairs separated by a series of distances; 2) a graph is then generated to show the calculated variances with distances; 3) a mathematical model (i.e., semivariogram model) is then fit to the graph and usually the model is determined by the best fit with professional judgment. Parameters describing the mathematical model include range, sill, and nugget. The range is the distance at which spatial correlation disappears. The sill is the variance plateau (highest variance) that the semivariogram model reaches at the range. The nugget accounts for the variance among data collected from the same location (if sampling repeats at the same location), and is usually used to represent possible measurement errors or other sources of variation. For this project, MVS automatically determined the semivariogram model based on the input data and no constraints were placed on its semivariogram modeling algorithm. It is important to note that MVS uses a nugget value of 0 which

cannot be changed. CTech explains that “this restriction of the nugget [to only be a value of 0] provides much more representative results than allowing the nugget to be greater than zero, and thus allowing estimated data points to be different than the measured data points when they coincide.”

Based on the input data and parameter sets, the MVS conducts ordinary kriging automatically. The kriging results of the three-dimensional model were then processed into two-foot slices for presentation purposes. In order to achieve this, the Krig 3D Geology module in MVS was used. This module is generally used to create models of the lithology of a site. Lithology data was not available, but the module still proved useful for this analysis. A geology file was created for each parameter and each modeled area using the coordinates for the sample locations that were used for kriging the analytical data. For each location, two-foot elevation data was entered into the geology file to create the two-foot elevation slices from ground surface to the lowest sampled elevation. Once this data was processed, the three-dimensional model could be subset into the desired two-foot elevation slices. The ultimate goal was to show the resulting slices in plan view figures; therefore, the geology file was designed to display the middle elevation of the each two-foot elevation interval. For example, an elevation interval of 8 to 10 feet would show the data for elevation 9 feet.

The focus of the SAP was to identify the extent of contaminated soil. Both Residential and Industrial criteria were considered to determine the extent. It was deemed more valuable to subset the data based on a color scale as opposed to physically subsetting the three-dimensional model based on the different criterion. As a result, the slices were color coded based on the different criteria to assist engineering staff in their analysis of the data and decisions for future sampling locations.

The two-foot slices were exported as georeferenced image files. These image files were then imported into ArcGIS 9.3 software and displayed along with the New London base map spatial data for the generation of report figures. The resulting figures showing the kriging results for PAHs, TPH, and lead are provided in Appendix B of the Lower Subase Soil PDI SAP.

Sensitivity Analysis

As stated, several kriging parameters are automatically specified by the MVS software, including the semivariogram and the Reach value. Among the user specified parameters, the Point value (see **Searching Mechanism** above) influences the kriging results the most.

Kriging is essentially a linear estimator [best linear unbiased estimator (B.L.U.E.)], where the kriging estimate at an unsampled location is calculated as the weighted average of the available sample data within the searching window. The weights for these available data are determined by the kriging system

which takes the spatial structure into consideration. Therefore, in addition to the spatial structure (characterized by semivariograms), the searching window specification directly affects kriging estimates. As described previously, the searching window is defined by specifying Reach and Point in the MVS software. While the Reach value can be determined automatically by the software, user needs to specify the Point value.

Specification of the Point value is typically based on professional judgment and several factors are considered, including data density, spatial variability of the data, and data configuration (i.e., whether data is located in a cleaner or more contaminated area). Using a larger Point value would result in a smoother map, where the map depicts more long-range spatial structures. If the purpose of kriging is to depict local features of the data, one should limit the size of the searching window by using a smaller Point value. For this study, a smaller Point value was determined to be more appropriate because the data values vary significantly in relatively short distances and using data from cleaner areas to estimate the more contaminated areas would lead to underestimation of the contamination levels.

In the previous kriging modeling conducted prior to the PDI sampling, the Point value was set to 6 considering that the data were relatively sparse and the data variability was relatively high. Because soil data were typically collected from one or two depths at a sampling location and the horizontal spacing of the data were much larger than the vertical spacing, a Point value of 6 typically results in the 3 to 4 closest locations being included in the searching window and thus used to calculate a kriging estimate at an unsampled location (the unsampled location is in the center of the searching window).

After the PDI sampling, additional data are available to refine the previous kriging estimates, providing the potential of increasing the Point value. A sensitivity analysis was conducted by comparing the 2010 kriging maps generated using a Point value of 6 versus using a Point value of 8. Visual comparison of the two sets of maps suggests that with only minor differences the two sets of maps are similar, as exemplified on Figures E.1.45 through E.1.51, indicating that the kriging estimates are not very sensitive to the change of the Point value. Considering the increased data density, a Point value of 8 was determined appropriate for kriging after the PDI sampling, resulting in data points from the 4 to 5 closest locations being used for a kriging estimate. A Point value of 8 was used on Figures E.1.1 through E.1.44. For this report, the kriging results were displayed in a panel map format, displaying both the pre-PDI results (2009 Kriged Data) and the post PDI results (2010 Kriged Data) for a specific elevation range on the same map. This provides a quick visual a comparison of the results from both sampling events. For some parameters and locations, such as BaPEQ in Zones 1 through 4 at Elevation 4 to 6 feet (Figure E.1.3), the PDI results reduced the estimated areas of contamination. For other parameters and locations, such as Zone 7 lead at Elevation 6 to 8 feet (Figure E.1.38), the estimated area of contamination was

shifted due to the PDI sample results. The 2009/2010 panel maps for all contaminants and zones analyzed are included in Appendix E.1.

CROSS-SECTIONS

Cross-sections were also generated using C Tech's MVS software to help depict the vertical distribution of soil contamination and determine appropriate sample locations. This software package has modules that allow users to easily create fence diagrams from their three-dimensional models. For this project, fence lines were drawn through all of the sample locations that yielded the highest concentrations. This provided a good illustration of the vertical extent of the contamination near these locations. A text file was generated and imported into the model to accurately visualize the groundwater table in relation to the estimated concentrations where groundwater level data was available. All cross-section figures displayed sample locations that were used in creating the cross-sections and sample locations that may have potentially influenced the estimated concentration. The two sets of locations were symbolized differently in the resulting cross-section figures and the offset distance was indicated for the potentially influential locations. Images of these cross-sections with the posted sample locations were exported as image files. These images were imported into ArcGIS 9.3 where additional textual information was added to the figures. The resulting cross-section figures are provided and discussed in Appendix E.1 of the Lower Subase Soil PDI Completion Report and FS Addendum.

ZONE 3 LEAD KRIGING FIGURES

Zone 3 lead kriging figures were artificially enhanced based on site history. Blue areas were artificially placed over kriging in the locations and depths where soil was excavated and replaced with clean fill (Figures E.1.23 though E.1.26). Under former Building 31, because soil was first analyzed for lead, then excavated, stabilized with cement, and replaced in the excavation, soil concentrations in those areas were not kriged. Instead, the areas and depths of documented cement-stabilized soil backfill (Figure 4-1) were colored orange on Figures E.1.23 through E.1.26.

In addition, kriging input was modified to more accurately represent the concentrations of lead in the soil wall of the Albacore Road excavation. The west wall of the excavation west of former Building 31 was 140 feet long and 6 feet deep. One composite sample was taken from the northern half of the west wall, that is, six grab samples were collected from a vertical face 70 feet long and 6 feet deep and combined into one sample to represent that entire area. Similarly, a second composite sample was taken of the southern half of the west wall. The analytical results of the north and south composite samples were 4390 mg/kg and 1880 mg/kg, respectively. Kriging uses point data, therefore the input needed to be adjusted to effectively represent composite samples. For the 2009 kriging, nine artificial locations with

concentrations of 7500 mg/kg each (three samples each at 0 to 2 foot, 2 to 4 foot, and 4 to 6 foot depths below ground surface) were added to the data set in the area between the excavation wall and the river. This higher concentration was used so that kriging would show this area as uniformly greater than 1090 mg/kg (orange) in Soil SAP Figure 17-15.

For the 2010 kriging, Tetra Tech re-evaluated how to most accurately represent the data in the excavation wall. For the 2010 kriging, artificial locations were evenly spaced north to south along the excavation wall to better represent the two composite samples. Eight artificial locations were spaced approximately 17 feet apart along the length of the wall. The four locations near the northwestern portion of the wall were assigned the same concentration as sample location 2-EXWW-ALBACORE-06 (4390 mg/kg) and the four locations near the southeastern portion of the wall were assigned the same concentration as sample location EXWW-ALBACORE-06 (1880 mg/kg) (see inset on Figures E.1.24 through E.1.26). In the Draft FS Addendum, artificial data points were added to the kriging model at 1, 3, 5, 7, and 9 feet bgs to represent the vertical wall. During review of the kriging for the Draft Final FS Addendum, it was realized that inclusion of the artificial data points at 7 and 9 feet bgs caused the kriging to artificially project high lead concentrations below the groundwater table in Zones 2 and 3. Because the actual excavation stopped at the groundwater table, the artificial data points for 7 and 9 feet bgs were removed from the model for the draft Final Report. To prepare the Zone 1 through 4 lead panel figures, the 2009 data was re-evaluated using the artificial data points to represent the composite samples. As a result, the 2009 Zone 1 through 4 lead panels shown here do not match those of the Soil SAP, but provide a more useful comparison to the 2010 panels. The panel called “2009 Kriged Data” includes only historic data while the panel called “2010 Kriged Data”, includes both historic and PDI data. Note that although the artificial locations (2-EXWW-ALBACORE-06-01 through -04 and EXWW-ALBACORE-06-01 through -04) are shown in plan on the Figure E.1.23 through E.1.26 insets, only the two “real” composite samples (2-EXWW-ALBACORE-06 and EXWW-ALBACORE-06) are shown on E.1.28.

ZONE 1-4

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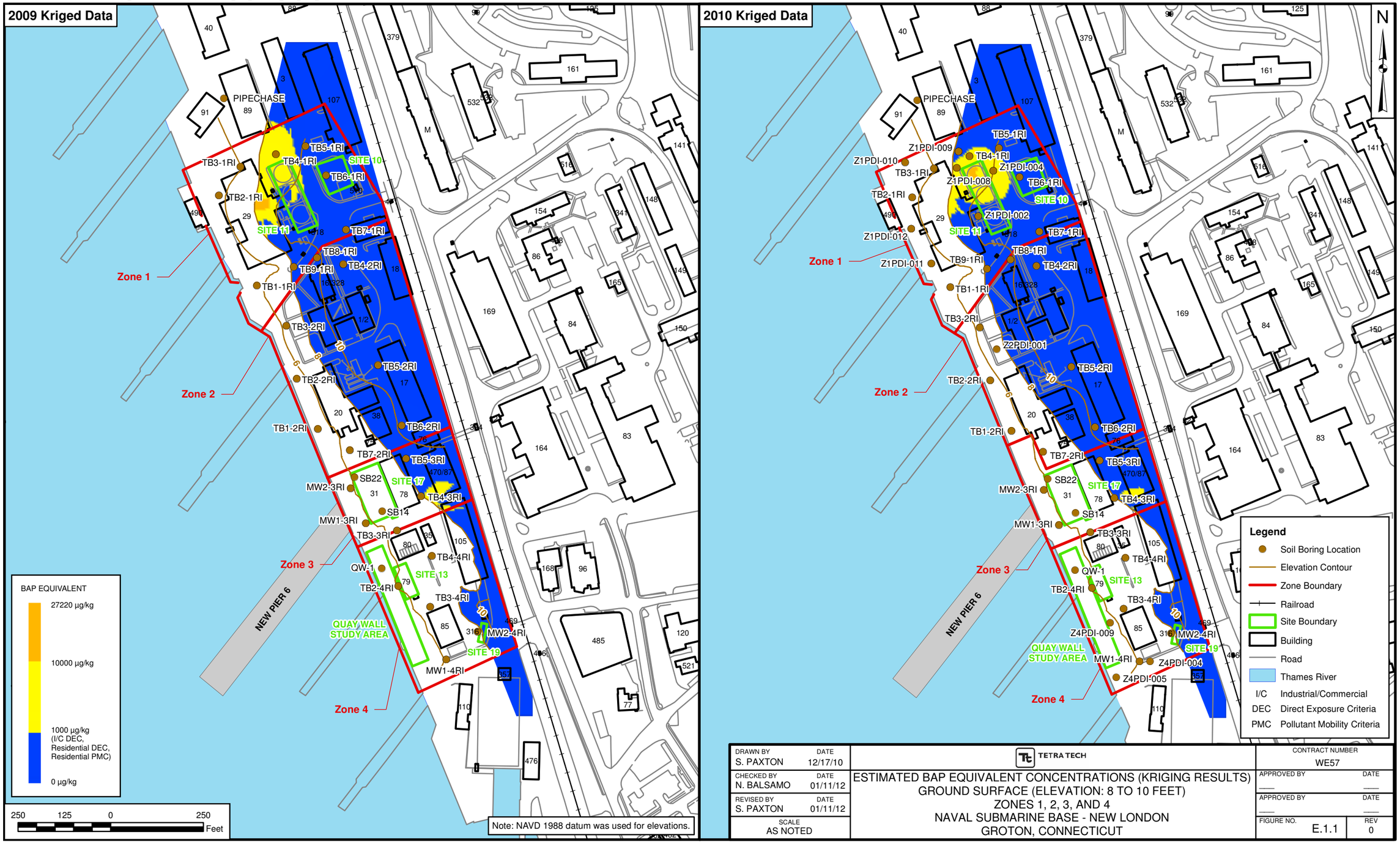

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.1 REV 0

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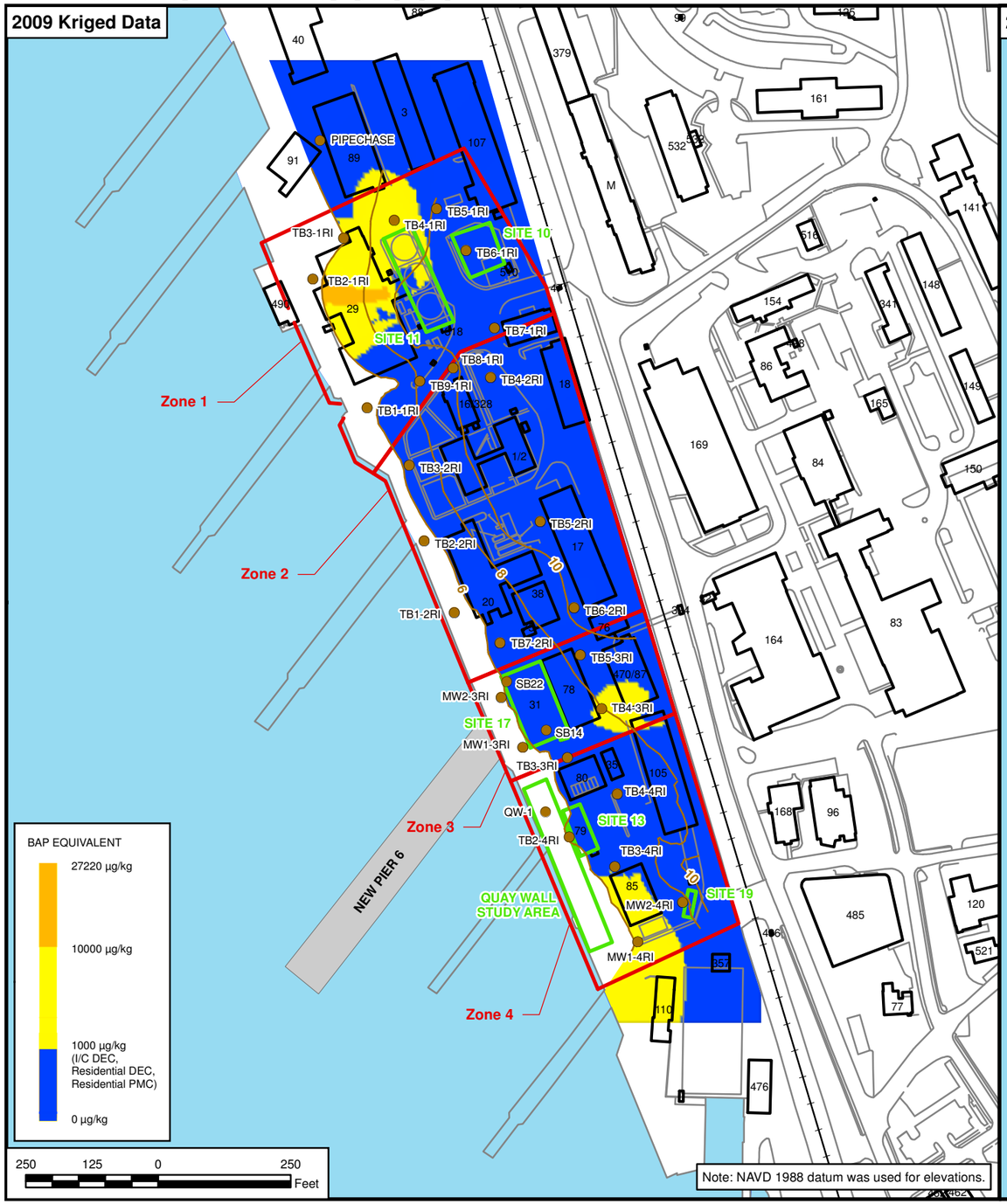

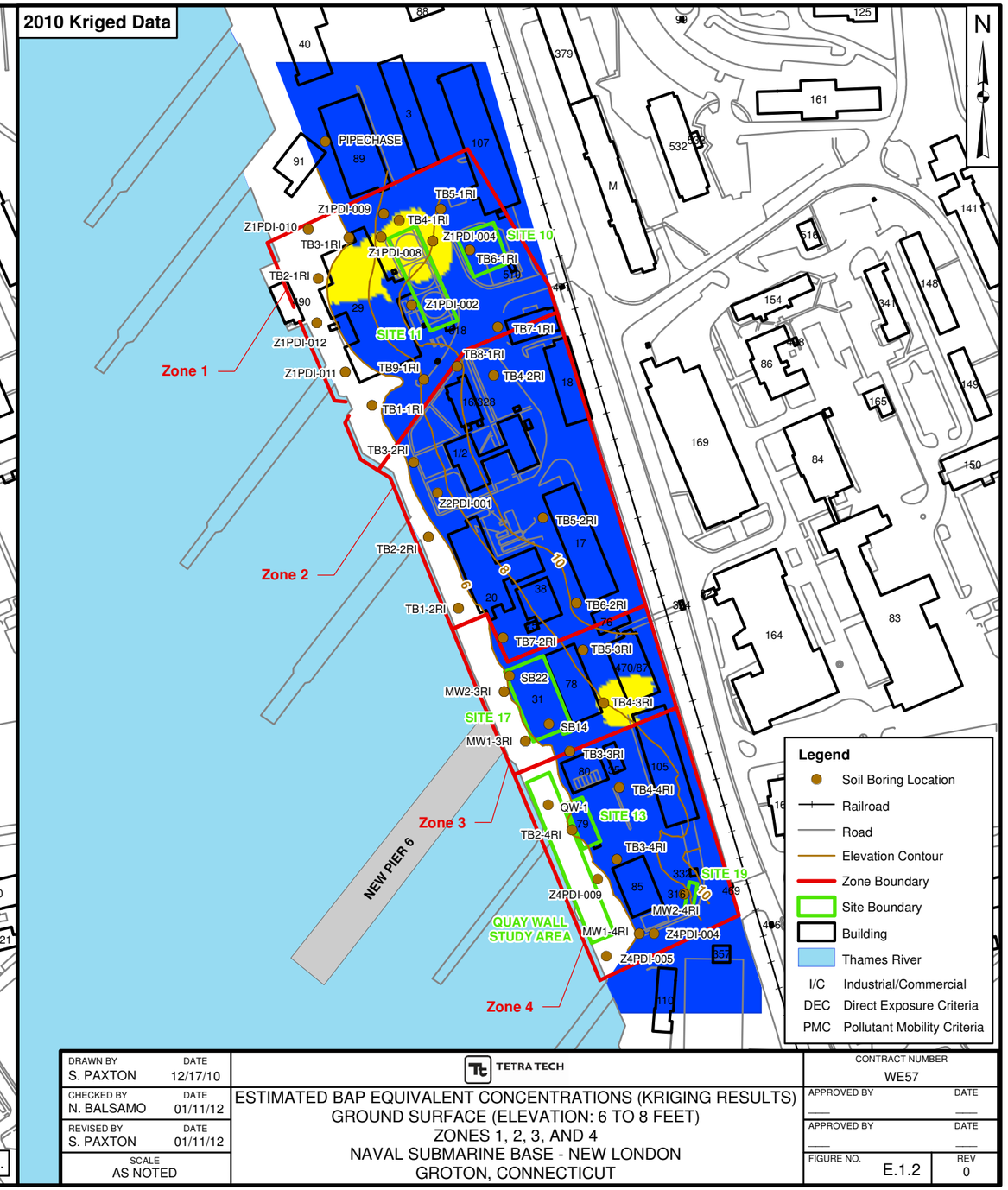

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.2 REV 0

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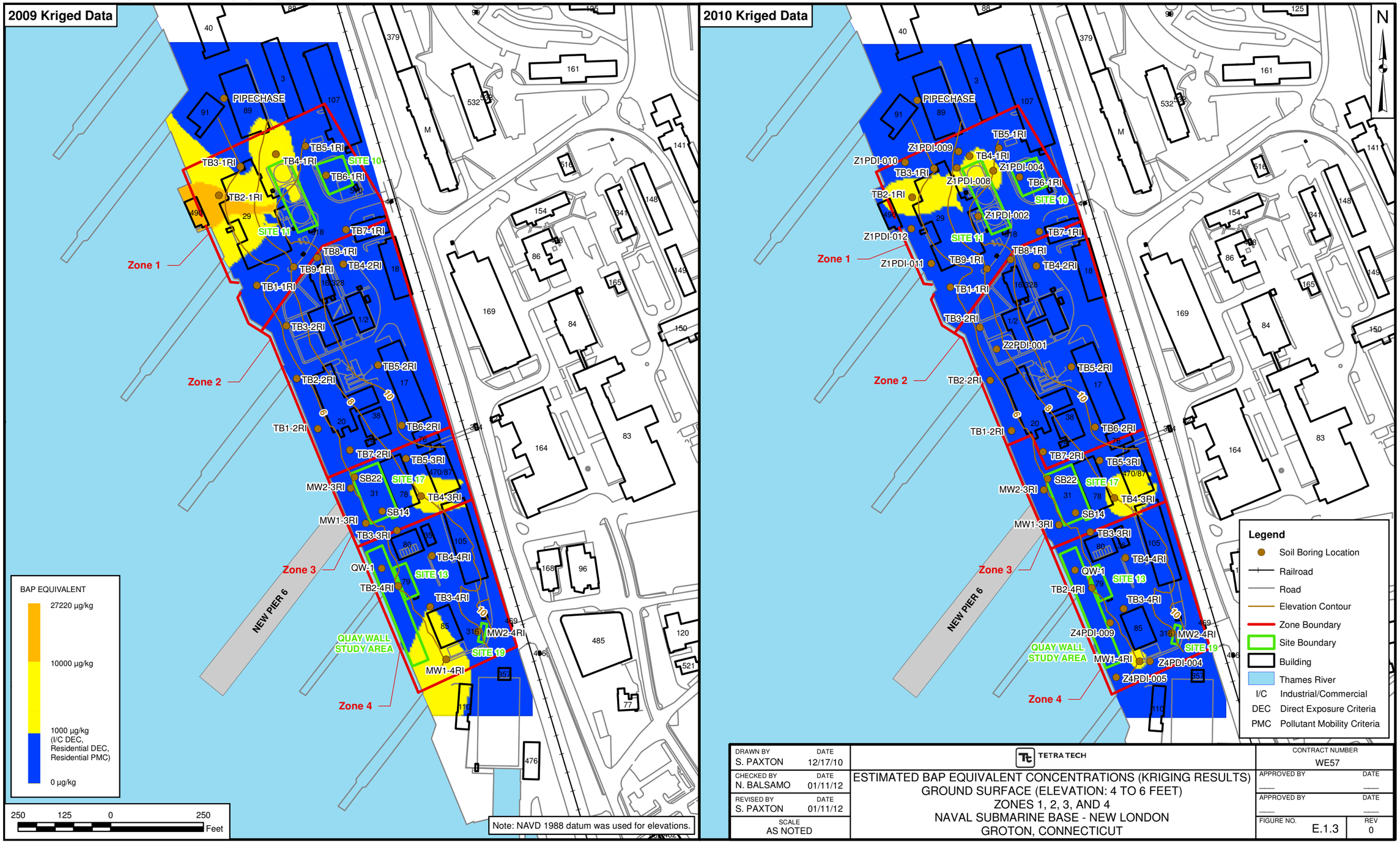

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 4 TO 6 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.3 REV 0

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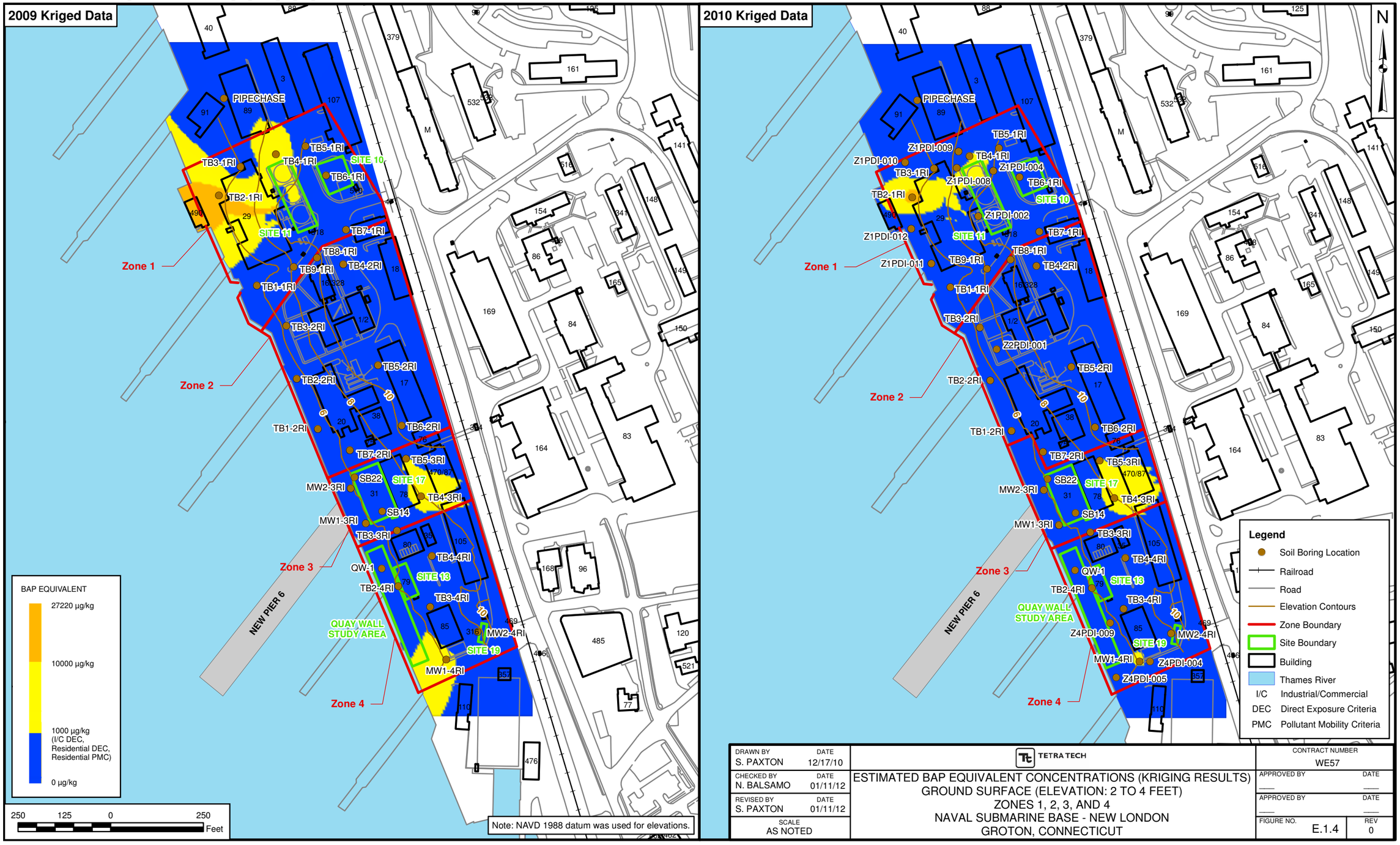

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CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 2 TO 4 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.4 REV 0

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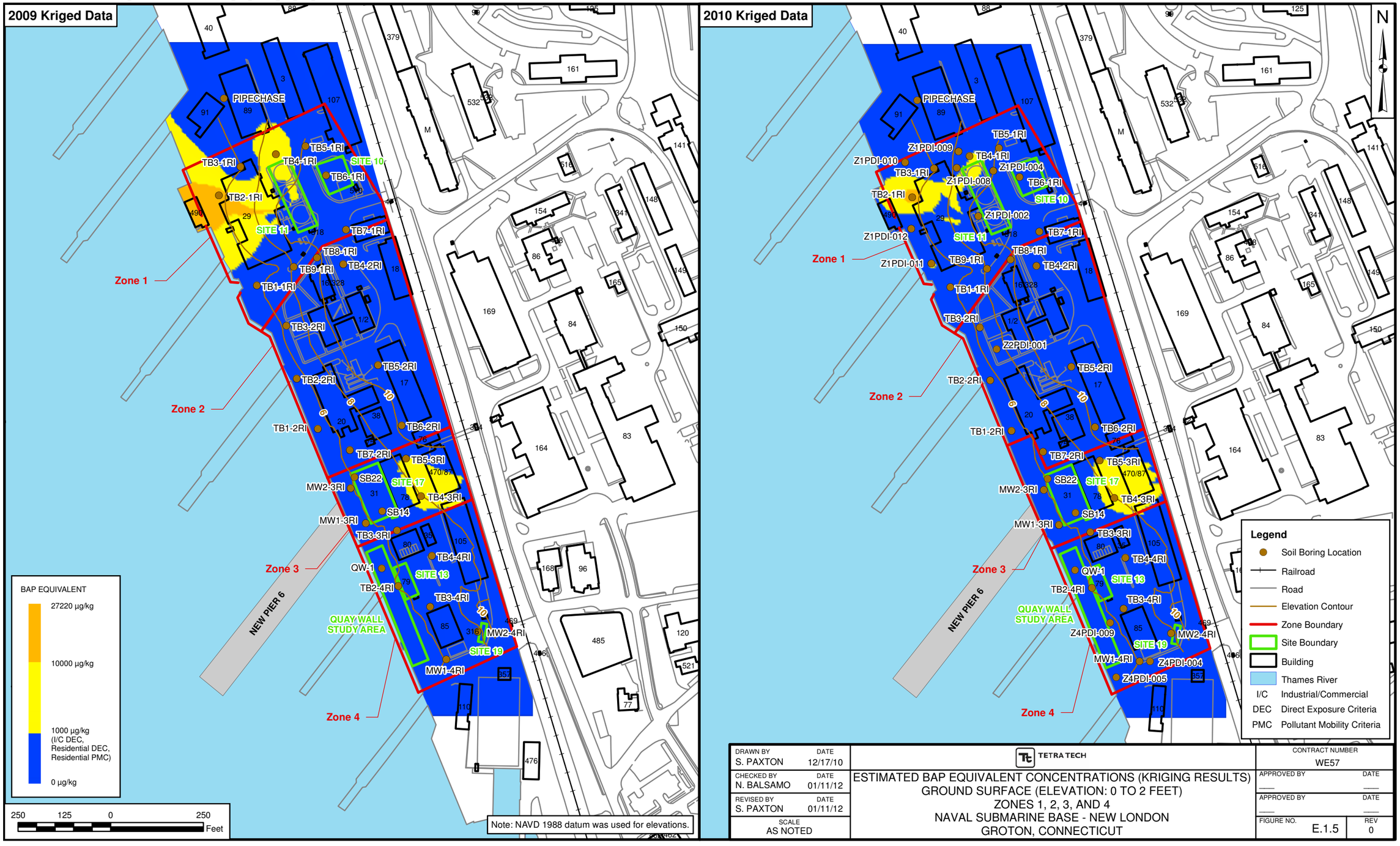

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CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 0 TO 2 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.5 REV 0

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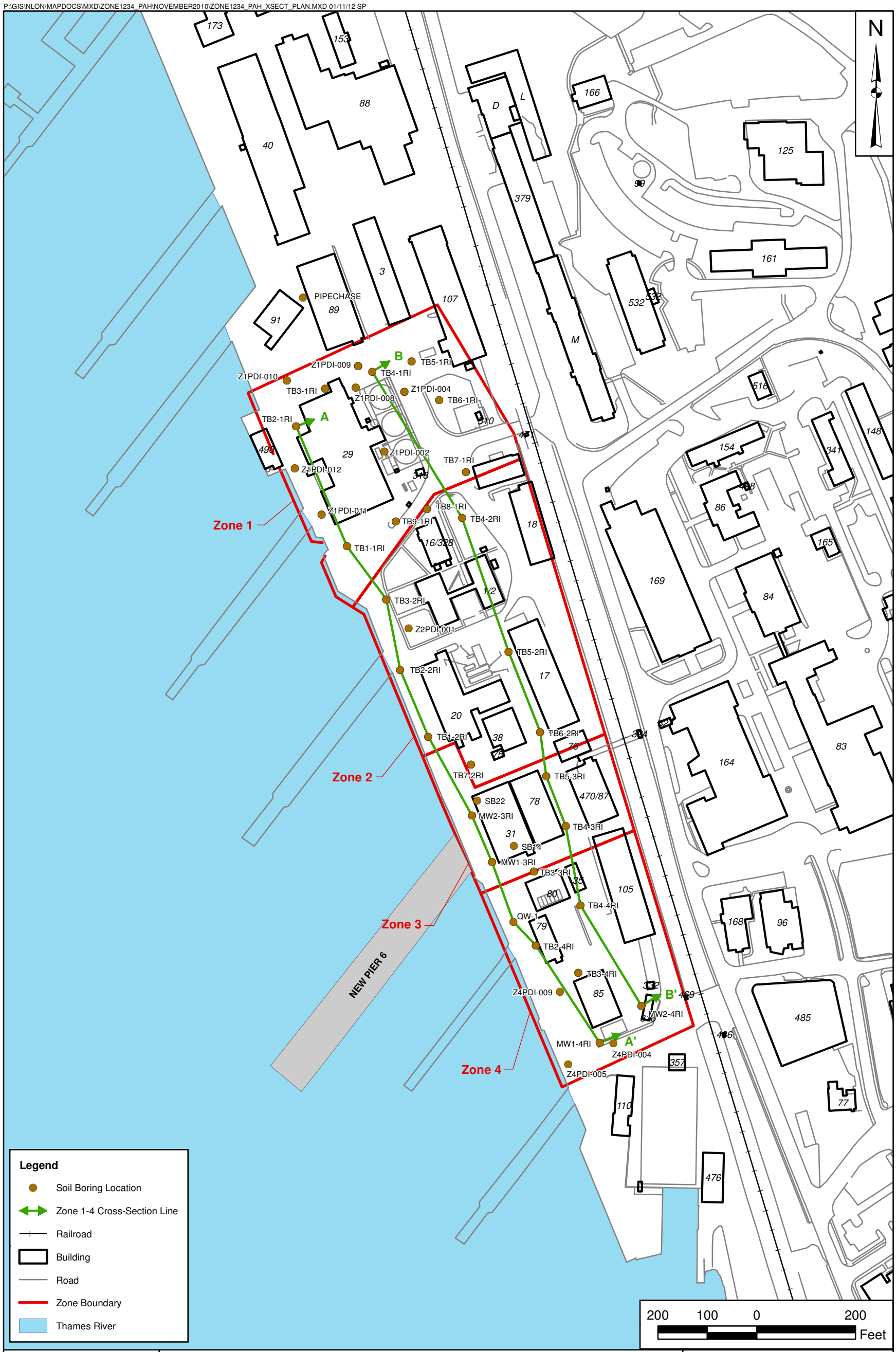

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S. PAXTON	12/17/10		2630
CHECKED BY	DATE	BAP EQUIVALENT CROSS-SECTION MAP ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY / DATE
N. BALSAMO	01/11/12		_ / --
COST/SCHED-AREA			APPROVED BY / DATE
			-- / --
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AS NOTED			E.1.6 / 0

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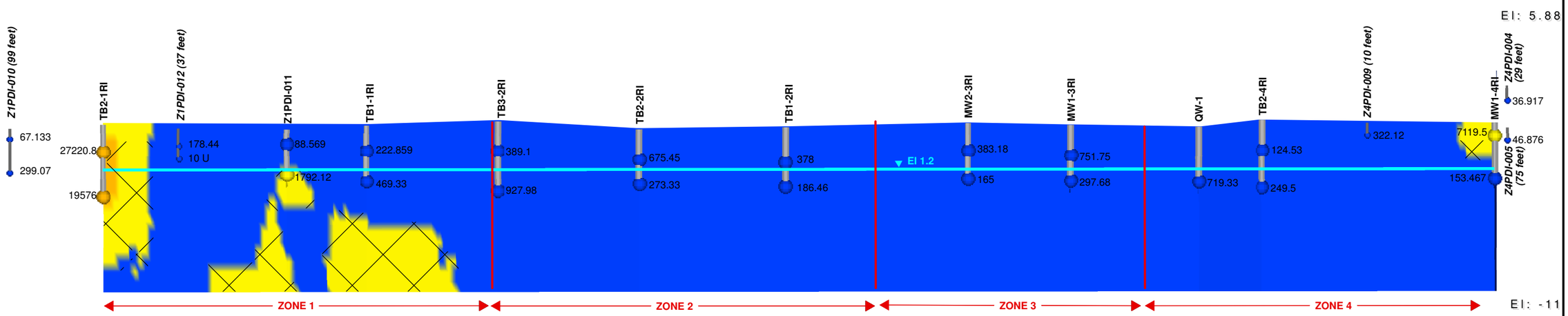

LEGEND

PAH

10000 µg/kg

1000 µg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Not Applicable for I/C Scenario

Note: NAVD 1988 datum was used for elevations.

105 52.5 0 105 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/12/12	BAP EQUIVALENT CROSS-SECTION A-A' WITH PDI SAMPLE LOCATIONS ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — / DATE —
REVISED BY S. PAXTON	DATE 01/12/12		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. E.1.7 / REV 0

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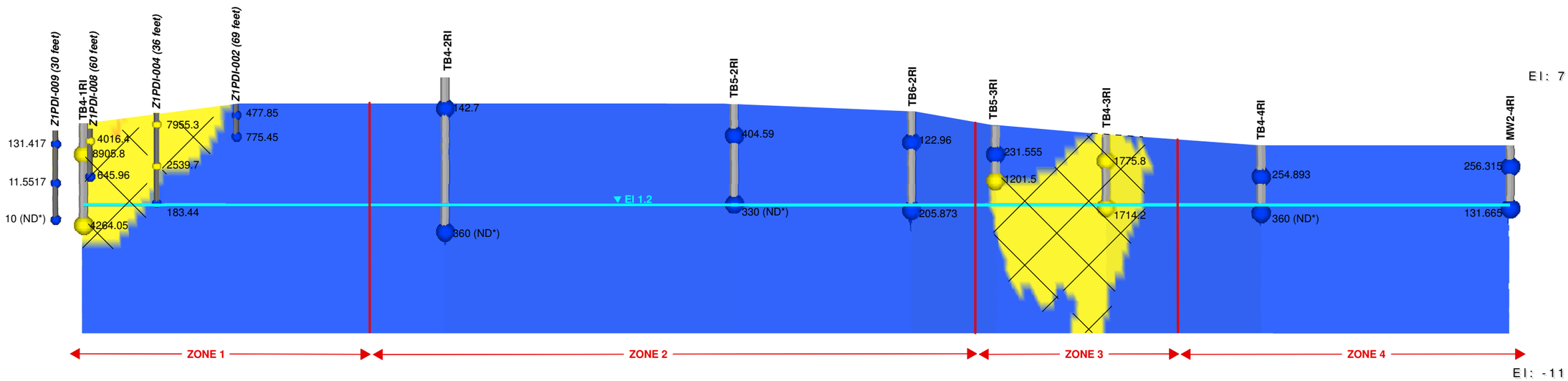

LEGEND

PAH

10000 µg/kg

1000 µg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Not Applicable for I/C Scenario

Notes:
1) NAVD 1988 datum was used for elevations.
2) * indicates the result is a non-detect and one half of the detection limit was used for kriging.

110 55 0 110 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630	CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 08/16/11	BAP EQUIVALENT CROSS-SECTION B-B' WITH PDI SAMPLE LOCATIONS ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY —	DATE —
REVISED BY S. PAXTON	DATE 08/16/11		APPROVED BY —	DATE —
SCALE AS NOTED			FIGURE NO. E.1.8	REV 0

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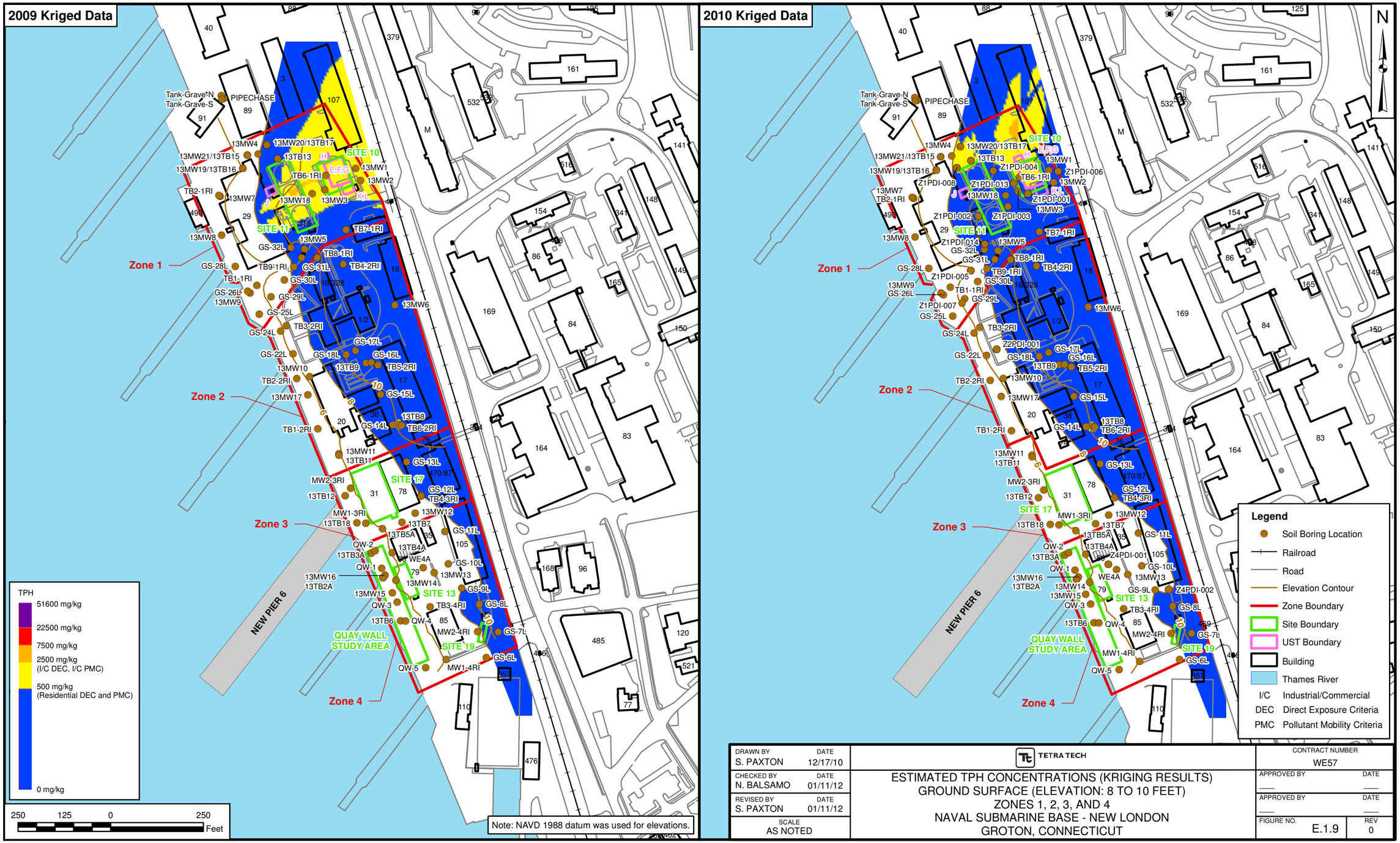

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 8 TO 10 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.9 REV 0

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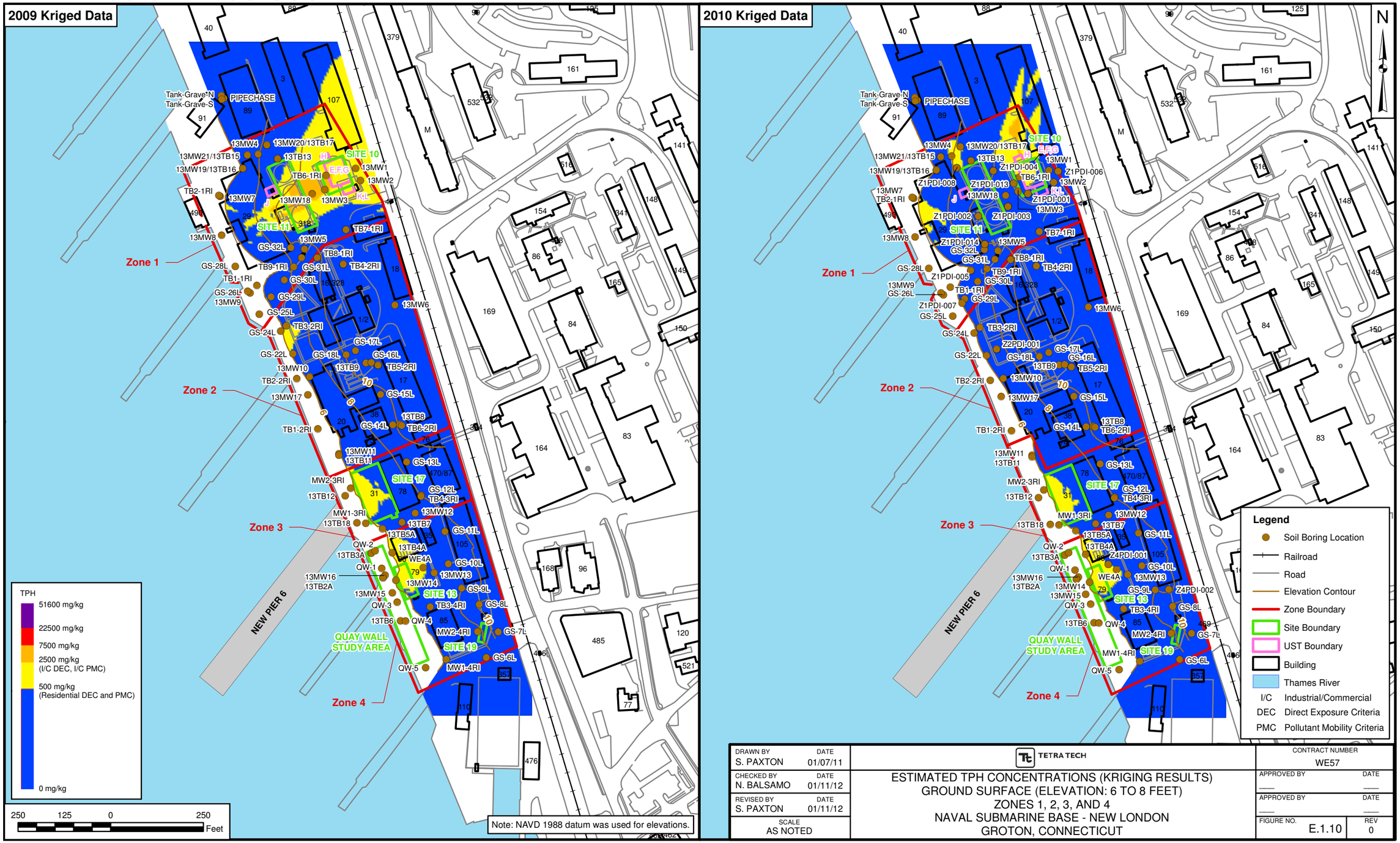

DRAWN BY S. PAXTON	DATE 01/07/11	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.10 REV 0

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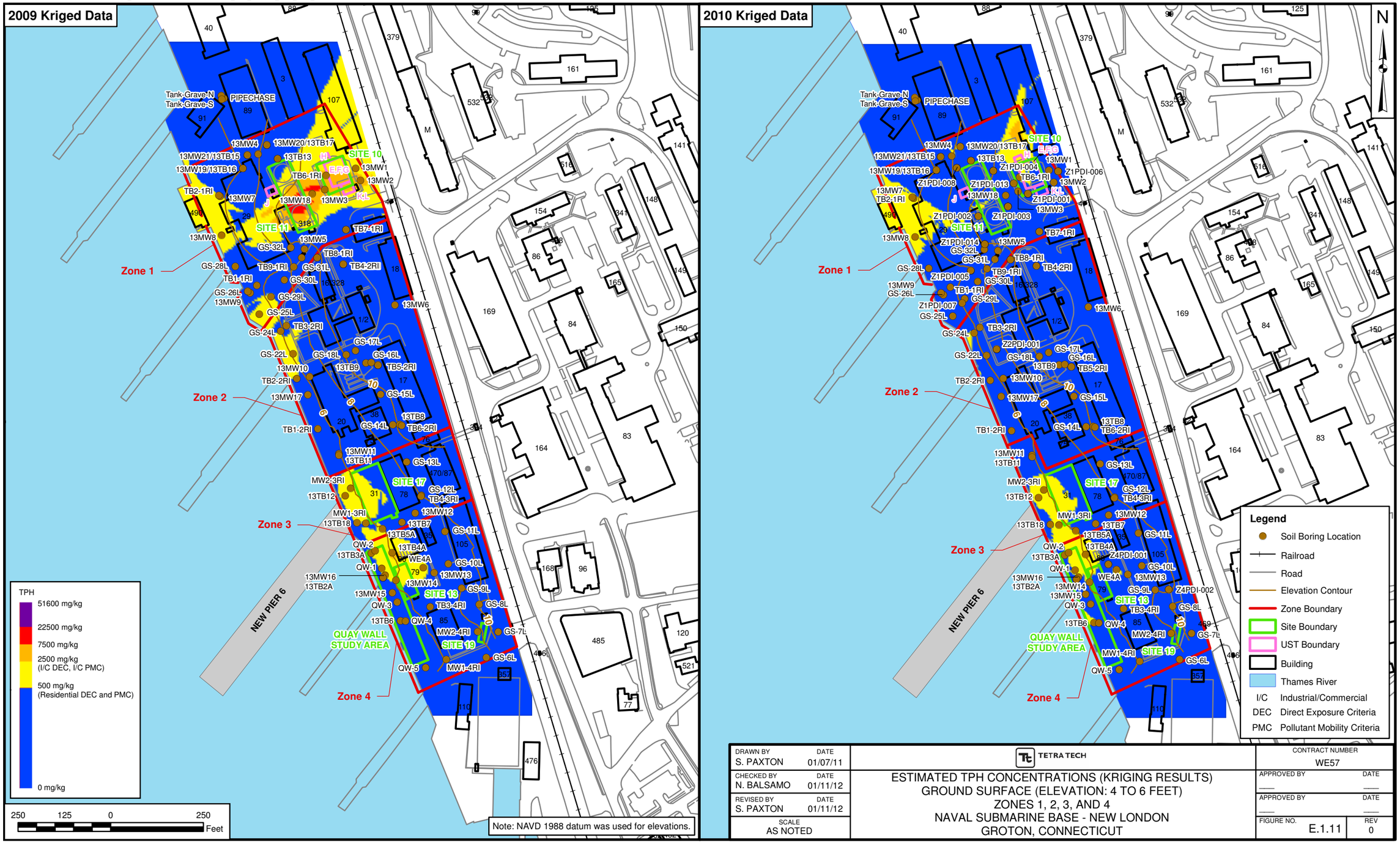

DRAWN BY S. PAXTON	DATE 01/07/11	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 4 TO 6 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.11 REV 0

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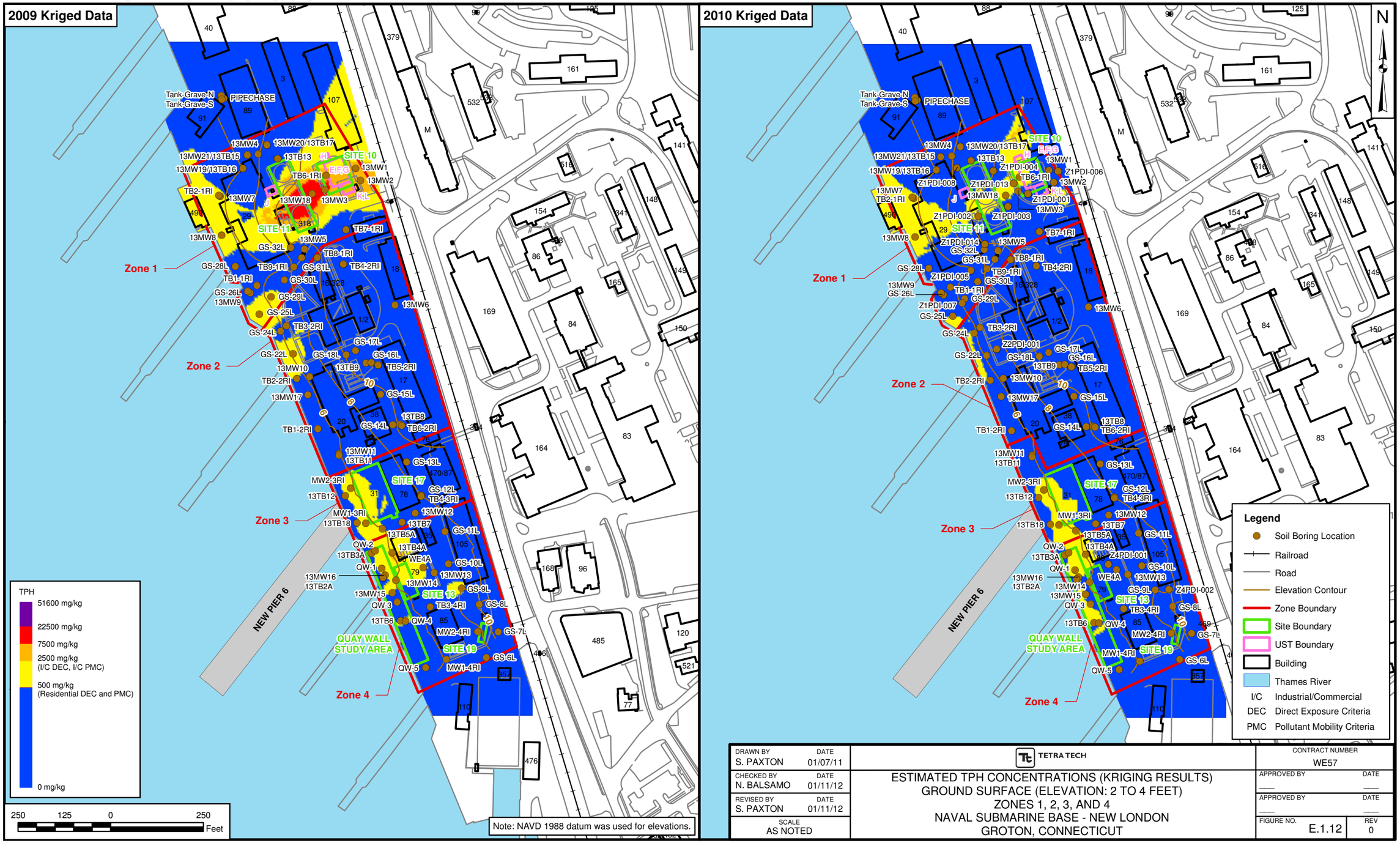

DRAWN BY S. PAXTON	DATE 01/07/11	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 2 TO 4 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.12 REV 0

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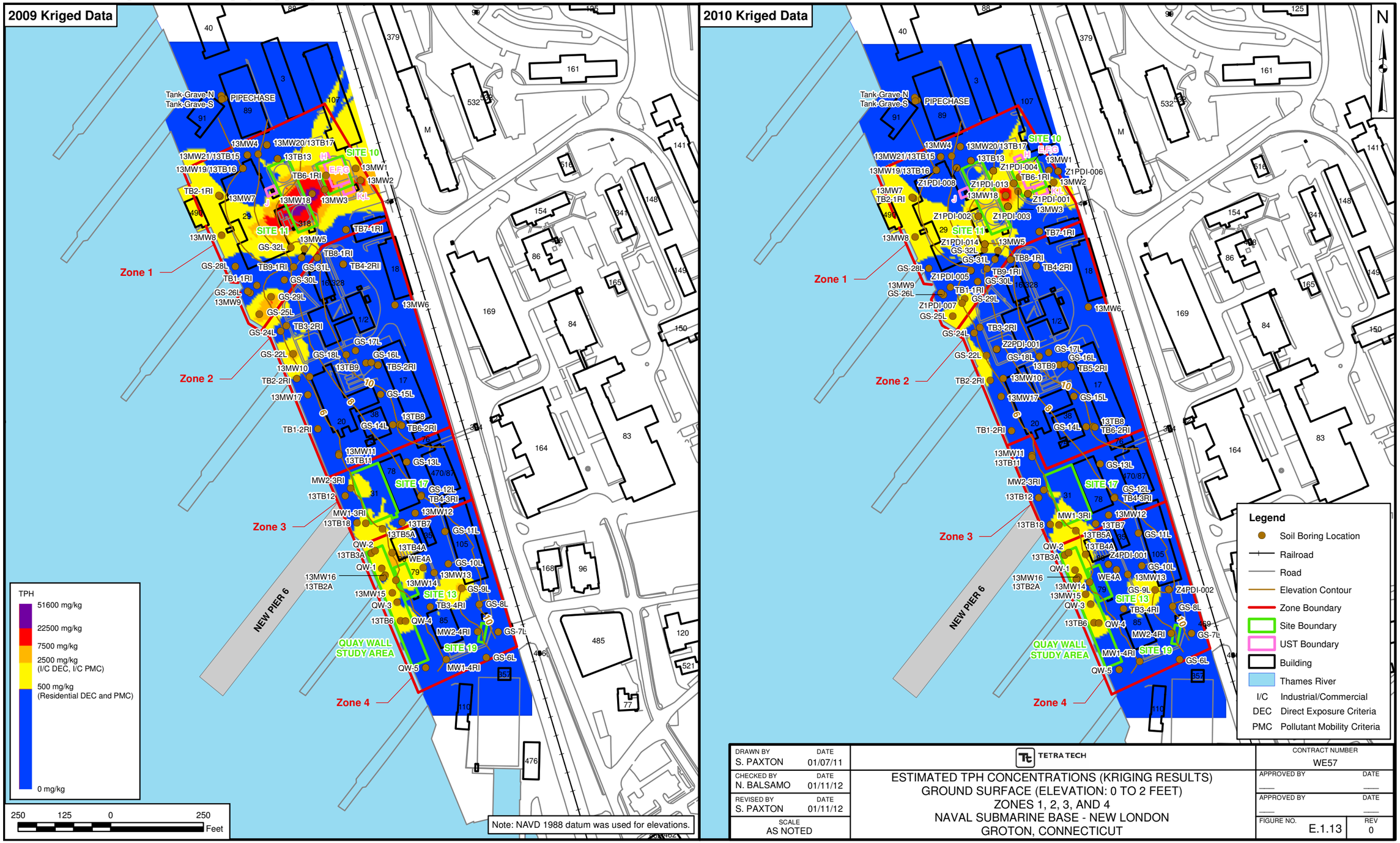

DRAWN BY S. PAXTON	DATE 01/07/11	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 0 TO 2 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.13 REV 0

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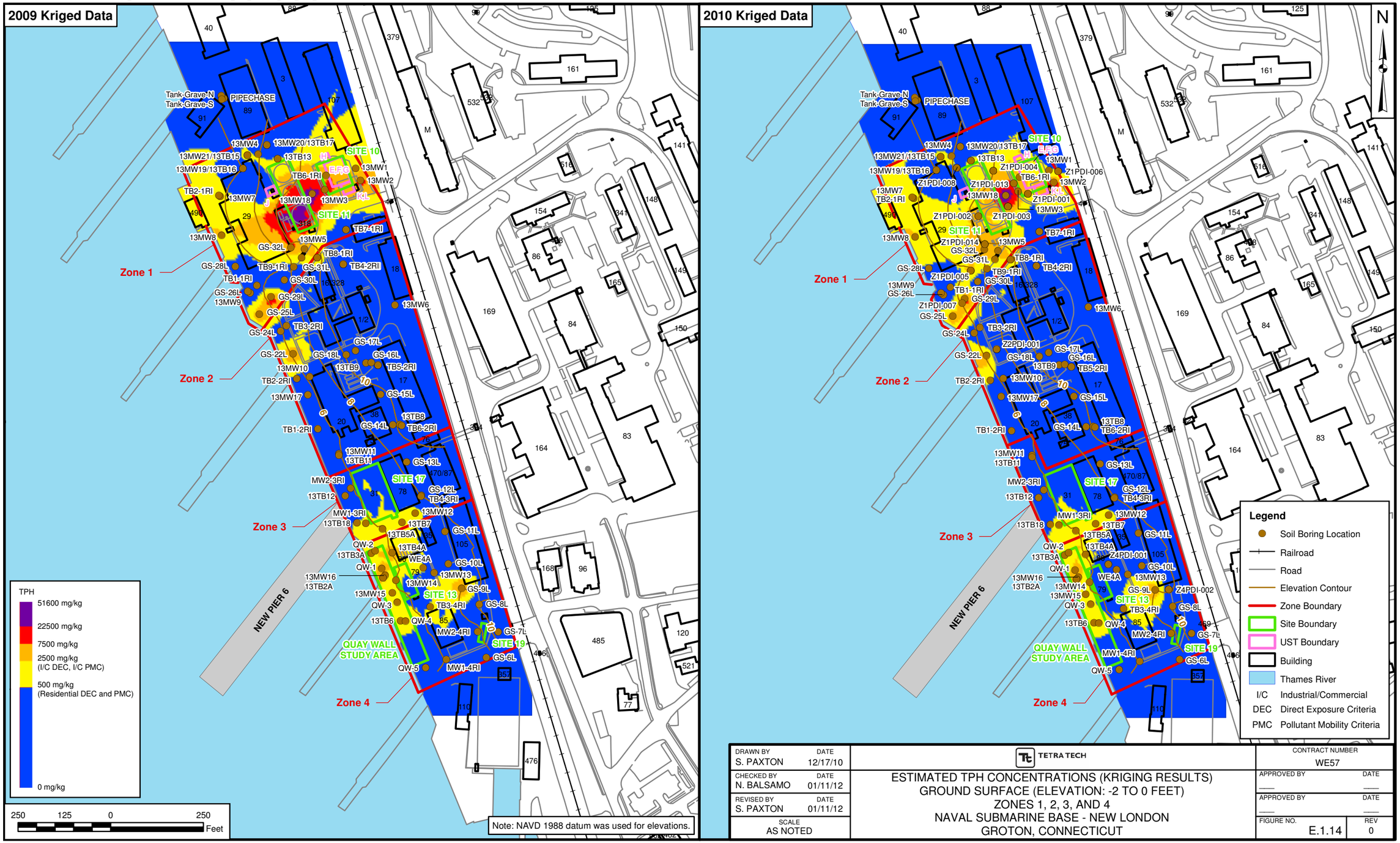

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: -2 TO 0 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.14 REV 0

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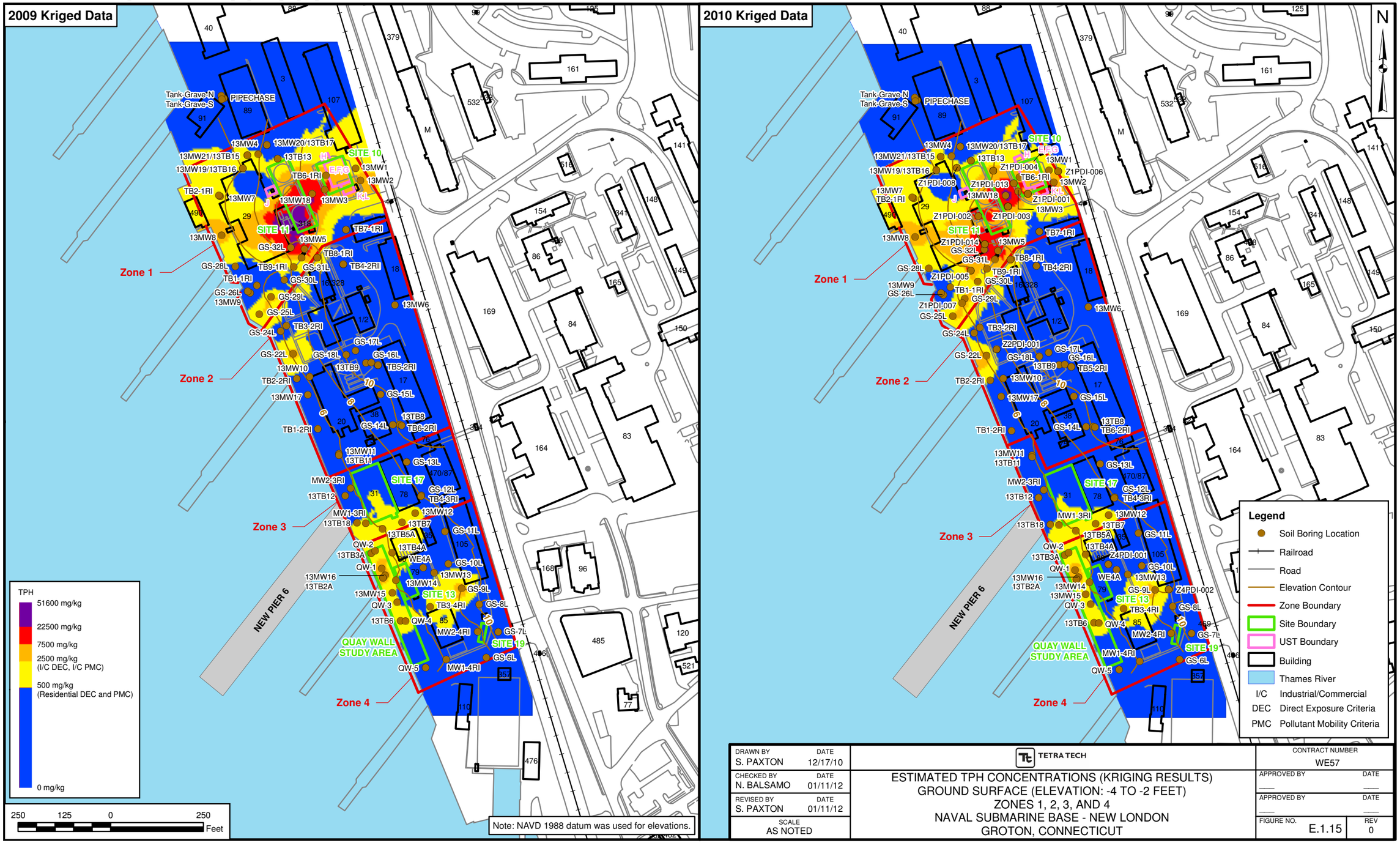

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: -4 TO -2 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY / DATE
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY / DATE
SCALE AS NOTED			FIGURE NO. E.1.15 / REV 0

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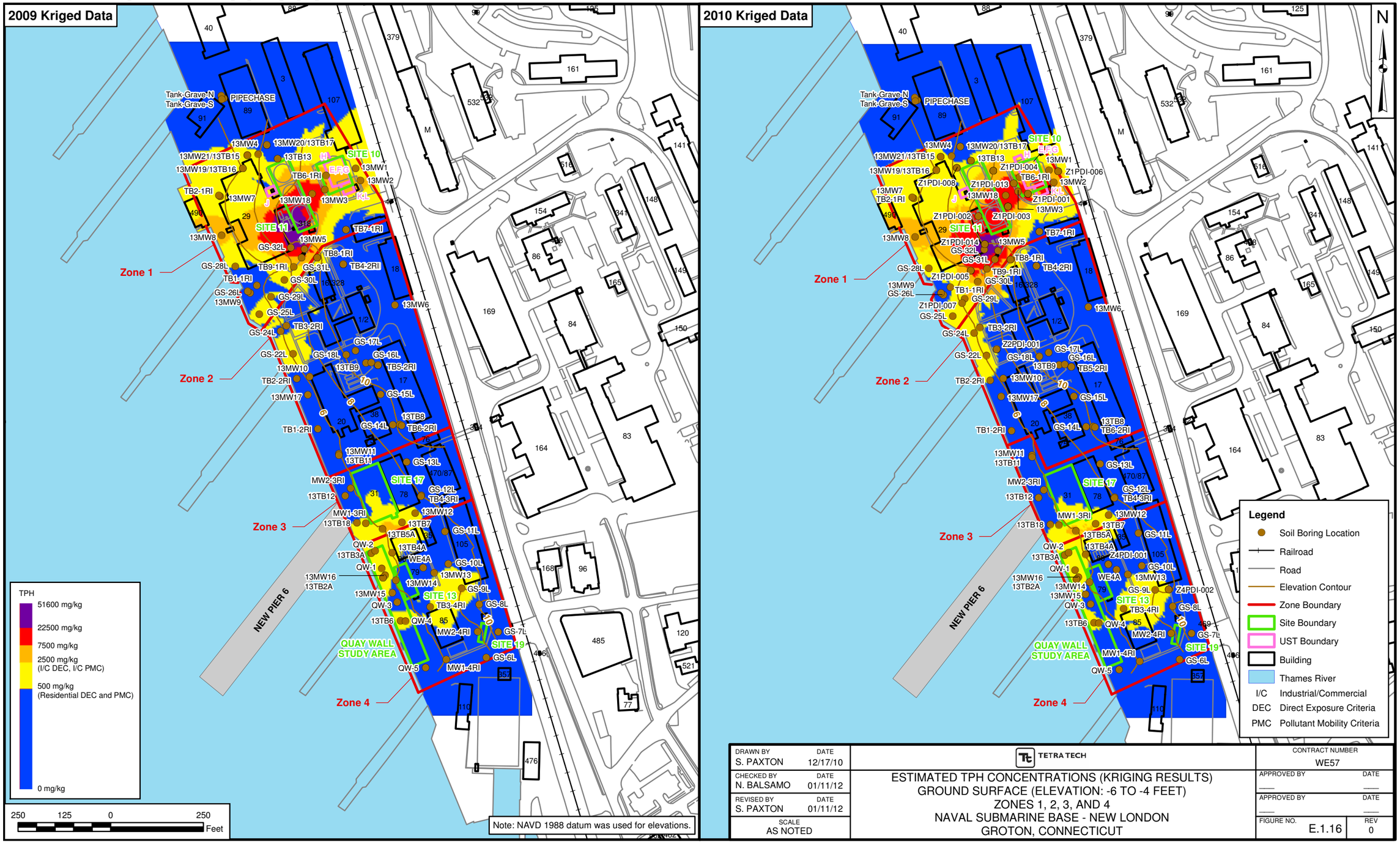

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: -6 TO -4 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.16 REV 0

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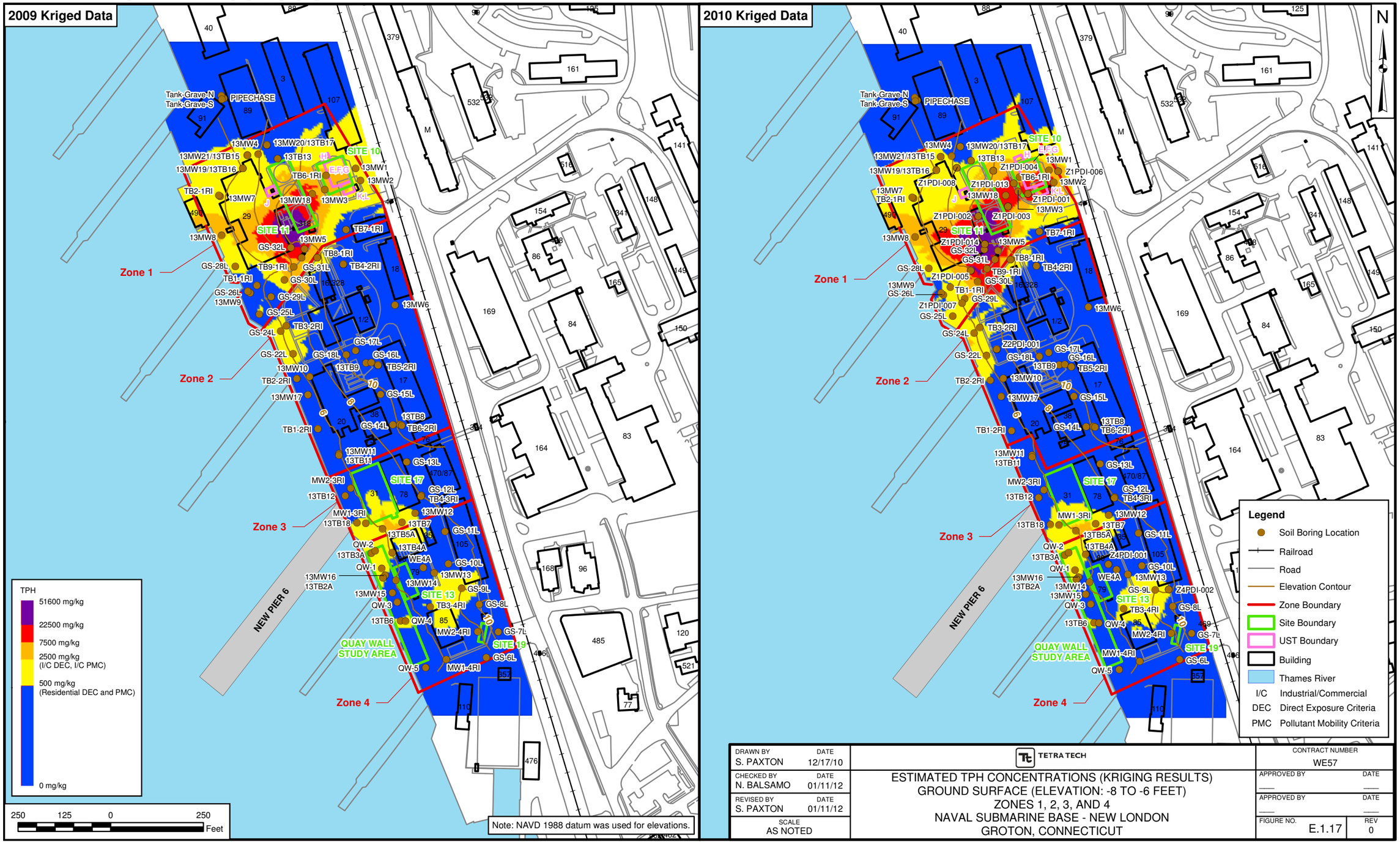

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: -8 TO -6 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.17 REV 0

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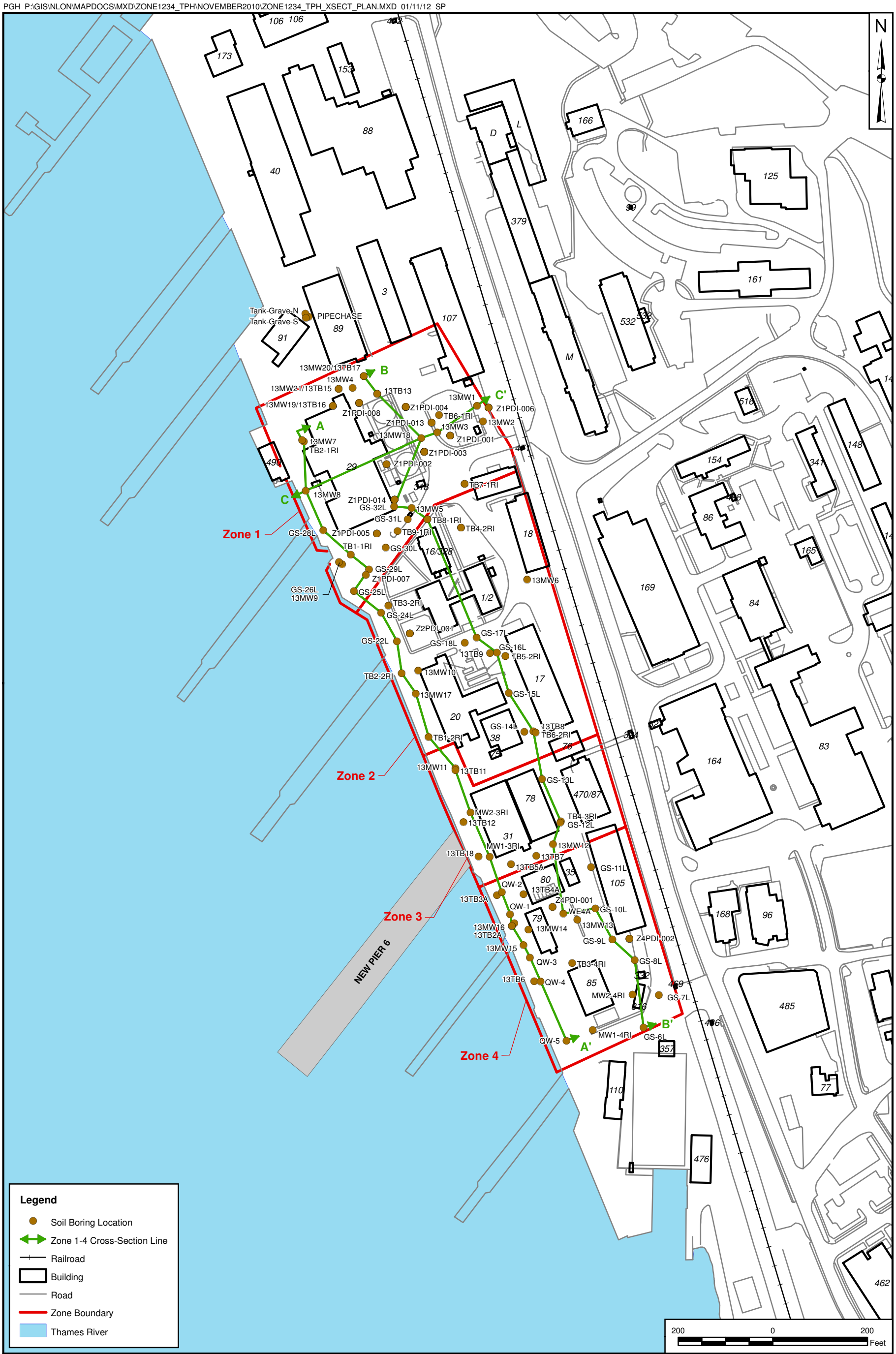

DRAWN BY	DATE	TETRA TECH	CONTRACT NUMBER	CTO NUMBER
S. PAXTON	12/17/10		2630	WE57
CHECKED BY	DATE	TPH CROSS-SECTION MAP	APPROVED BY	DATE
N. BALSAMO	01/11/12	ZONES 1, 2, 3, AND 4		
REVISED BY	DATE	NAVAL SUBMARINE BASE - NEW LONDON	APPROVED BY	DATE
S.PAXTON	01/11/12	GROTON, CONNECTICUT		
SCALE			FIGURE NO.	REV
AS NOTED			E.1.18	0

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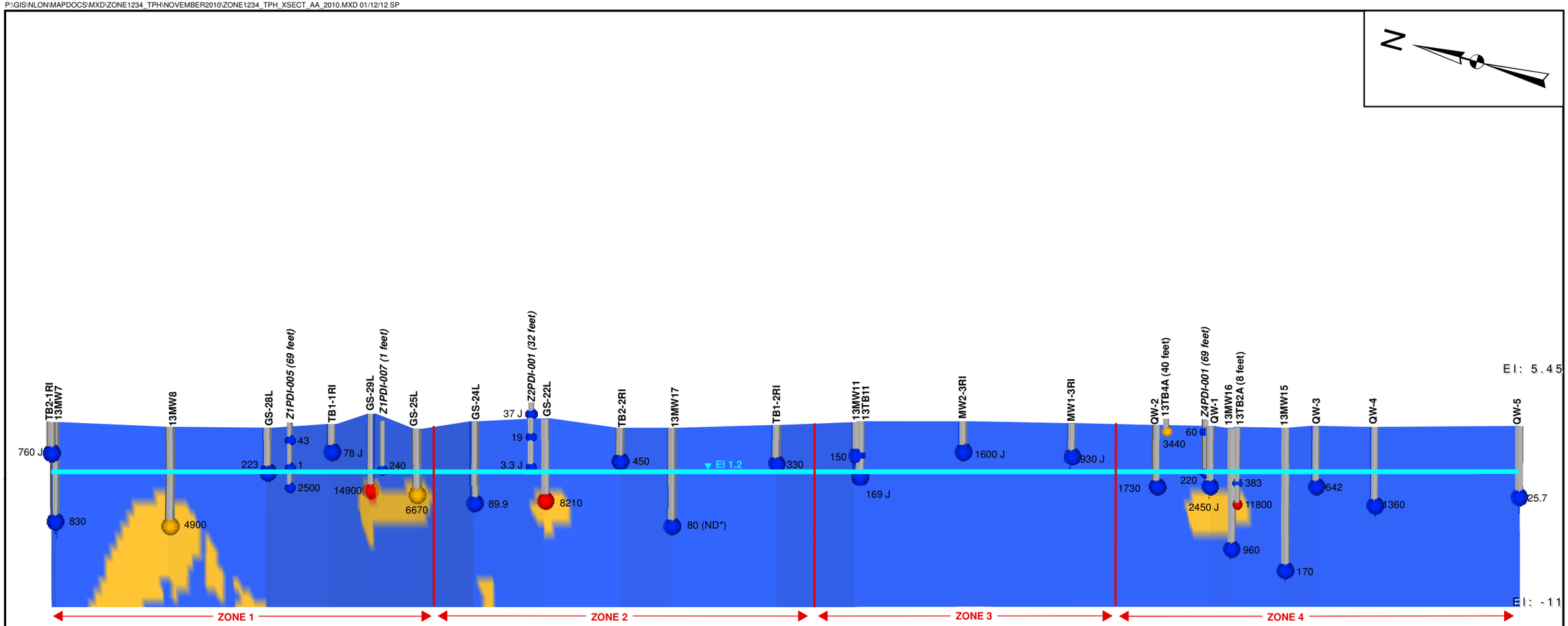

LEGEND

TPH

- 22500 mg/kg
- 7500 mg/kg
- 2500 mg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Notes:
1) NAVD 1988 datum was used for elevations.
2) * indicates the result is a non-detect and one half of the detection limit was used for kriging.

100 50 0 100 Feet
APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/12/12	TPH CROSS-SECTION A-A' WITH PDI SAMPLE LOCATIONS ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — / DATE —
REVISED BY S. PAXTON	DATE 01/12/12		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. E.1.19 / REV 0

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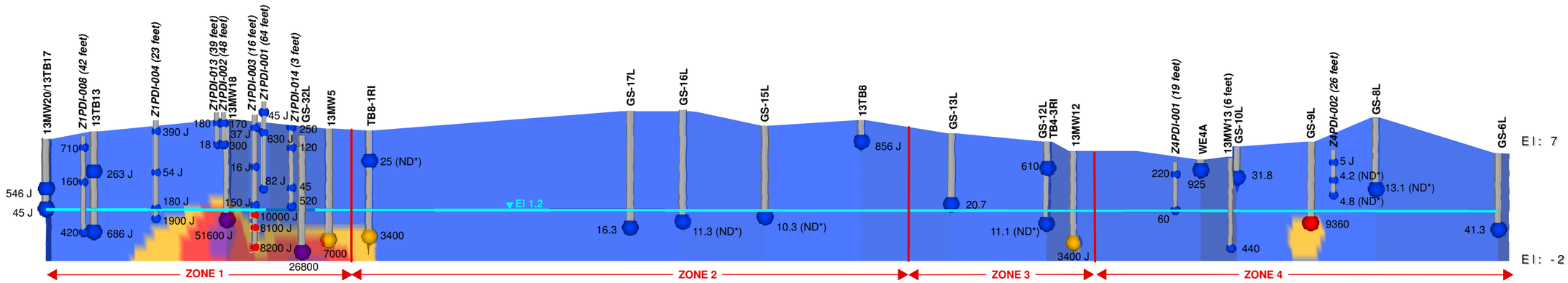

LEGEND

TPH

22500 mg/kg
7500 mg/kg
2500 mg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Notes:
1) NAVD 1988 datum was used for elevations.
2) * indicates the result is a non-detect and one half of the detection limit was used for kriging.

100 50 0 100 Feet
APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630	CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 08/16/11	TPH CROSS-SECTION B-B' WITH PDI SAMPLE LOCATIONS ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY —	DATE —
REVISED BY S. PAXTON	DATE 08/16/11		APPROVED BY —	DATE —
SCALE AS NOTED			FIGURE NO. E.1.20	REV 0

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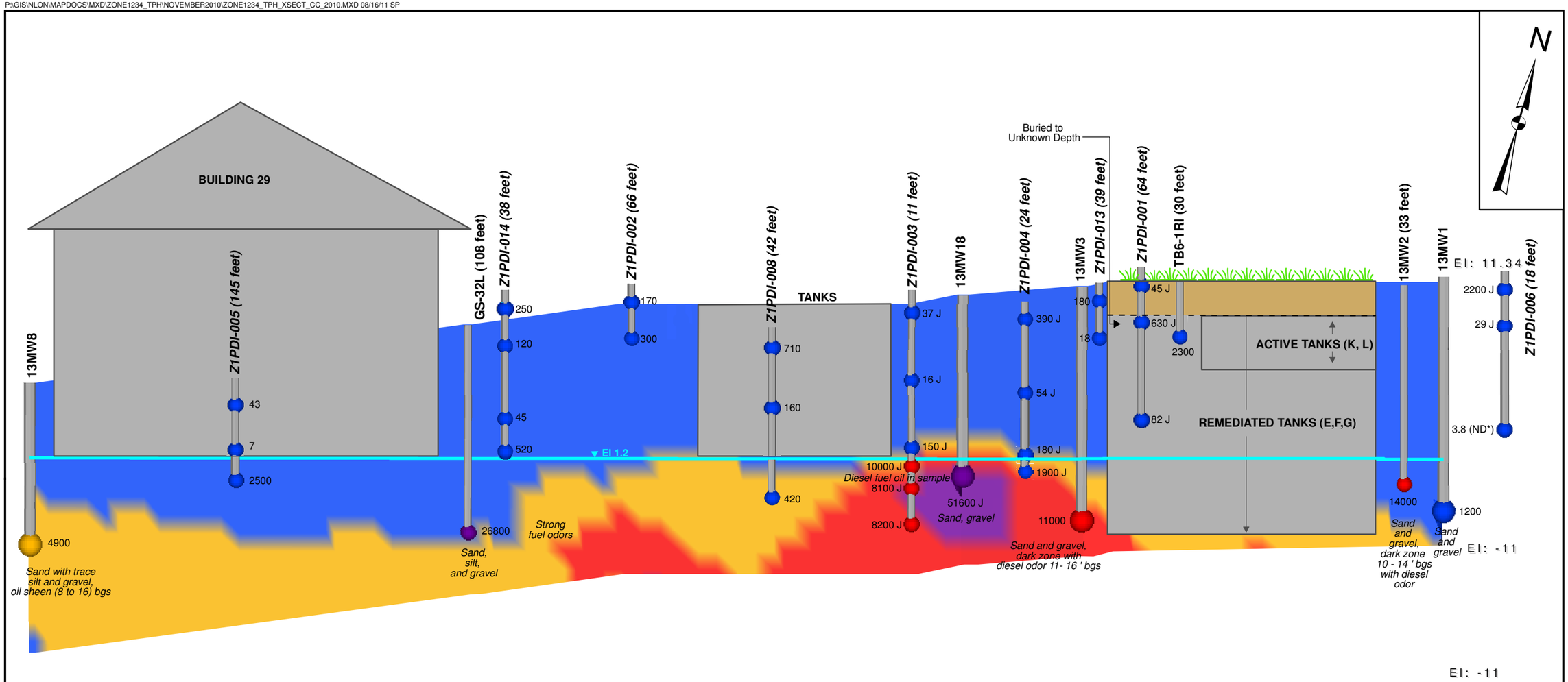

LEGEND

TPH

- 22500 mg/kg
- 7500 mg/kg
- 2500 mg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Note: NAVD 1988 datum was used for elevations.

35 17.5 0 35 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY	DATE	TETRA TECH	CONTRACT NUMBER	CTO NUMBER
S. PAXTON	12/21/10		2630	WE57
CHECKED BY	DATE	TPH CROSS-SECTION C-C' WITH PDI SAMPLE LOCATIONS ZONE 1 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY	DATE
N. BALSAMO	08/16/11		—	—
REVISED BY	DATE		APPROVED BY	DATE
S. PAXTON	08/16/11		—	—
SCALE AS NOTED			FIGURE NO. E.1.21	REV 0

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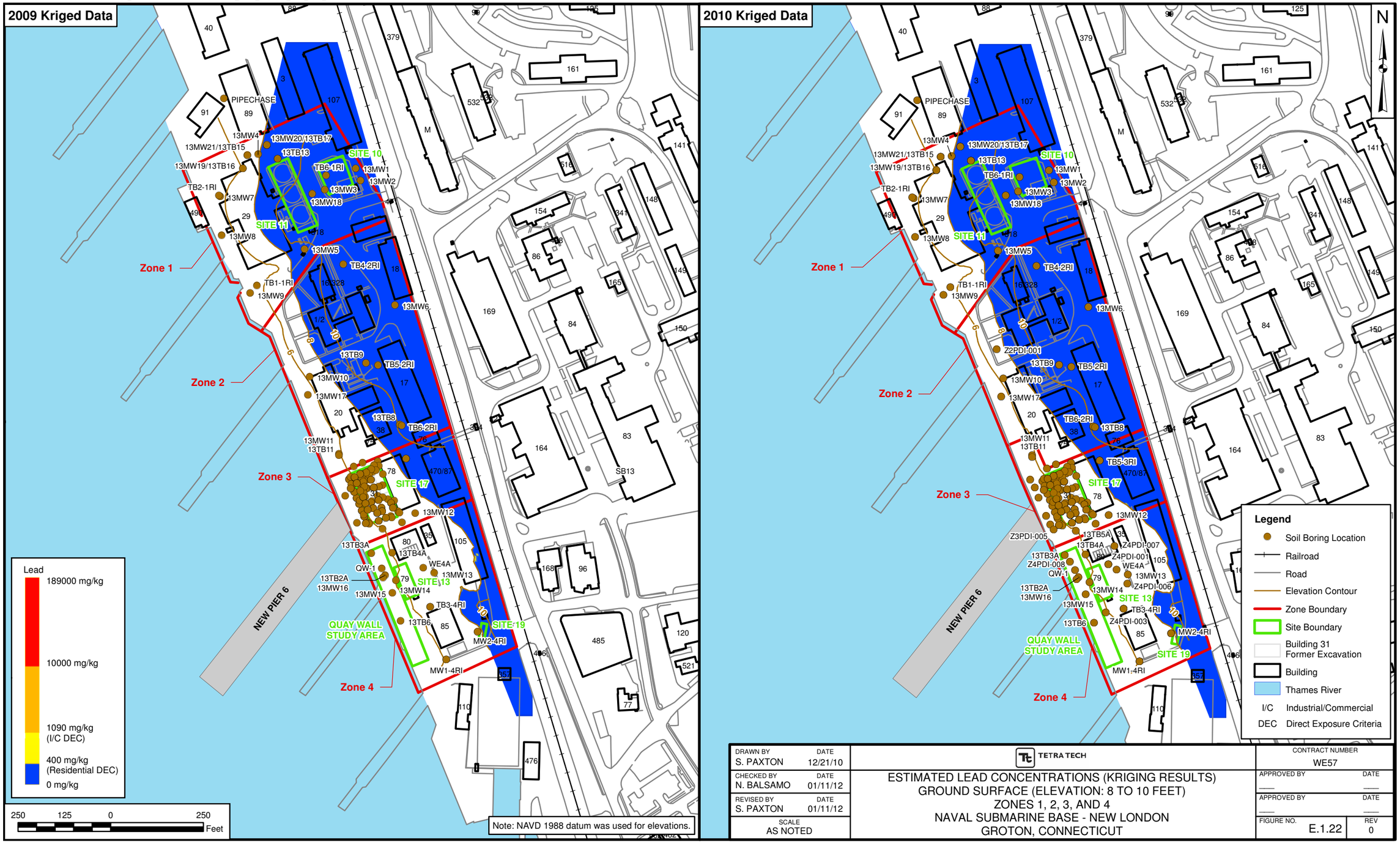
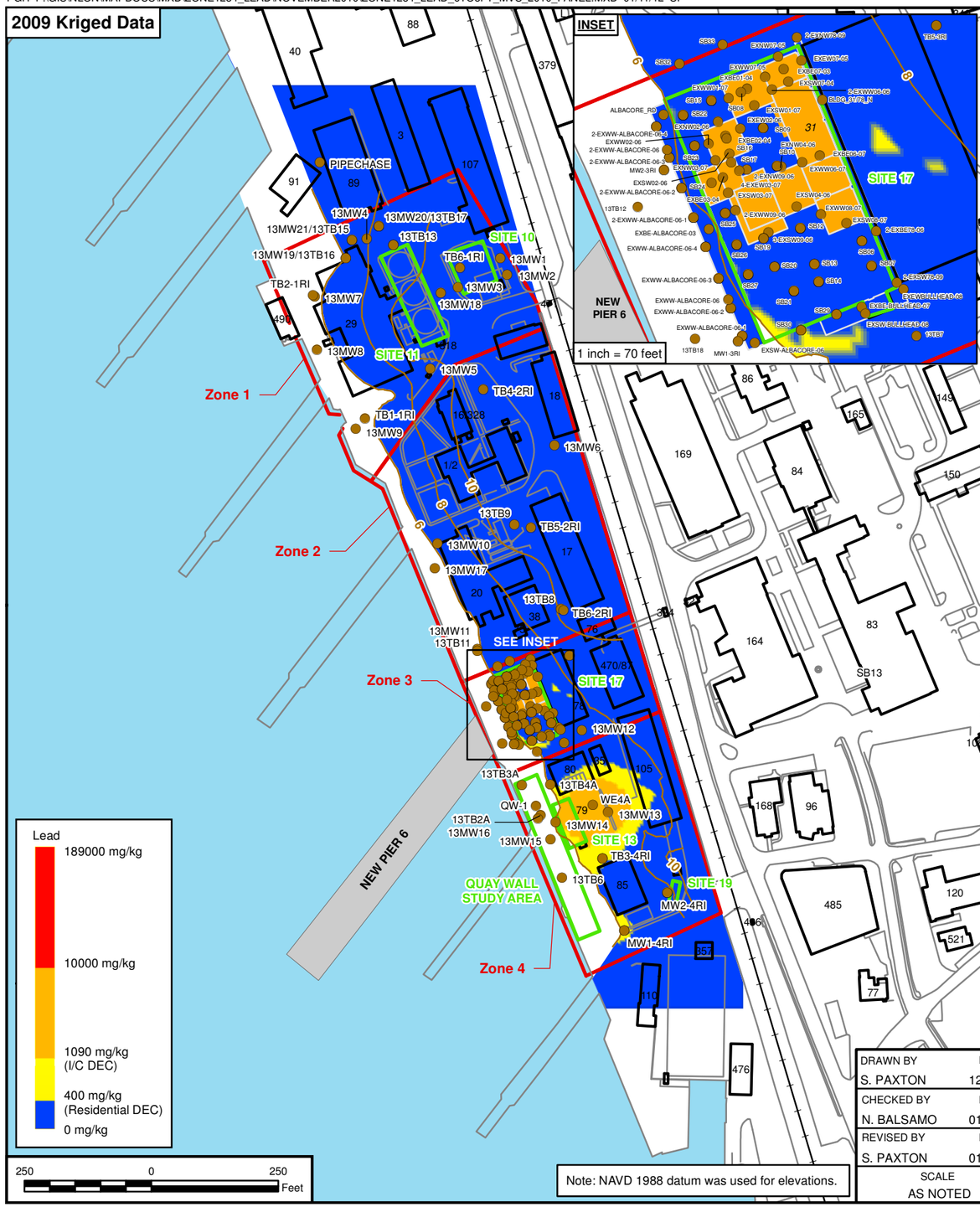
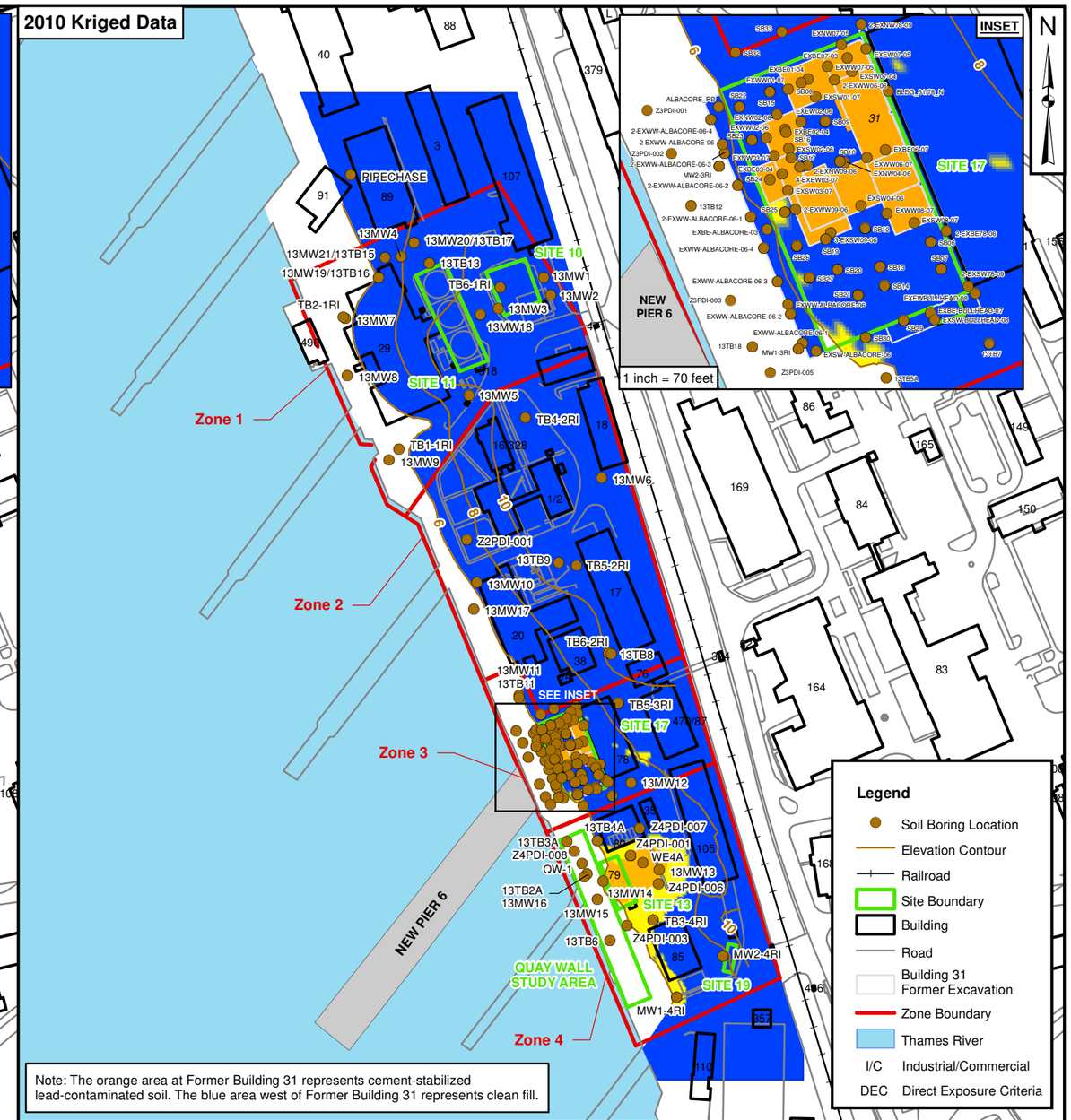


DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 8 TO 10 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.22 REV 0

PGH P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_6TO8FT_MVS_2010_PANEL.MXD 01/11/12 SP



Note: NAVD 1988 datum was used for elevations.



Note: The orange area at Former Building 31 represents cement-stabilized lead-contaminated soil. The blue area west of Former Building 31 represents clean fill.

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — / DATE —
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. E.1.23 / REV 0

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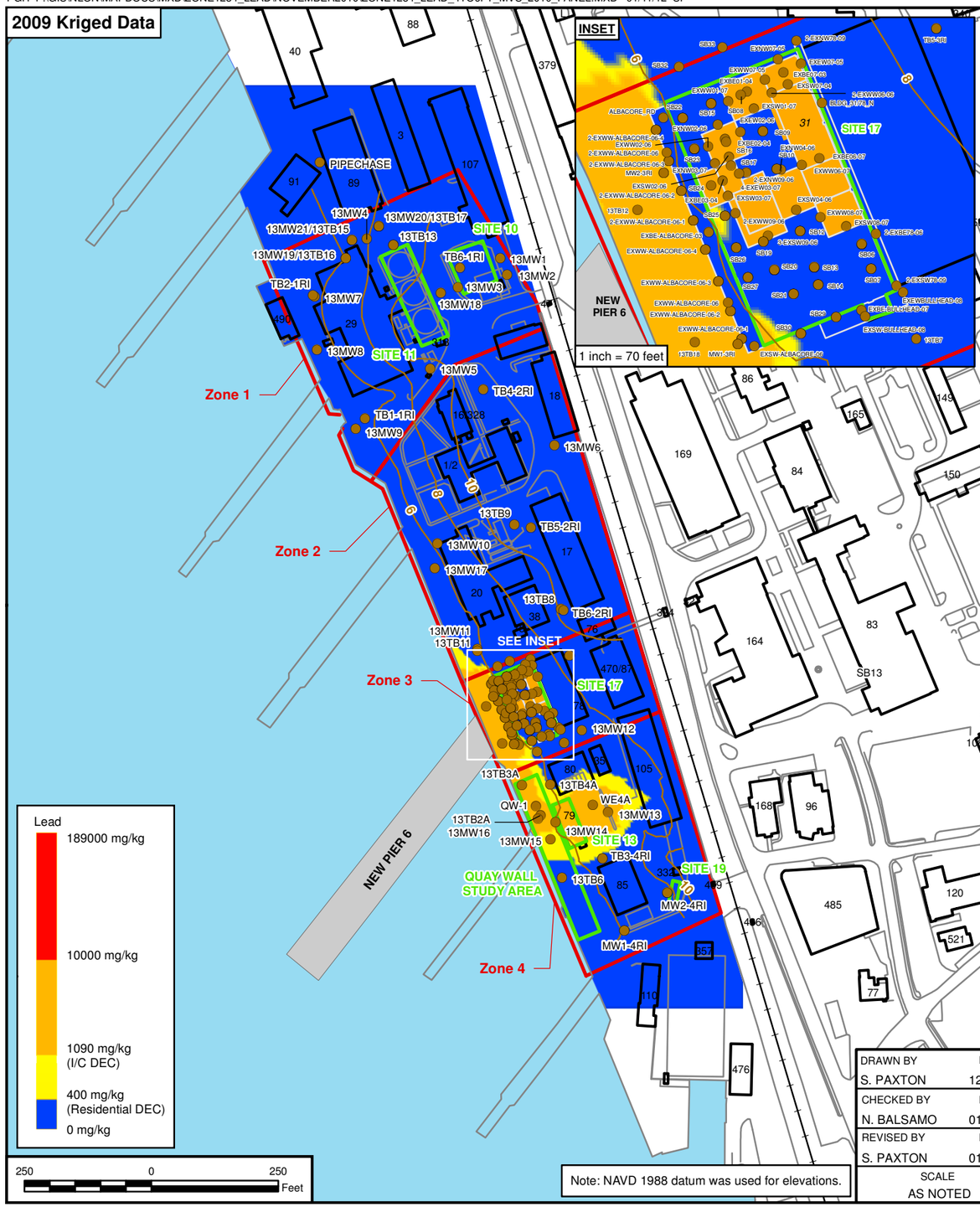
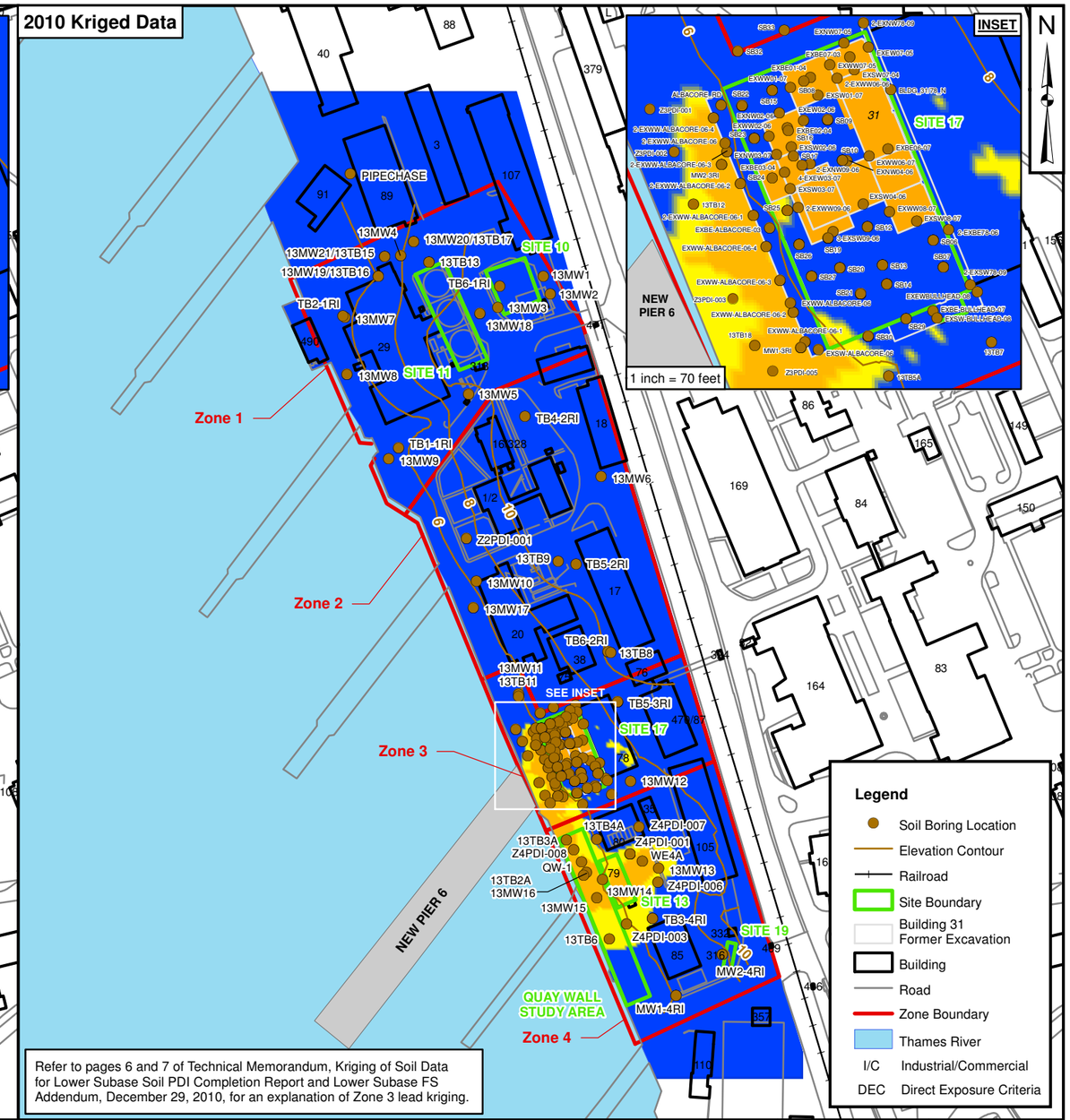
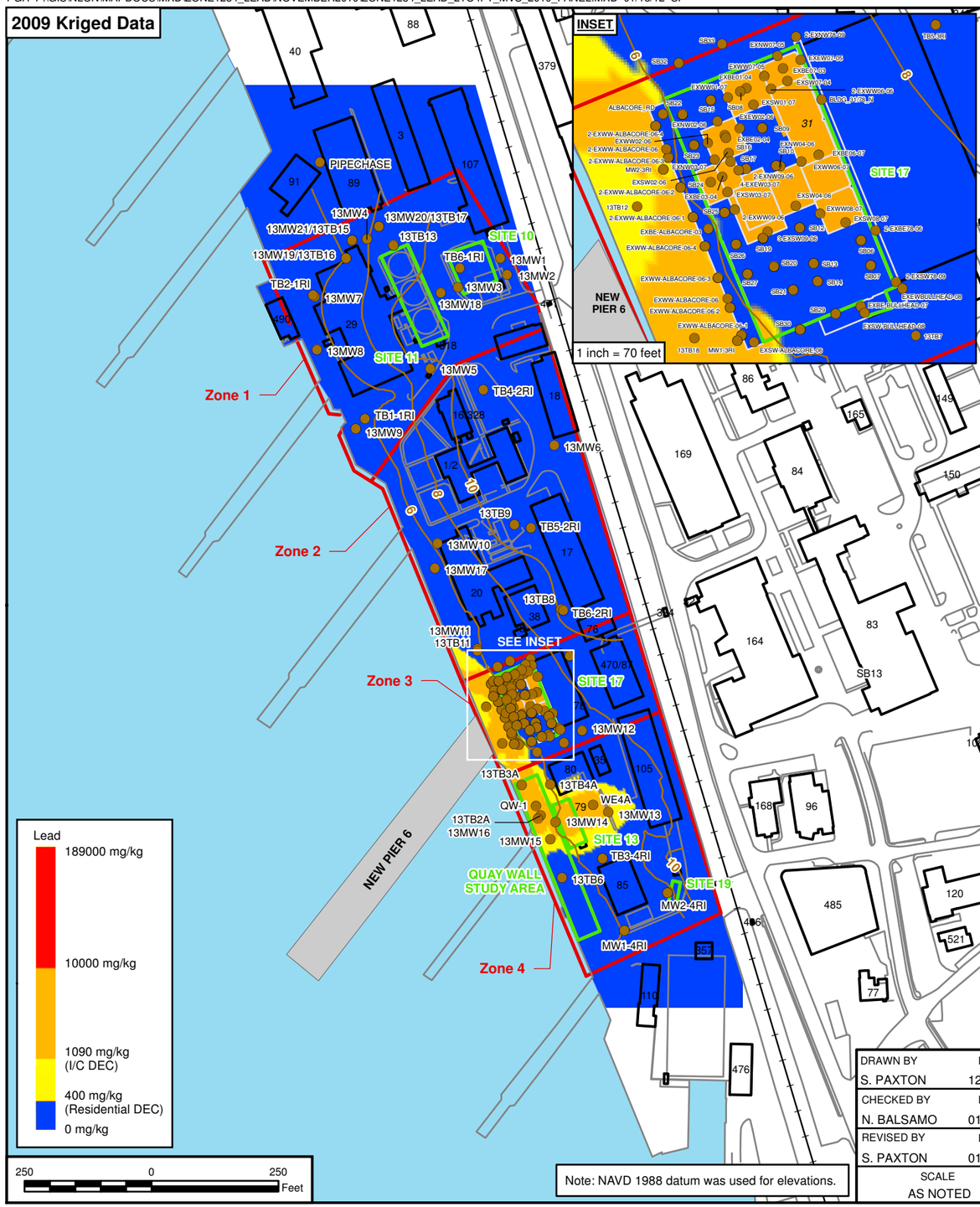


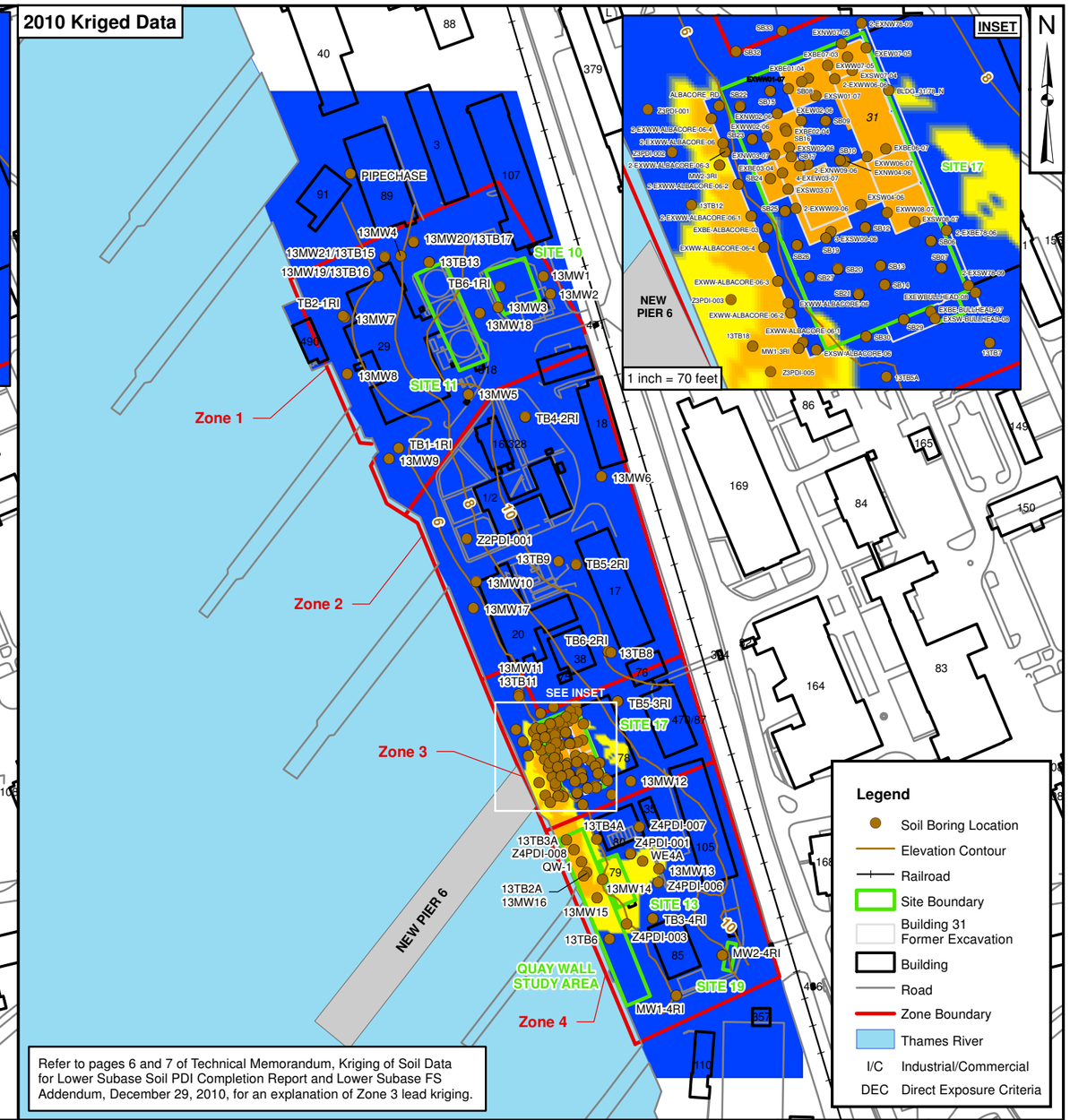


Refer to pages 6 and 7 of Technical Memorandum, Kriging of Soil Data for Lower Subase Soil PDI Completion Report and Lower Subase FS Addendum, December 29, 2010, for an explanation of Zone 3 lead kriging.

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/11/12	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION 4 TO 6 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — DATE —
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY — DATE —
SCALE AS NOTED			FIGURE NO. E.1.24 / REV 0

PGH P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_2TO4FT_MVS_2010_PANEL.MXD 01/18/12 SP

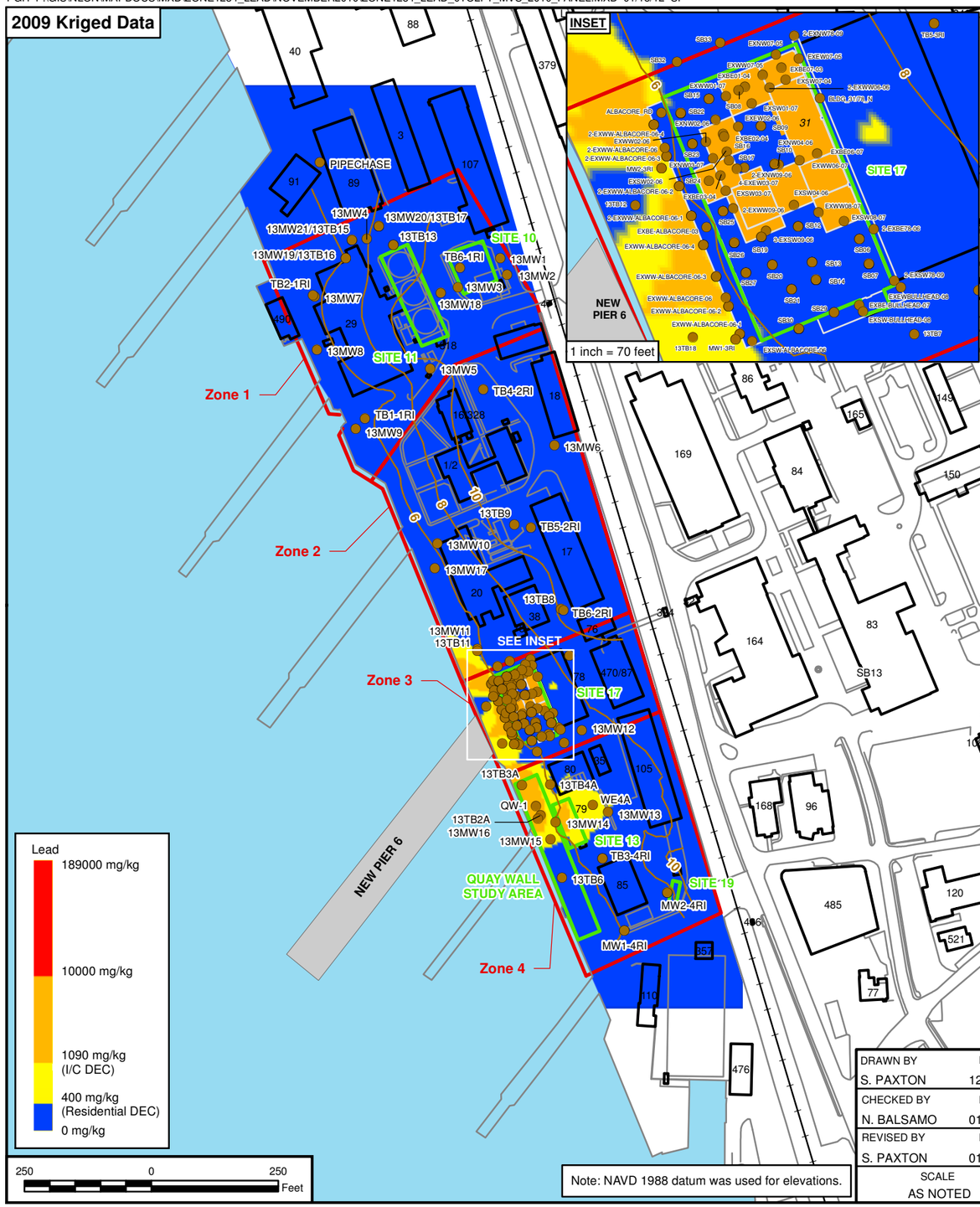




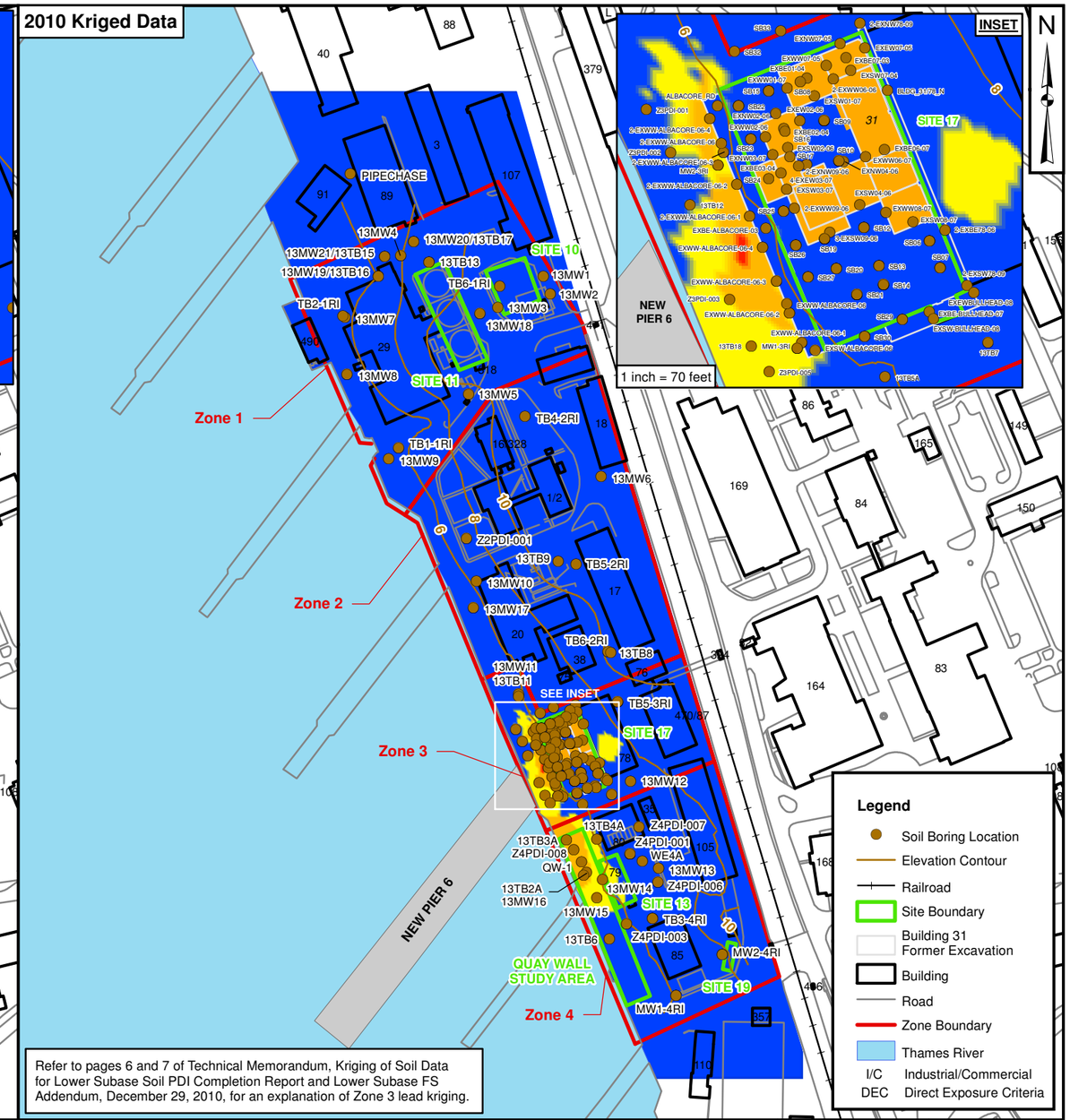
Refer to pages 6 and 7 of Technical Memorandum, Kriging of Soil Data for Lower Subase Soil PDI Completion Report and Lower Subase FS Addendum, December 29, 2010, for an explanation of Zone 3 lead kriging.

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/18/12	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GORUND SURFACE (ELEVATION: 2 TO 4 FEET) ZONE 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — DATE —
REVISED BY S. PAXTON	DATE 01/18/12		APPROVED BY — DATE —
SCALE AS NOTED			FIGURE NO. E.1.25 / REV 0

PGH P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_0TO2FT_MVS_2010_PANEL.MXD 01/18/12 SP



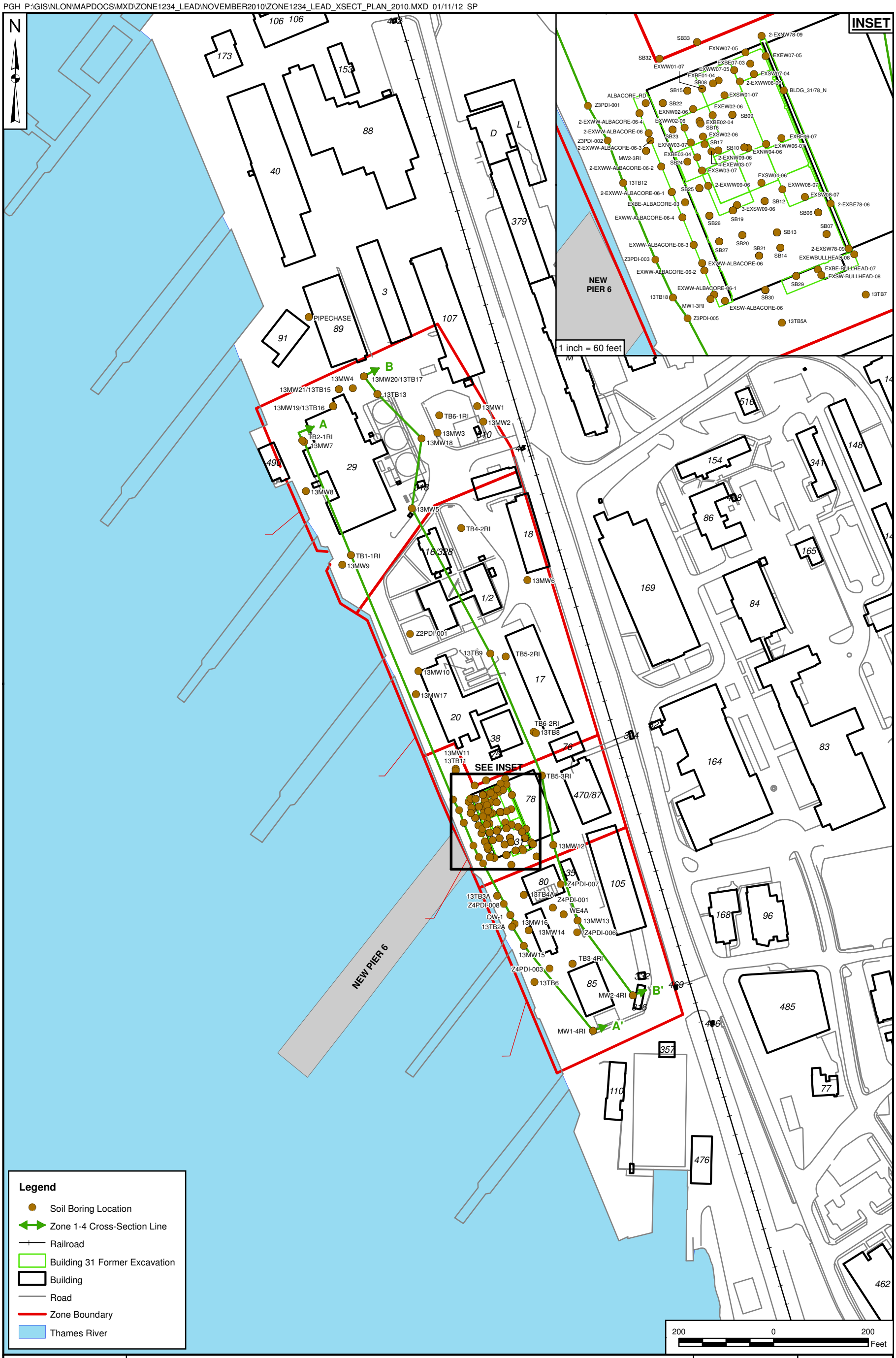
Note: NAVD 1988 datum was used for elevations.



Refer to pages 6 and 7 of Technical Memorandum, Kriging of Soil Data for Lower Subase Soil PDI Completion Report and Lower Subase FS Addendum, December 29, 2010, for an explanation of Zone 3 lead kriging.

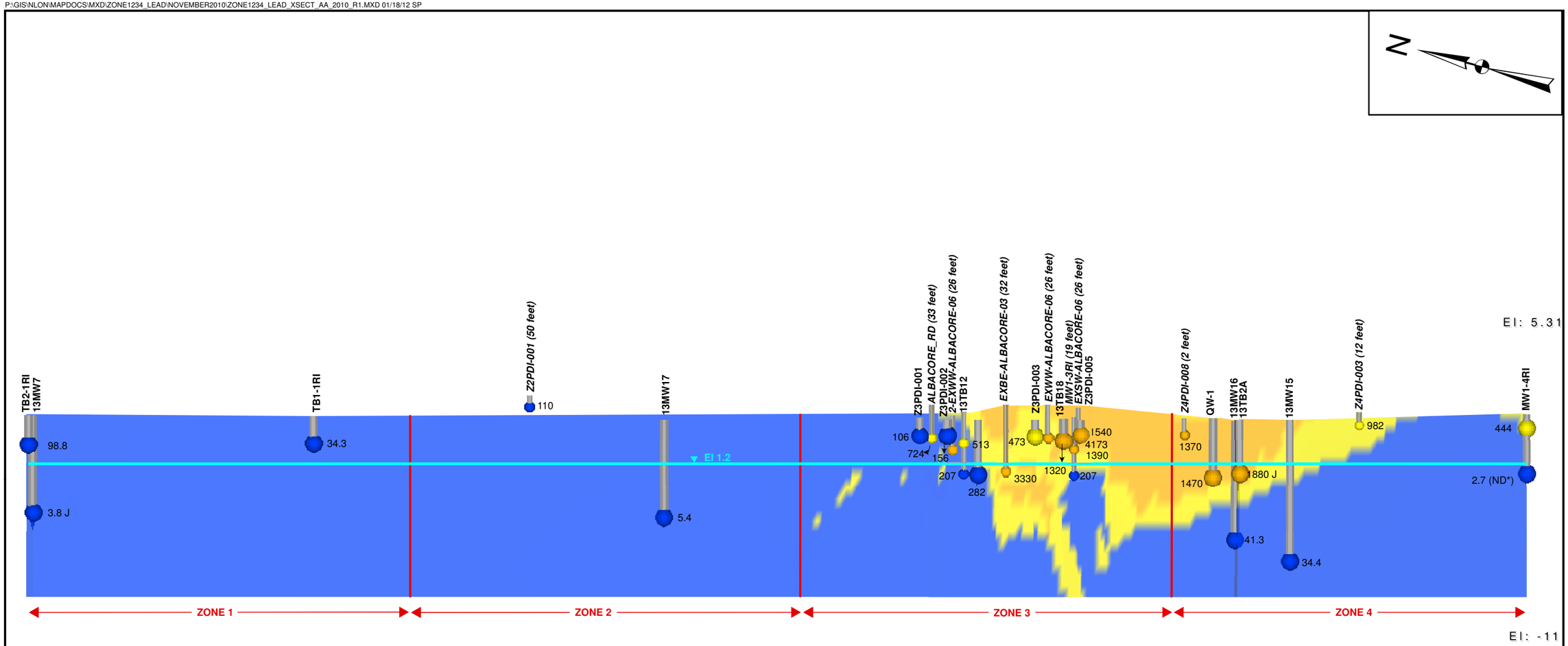
DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/18/12	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 0 TO 2 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — DATE —
REVISED BY S. PAXTON	DATE 01/18/12		APPROVED BY — DATE —
SCALE AS NOTED			FIGURE NO. E.1.26 / REV 0

PGH P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_XSECT_PLAN_2010.MXD 01/11/12 SP



DRAWN BY S. PAXTON — DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630	CTO NUMBER WE57
CHECKED BY N. BALSAMO — DATE 01/11/12	LEAD CROSS-SECTION MAP ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — DATE	
REVISED BY S. PAXTON — DATE 01/11/12		APPROVED BY — DATE	
SCALE AS NOTED		FIGURE NO. E.1.27	REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_XSECT_AA_2010_R1.MXD 01/18/12 SP



LEGEND

Lead

10000 mg/kg

1090 mg/kg

400 mg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

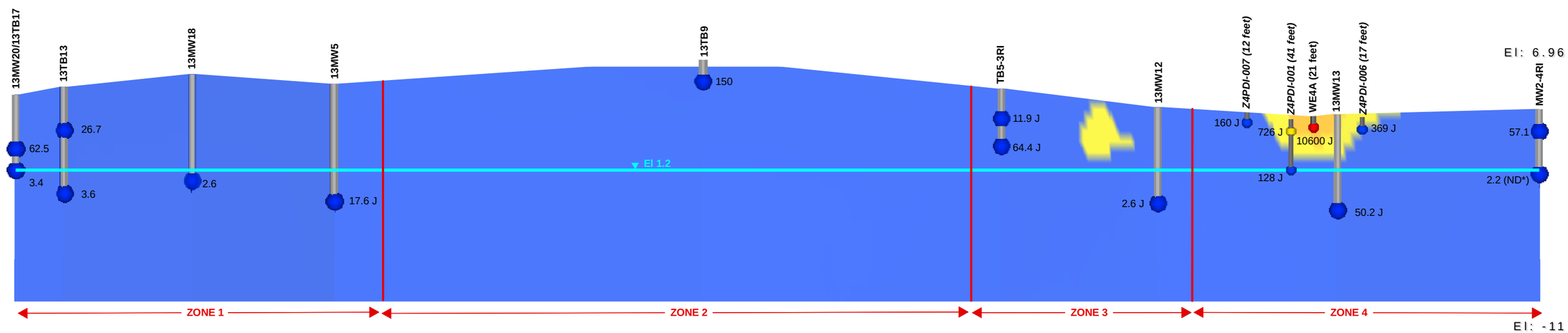
Notes:
1) NAVD 1988 datum was used for elevations.
2) * indicates the result is a non-detect and one half of the detection limit was used for kriging.
3) Refer to pages 6 and 7 of Technical Memorandum, Kriging of Soil Data for Lower Subase Soil PDI Completion Report and Lower Subase FS Addendum, December 29, 2010, for an explanation of Zone 3 lead kriging.

95 47.5 0 95 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 01/18/12	LEAD CROSS-SECTION A-A' WITH PDI SAMPLE LOCATIONS ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — / DATE —
REVISED BY S. PAXTON	DATE 01/18/12		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. E.1.28 / REV 0

PGH P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_XSECT_BB_2010.MXD 08/25/11 JEE



LEGEND

Lead

10000 mg/kg

1090 mg/kg

400 mg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Notes:
1) NAVD 1988 datum was used for elevations.
2) * indicates the result is a non-detec and one half of the detection limit was used for kriging.
3) Refer to pages 6 and 7 of Technical Memorandum, Kriging of Soil Data for Lower Subase Soil PDI Completion Report and Lower Subase FS Addendum, December 29, 2010, for an explanation of Zone 3 lead kriging.

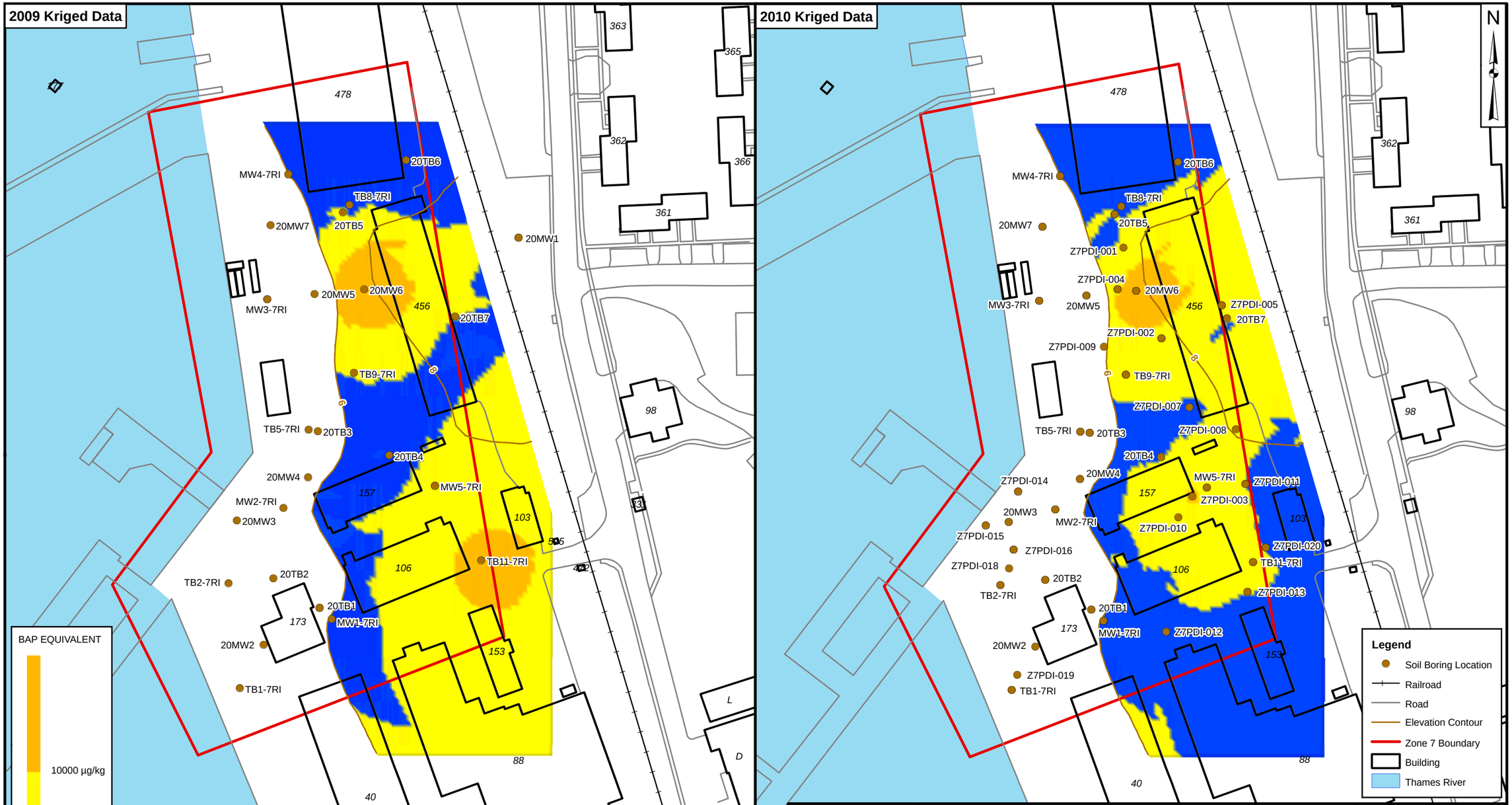
100 50 0 100 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 08/16/11	LEAD CROSS-SECTION B-B' WITH PDI SAMPLE LOCATIONS ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — / DATE —
REVISED BY J. ENGLISH	DATE 08/25/11		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. E.1.29 / REV 0

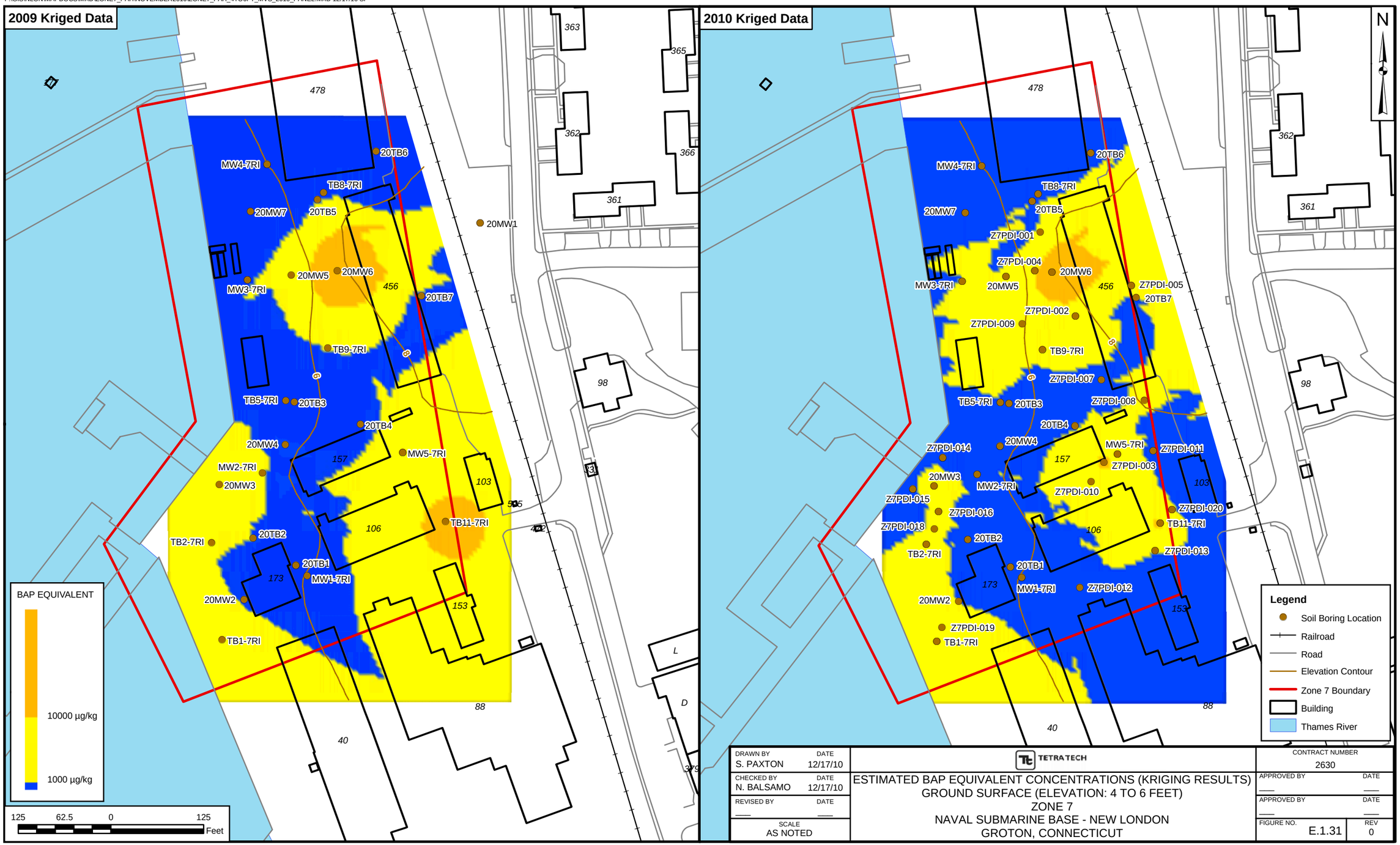
ZONE 7

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_6TO8FT_MVS_2010_PANEL.MXD 12/17/10 SP



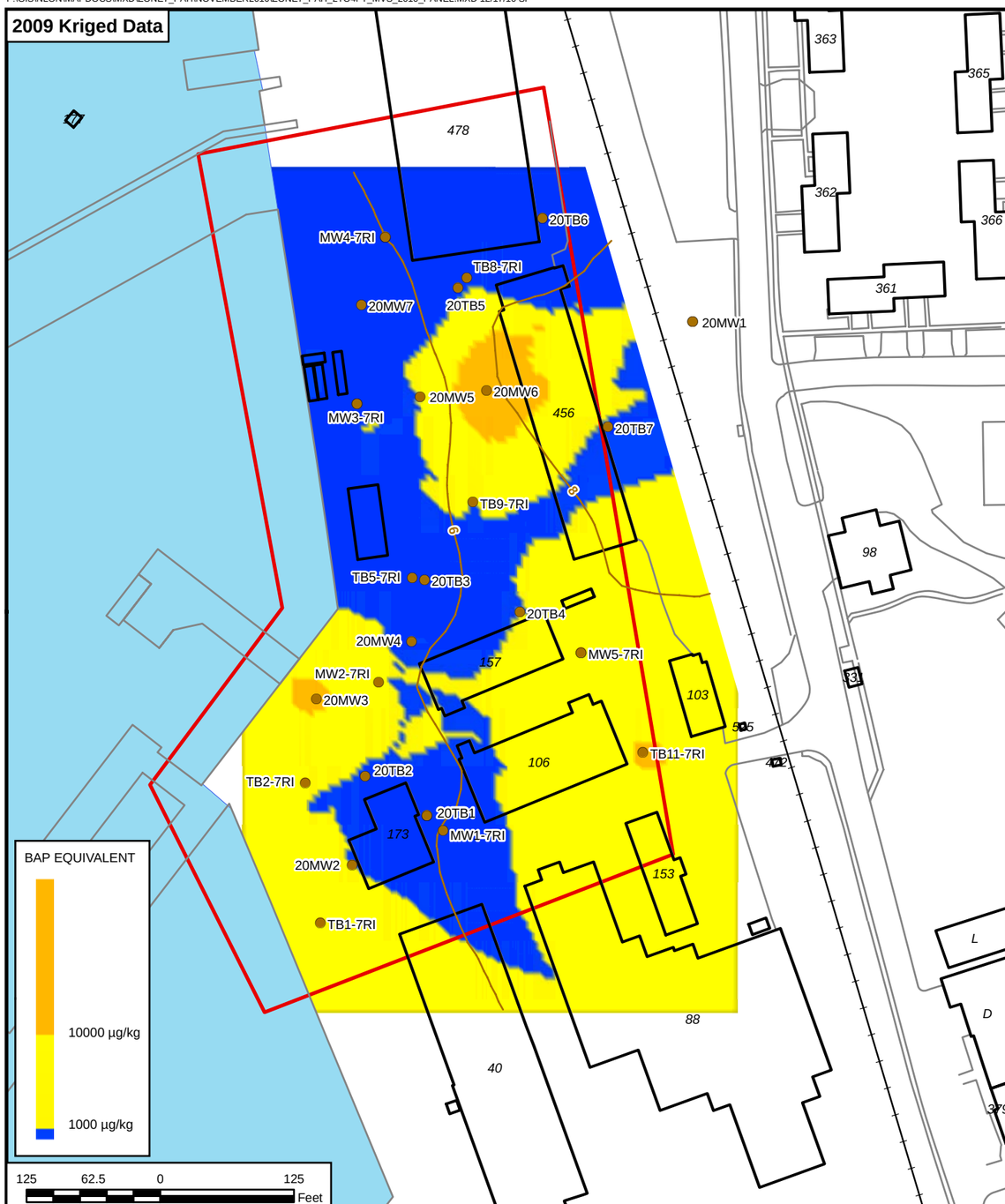
DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.30 REV 0

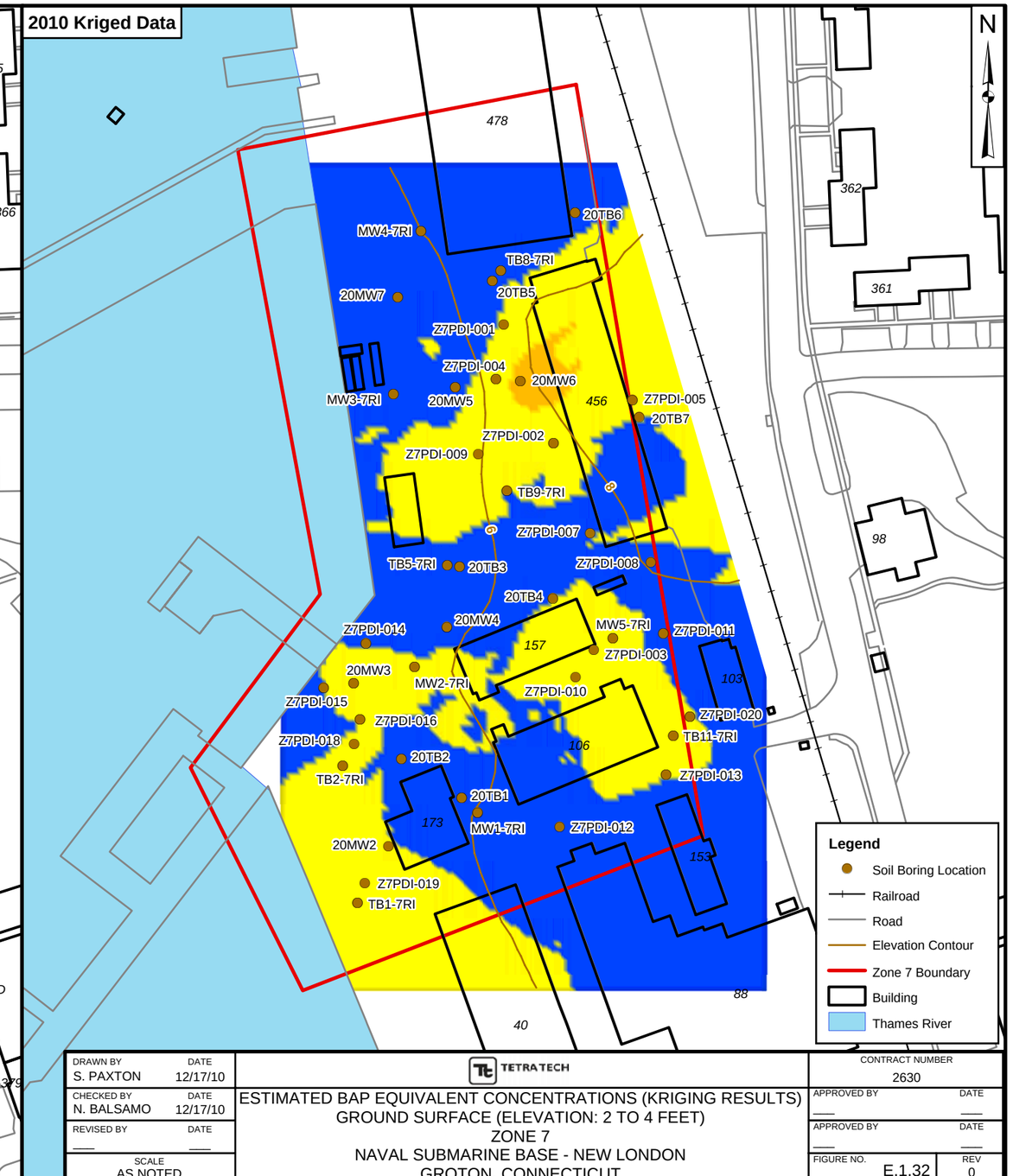
P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_4TO6FT_MVS_2010_PANEL.MXD 12/17/10 SP



DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 4 TO 6 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.31 REV 0

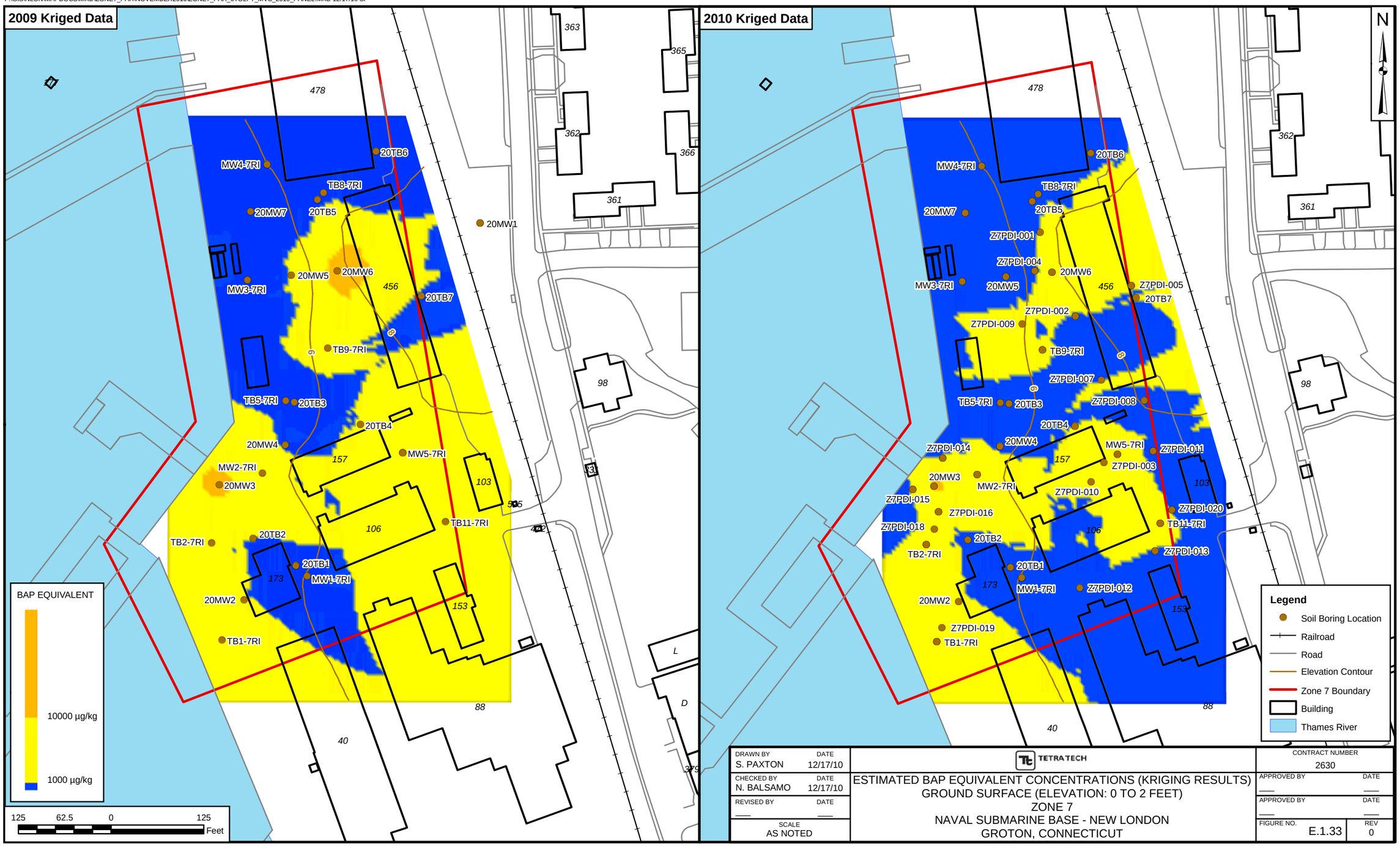
P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_2TO4FT_MVS_2010_PANEL.MXD 12/17/10 SP





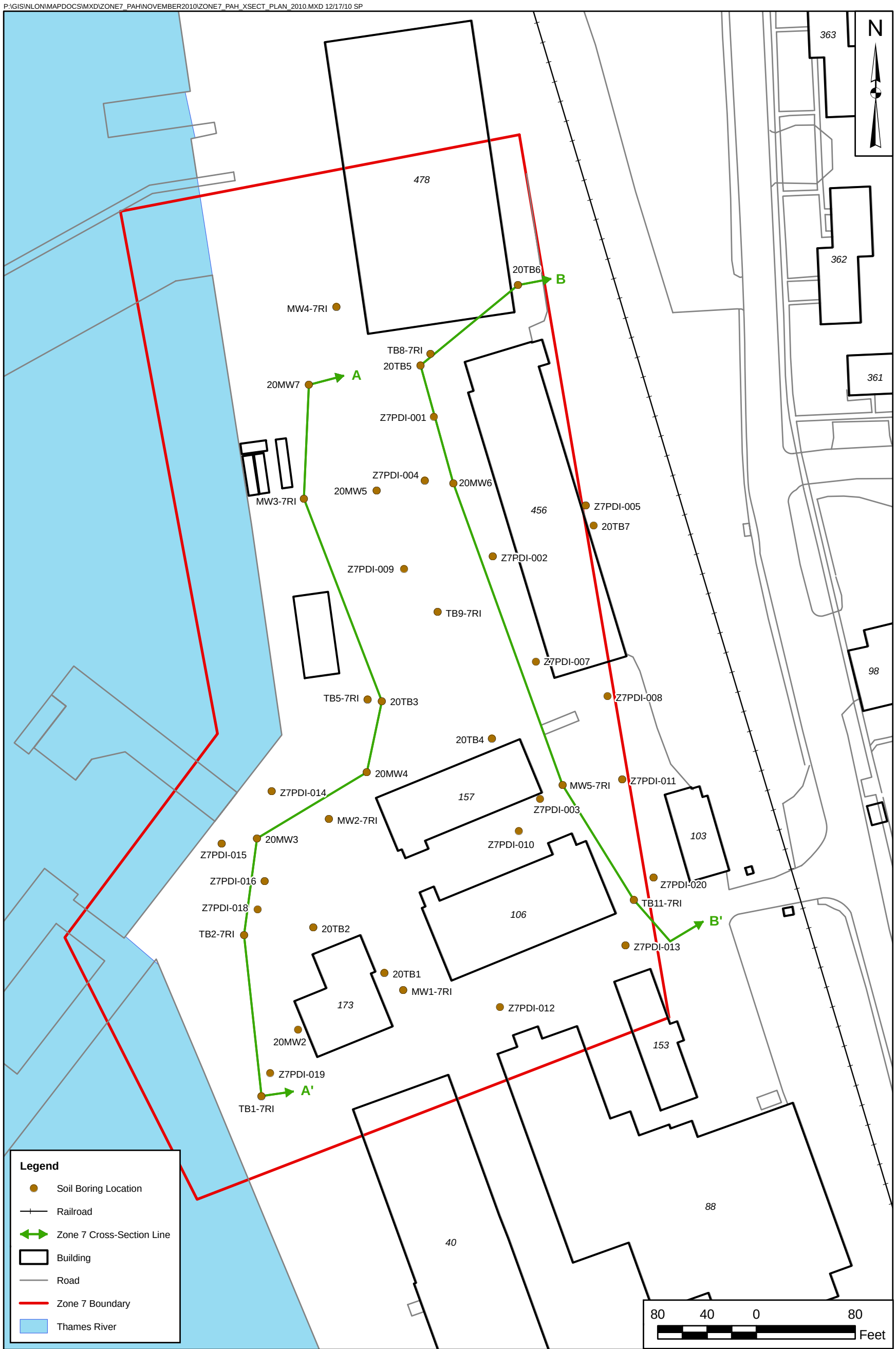
DRAWN BY S. PAXTON	DATE 12/17/10	TETRATECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 2 TO 4 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.32 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_0TO2FT_MVS_2010_PANEL.MXD 12/17/10 SP



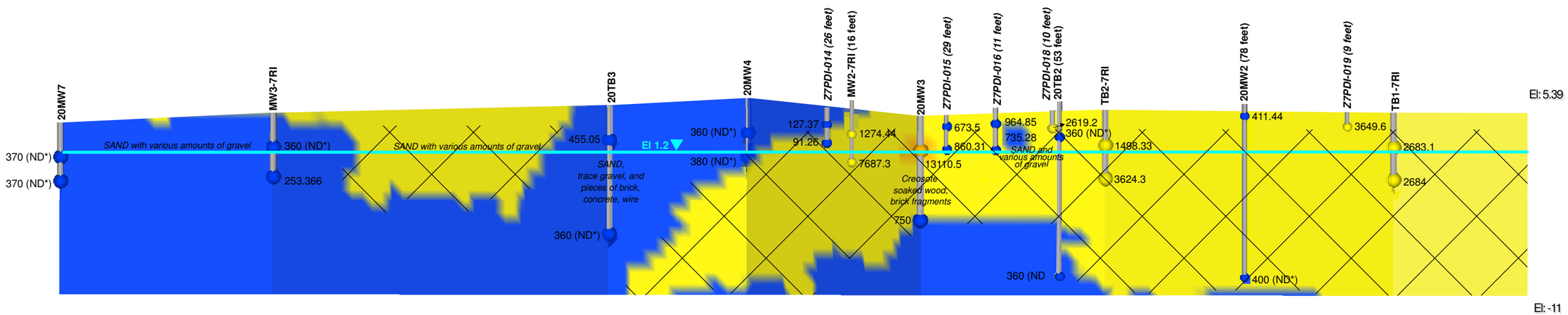
DRAWN BY S. PAXTON	DATE 12/17/10	TETRATECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 0 TO 2 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.33 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_XSECT_PLAN_2010.MXD 12/17/10 SP



DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NO.
S. PAXTON	12/17/10		2630
CHECKED BY	DATE	BAP EQUIVALENT CROSS-SECTION MAP ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY / DATE
N. BALSAMO	12/17/10		_ / --
COST/SCHED-AREA			APPROVED BY / DATE
			-- / --
SCALE			FIGURE NO. / REV.
AS NOTED			E.1.34 /

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_XSECT_AA_PROPLOCS_2010.MXD 08/16/11 SP



LEGEND

PAH

10000 µg/kg

1000 µg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Not Applicable for I/C Scenario

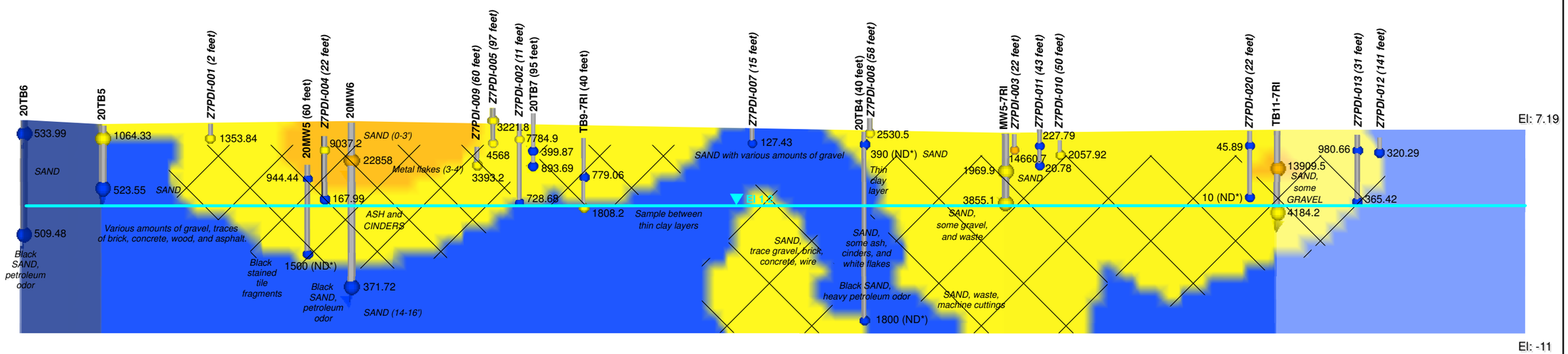
Notes:
1) NAVD 1988 datum was used for elevations.
2) * indicates the result is a non-detect and one half of the detection limit was used for kriging.

50 25 0 50 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630	CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 08/16/11	BAP EQUIVALENT CROSS-SECTION A-A' WITH PDI SAMPLE LOCATIONS ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY —	DATE —
REVISED BY S. PAXTON	DATE 08/16/11		APPROVED BY —	DATE —
SCALE AS NOTED			FIGURE NO. E.1.35	REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_XSECT_BB_PROPLOCS_2010.MXD 08/16/11 SP



LEGEND

PAH

10000 µg/kg

1000 µg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

Not Applicable for I/C Scenario

Notes:
1) NAVD 1988 datum was used for elevations
2) * indicates the result is a non-detect and one half of the detection limit was used for kriging.

50 25 0 50 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630 / CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 08/16/11	BAP EQUIVALENT CROSS-SECTION B-B' WITH PDI SAMPLE LOCATIONS ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY — / DATE —
REVISED BY S. PAXTON	DATE 08/16/11		APPROVED BY — / DATE —
SCALE AS NOTED			FIGURE NO. E.1.36 / REV 0

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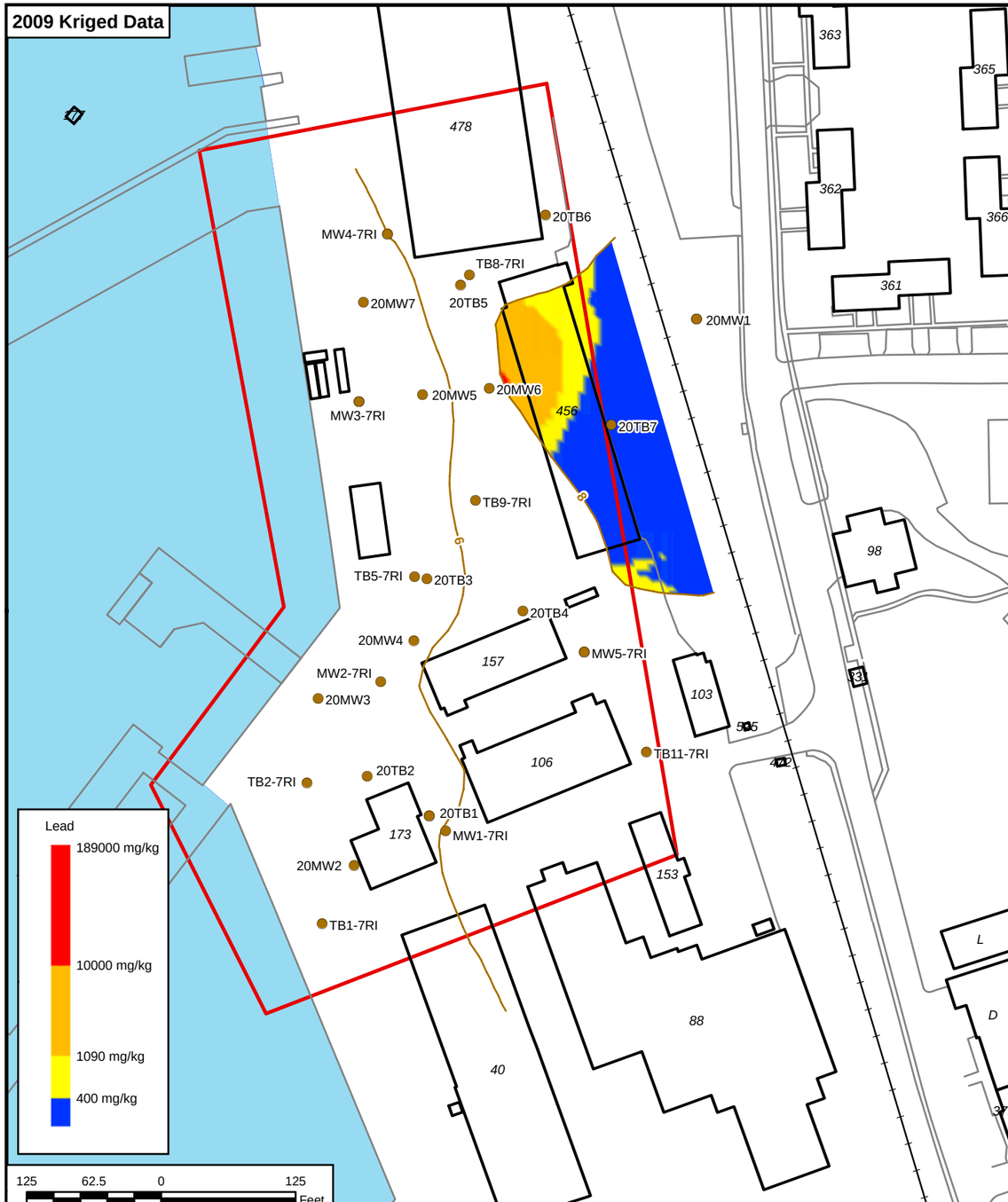
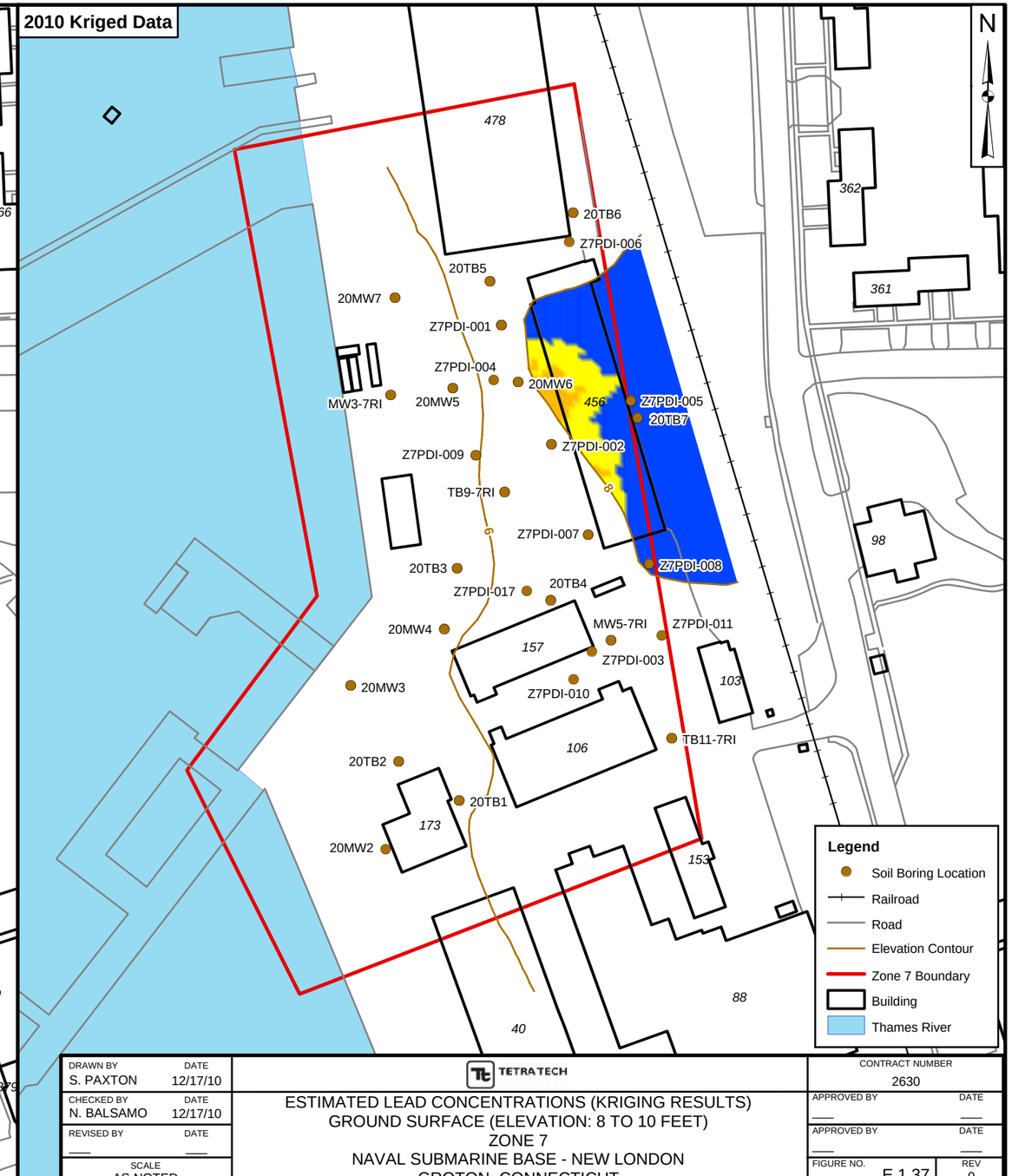
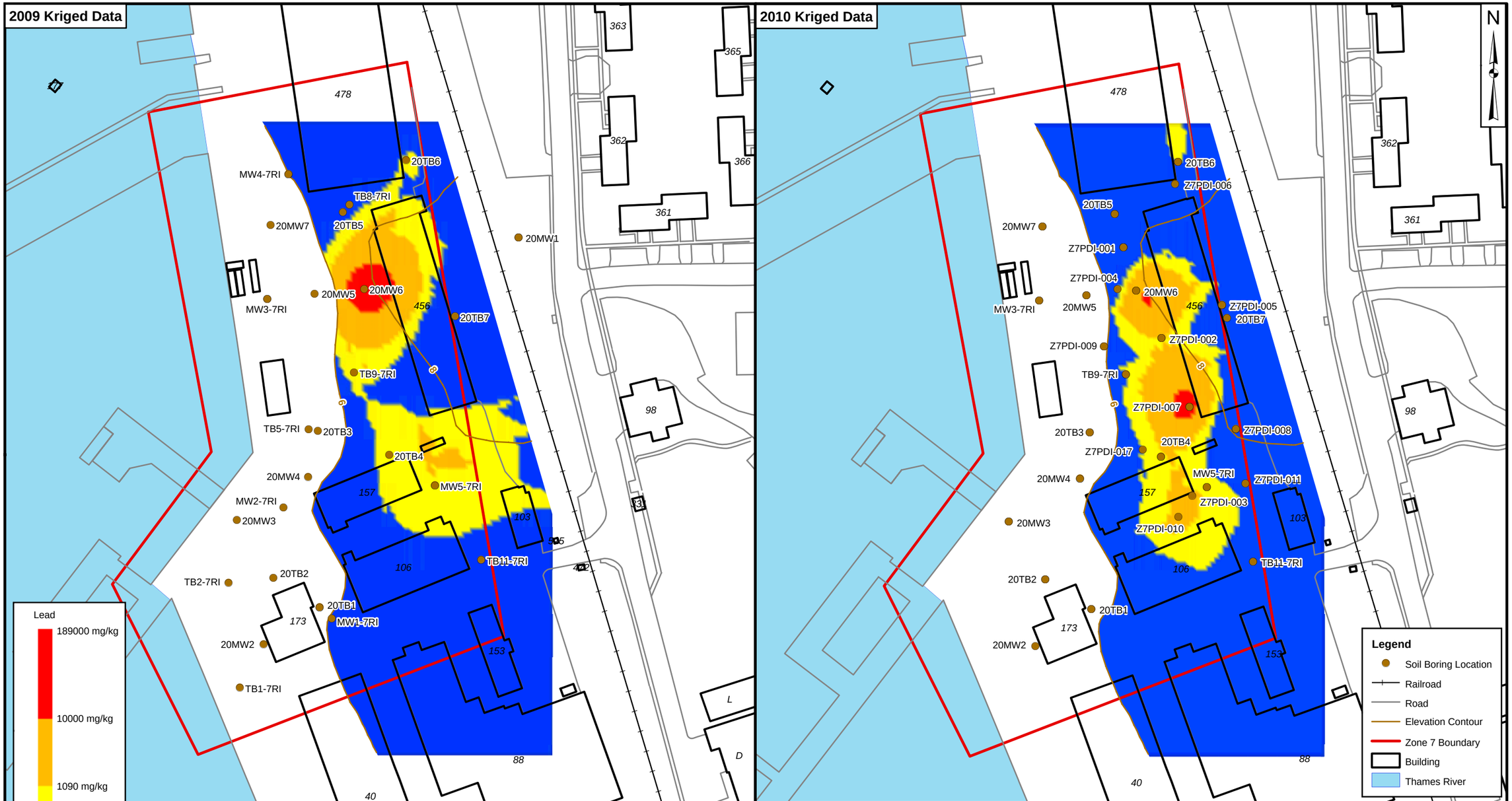




DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 8 TO 10 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.37 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_LEAD\NOVEMBER2010\ZONE7_LEAD_6TO8FT_MVS_2010_PANEL.MXD 12/17/10 SP



DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.38 REV 0

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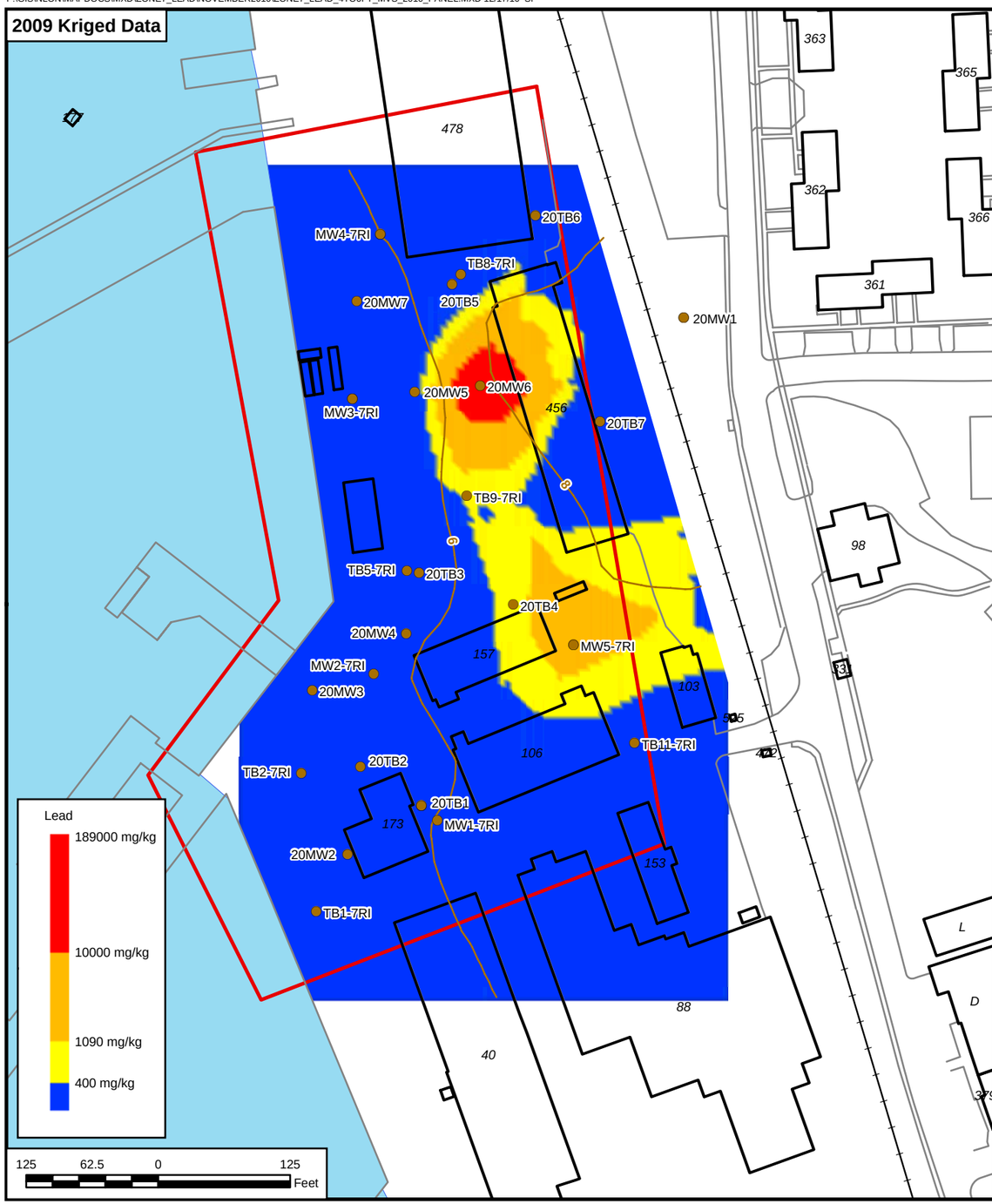

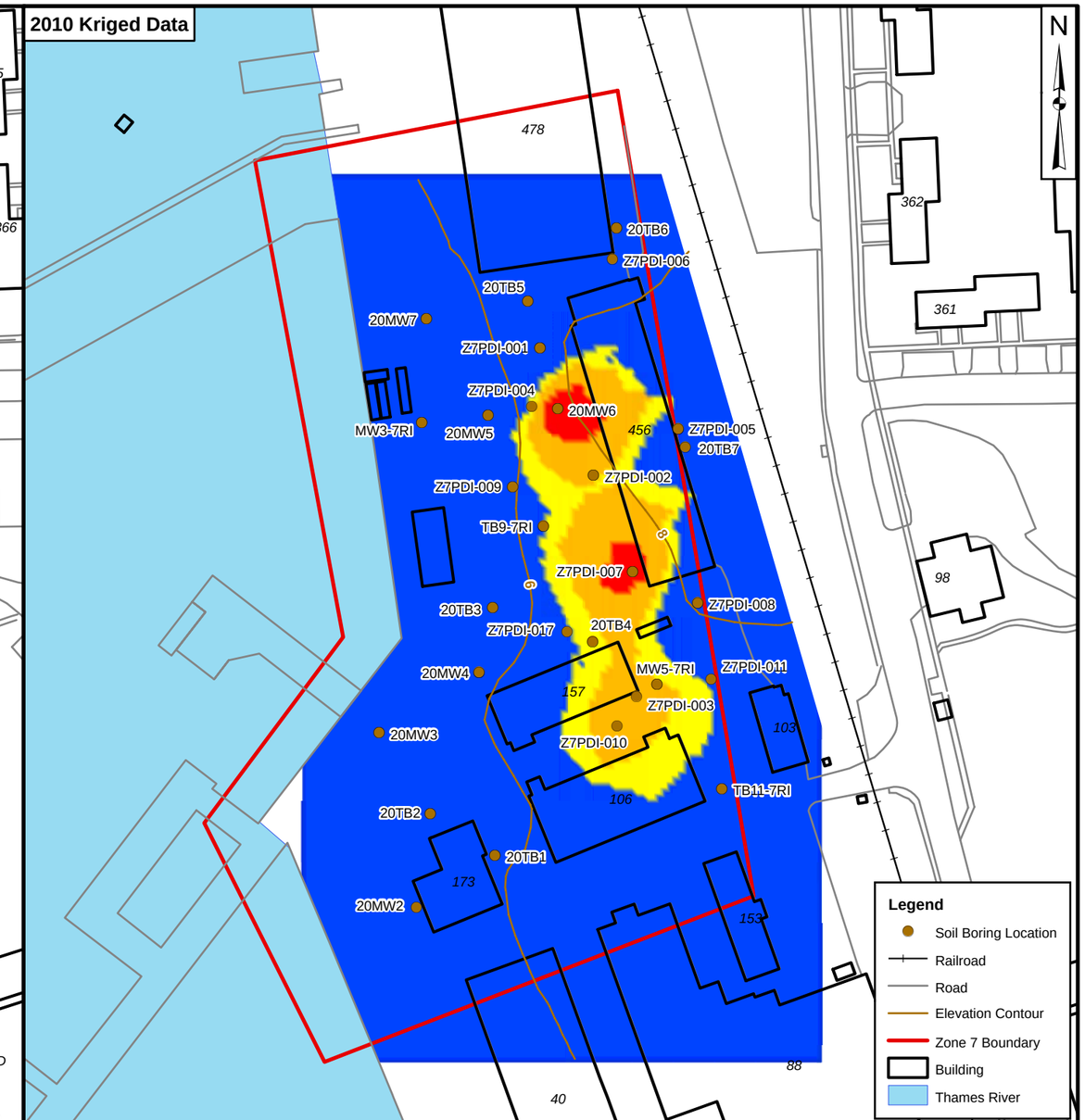

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 4 TO 6 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.39 REV 0

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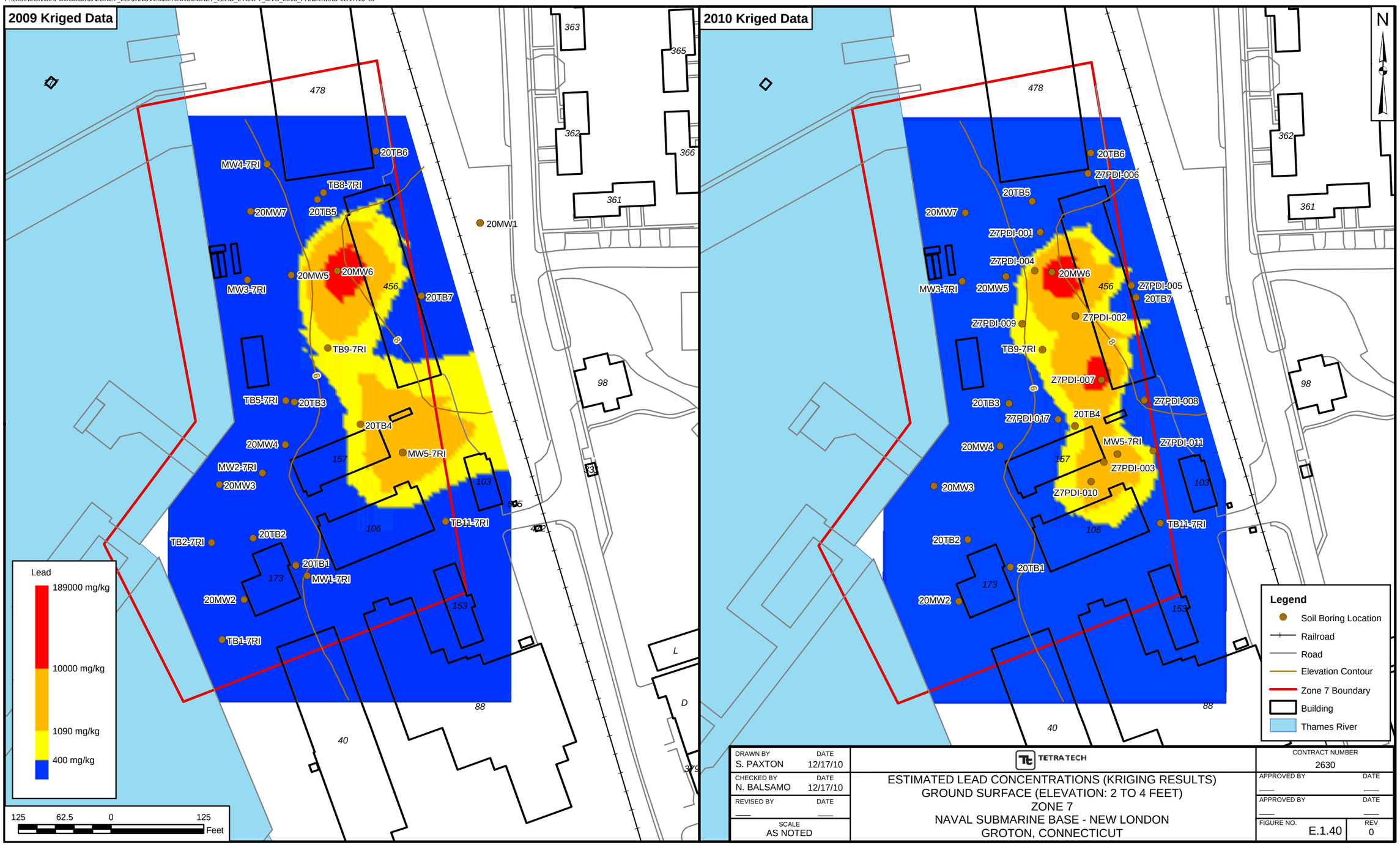
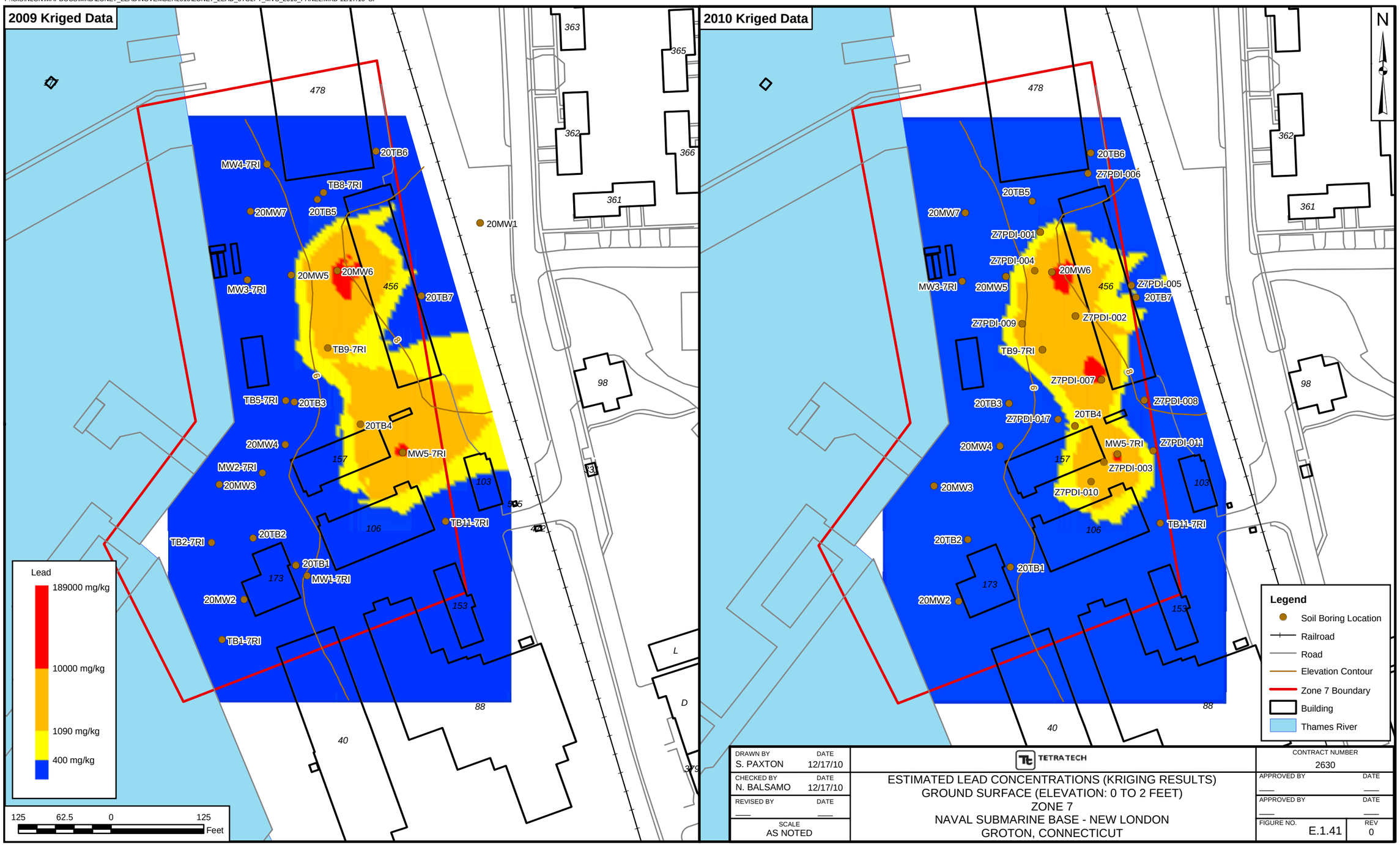


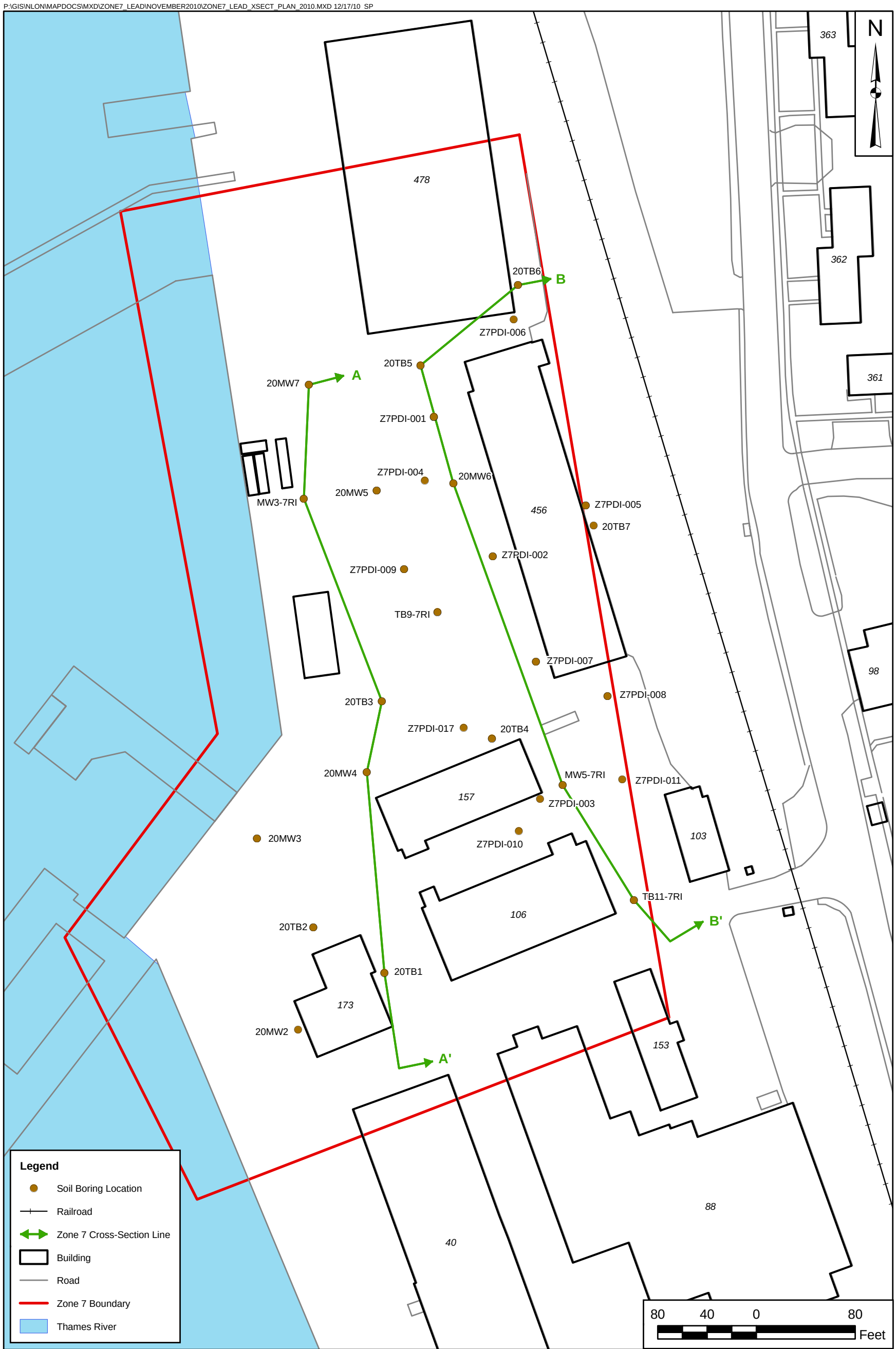
DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 2 TO 4 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.40 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_LEAD\NOVEMBER2010\ZONE7_LEAD_0TO2FT_MVS_2010_PANEL.MXD 12/17/10 SP



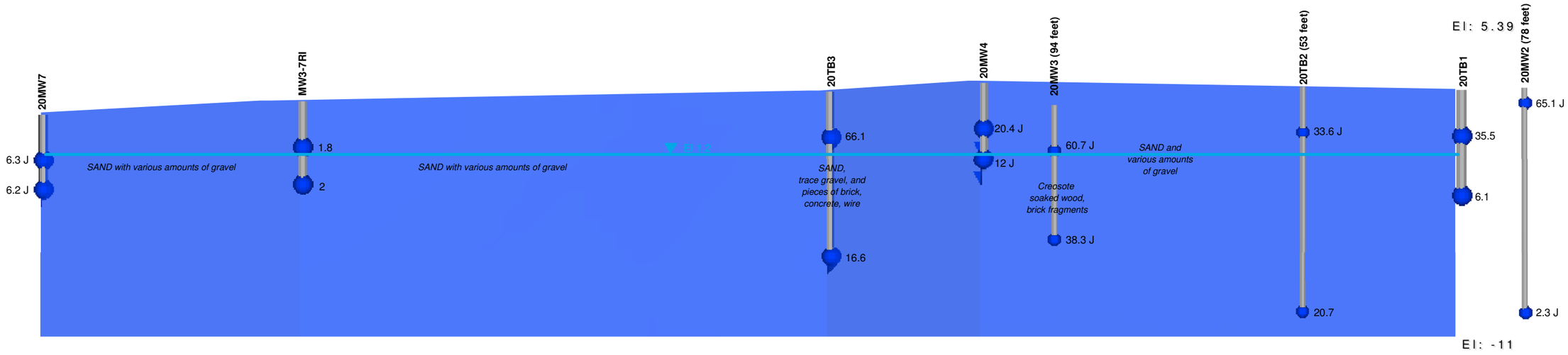
DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS) GROUND SURFACE (ELEVATION: 0 TO 2 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.1.41 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_LEAD\NOVEMBER2010\ZONE7_LEAD_XSECT_PLAN_2010.MXD 12/17/10 SP



DRAWN BY S. PAXTON	DATE 12/17/10	Tetra Tech NUS, Inc.	CONTRACT NO. 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	LEAD CROSS-SECTION MAP ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY _ / DATE --
COST/SCHED-AREA			APPROVED BY -- / DATE --
SCALE AS NOTED			FIGURE NO. E.1.42 / REV.

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_LEAD\NOVEMBER2010\ZONE7_LEAD_XSECT_AA_NO_PROPLOCS_2010.MXD 08/16/11 SP



LEGEND

Lead

189000 mg/kg

4000 mg/kg

1090 mg/kg

400 mg/kg

Boring Offset from Cross-Section

Boring Included in Cross-Section

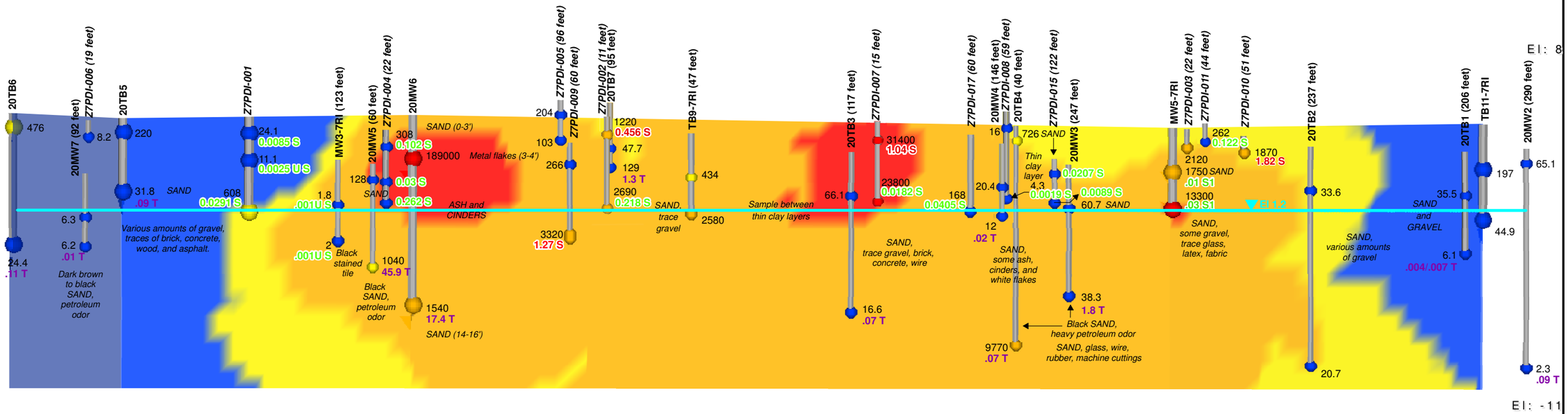
Note: NAVD 1988 datum was used for elevations.

35 17.5 0 35 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY S. PAXTON	DATE 12/21/10	TETRA TECH	CONTRACT NUMBER 2630	CTO NUMBER WE57
CHECKED BY N. BALSAMO	DATE 08/16/11	LEAD CROSS-SECTION A-A' ALL SAMPLES BELOW ELEVATION 10 FEET ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___	DATE ___
REVISED BY S. PAXTON	DATE 08/16/11		APPROVED BY ___	DATE ___
SCALE AS NOTED			FIGURE NO. E.1.43	REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_LEAD\NOVEMBER2010\ZONE7_LEAD_XSECT_BB_LEACHATE_2010.MXD 08/16/11 SP



LEGEND

Lead Kriging (based on mass results)

- 189000 mg/kg
- 10000 mg/kg
- 1090 mg/kg
- 400 mg/kg

Boring Offset > 60 feet from Cross-Section

Boring Offset ≤ 60 feet from Cross-Section

Boring Included in Cross-Section

Leachate Results

- T TCLP (mg/L)
- S SPLP < 0.32 mg/L
- S SPLP > 0.32 mg/L

Notes:
1) NAVD 1988 datum was used for elevations.
2) Where there are duplicate results, the higher value was used.

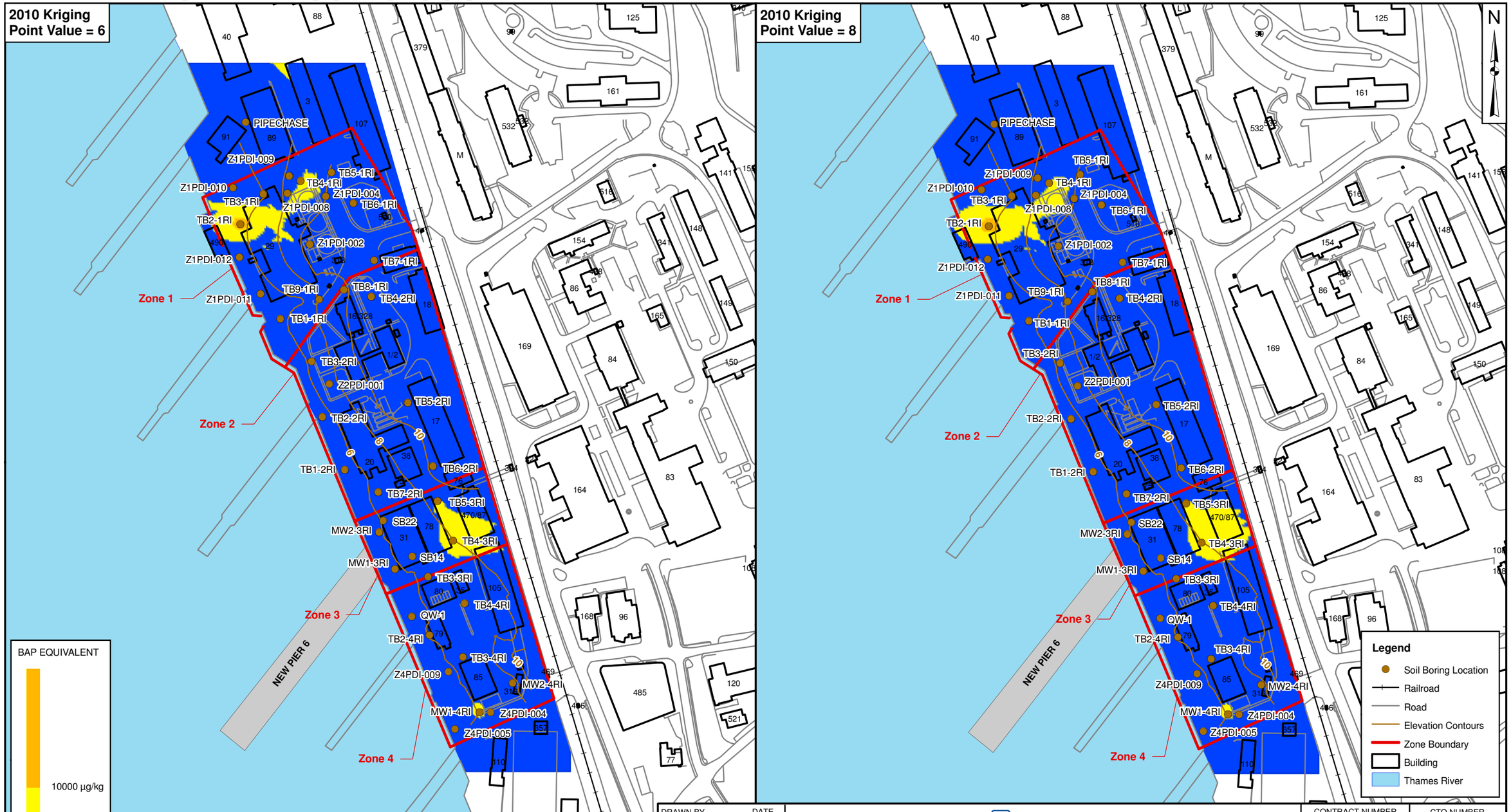
35 17.5 0 35 Feet

APPROXIMATE HORIZONTAL SCALE IN FEET

DRAWN BY	DATE	TETRA TECH	CONTRACT NUMBER	CTO NUMBER
S. PAXTON	12/21/10		2630	WE57
CHECKED BY	DATE	LEAD CROSS-SECTION B-B' WITH LEACHATE RESULTS AND PDI SAMPLE LOCATIONS ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY	DATE
N. BALSAMO	08/16/11		—	—
REVISED BY	DATE		APPROVED BY	DATE
S. PAXTON	08/16/11		—	—
SCALE			FIGURE NO.	REV
AS NOTED			E.1.44	0

SENSITIVITY ANALYSIS FIGURES

PGH P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_PAH\NOVEMBER2010\ZONE1234_PAH_SENSITIVITY_2TO4FT_MVS_2010_PANEL.MXD 08/15/11 SP



DRAWN BY	DATE
S. PAXTON	12/22/10
CHECKED BY	DATE
N. BALSAMO	08/15/11
REVISED BY	DATE
S. PAXTON	08/15/11
SCALE	
AS NOTED	

TETRA TECH

ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS)
GROUND SURFACE (ELEVATION: 2 TO 4 FEET)
ZONES 1, 2, 3, AND 4
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

CONTRACT NUMBER	CTO NUMBER
2630	WE57
APPROVED BY	DATE
APPROVED BY	DATE
FIGURE NO. E.1.45	REV 0

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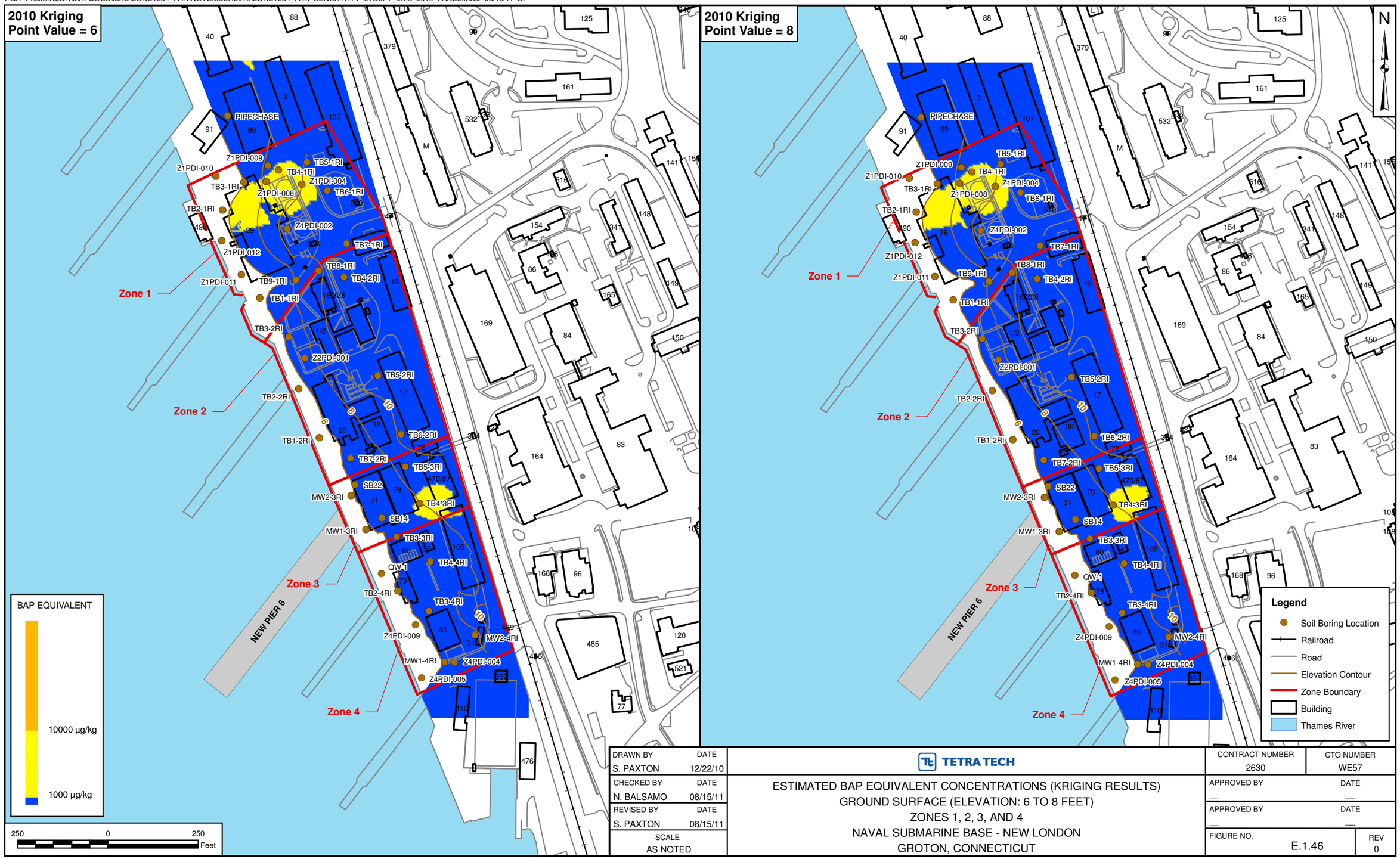

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TETRA TECH

ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS)
GROUND SURFACE (ELEVATION: 6 TO 8 FEET)
ZONES 1, 2, 3, AND 4
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

CONTRACT NUMBER	CTO NUMBER
2630	WE57
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FIGURE NO. E.1.46	REV 0

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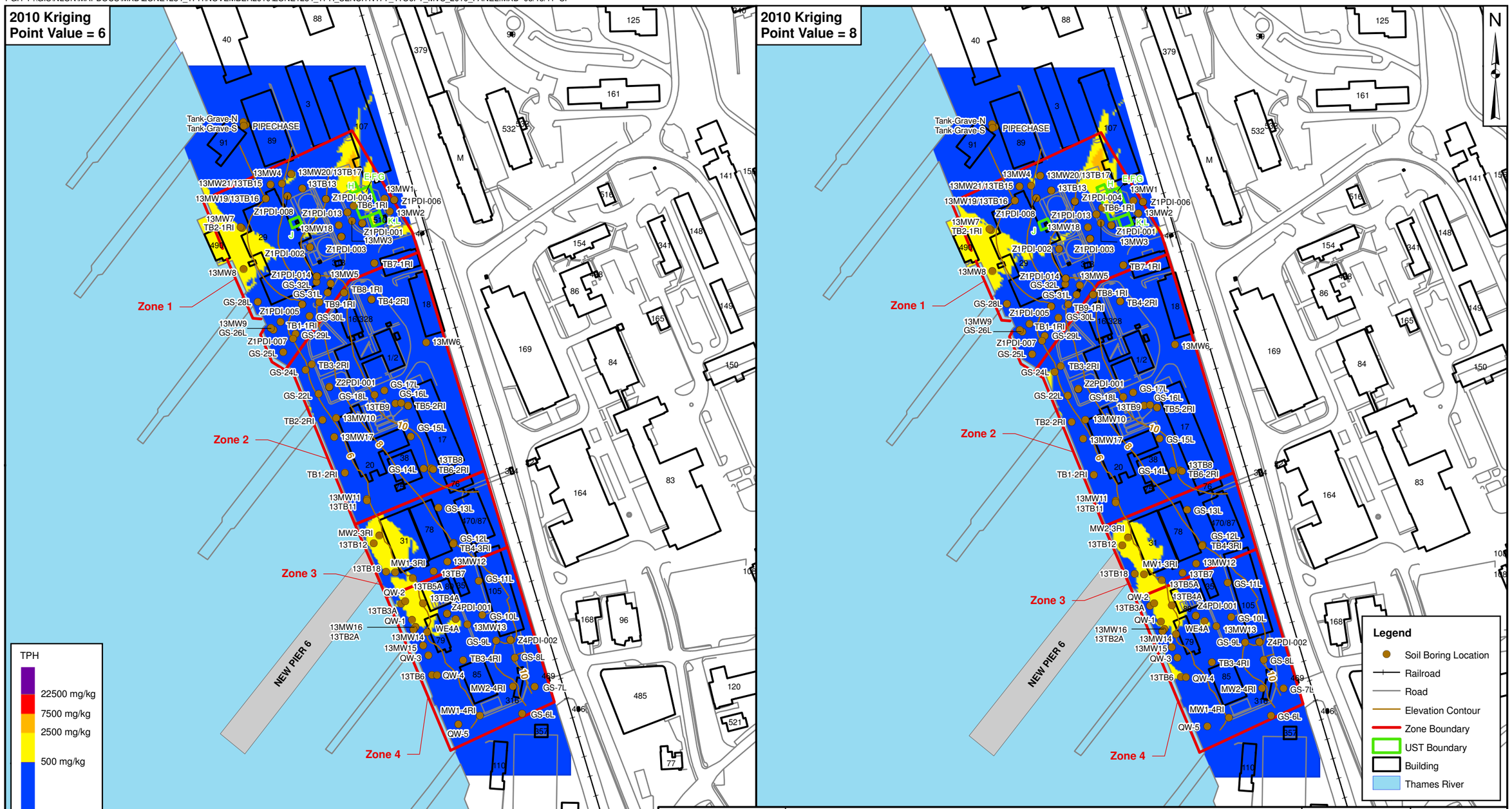

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S. PAXTON	08/15/11
SCALE	
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TETRA TECH

ESTIMATED TPH CONCENTRATIONS (KRIGING RESULTS)
GROUND SURFACE (ELEVATION: 4 TO 6 FEET)
ZONES 1, 2, 3, AND 4
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

CONTRACT NUMBER	CTO NUMBER
2630	WE57
APPROVED BY	DATE
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FIGURE NO. E.1.47	REV 0

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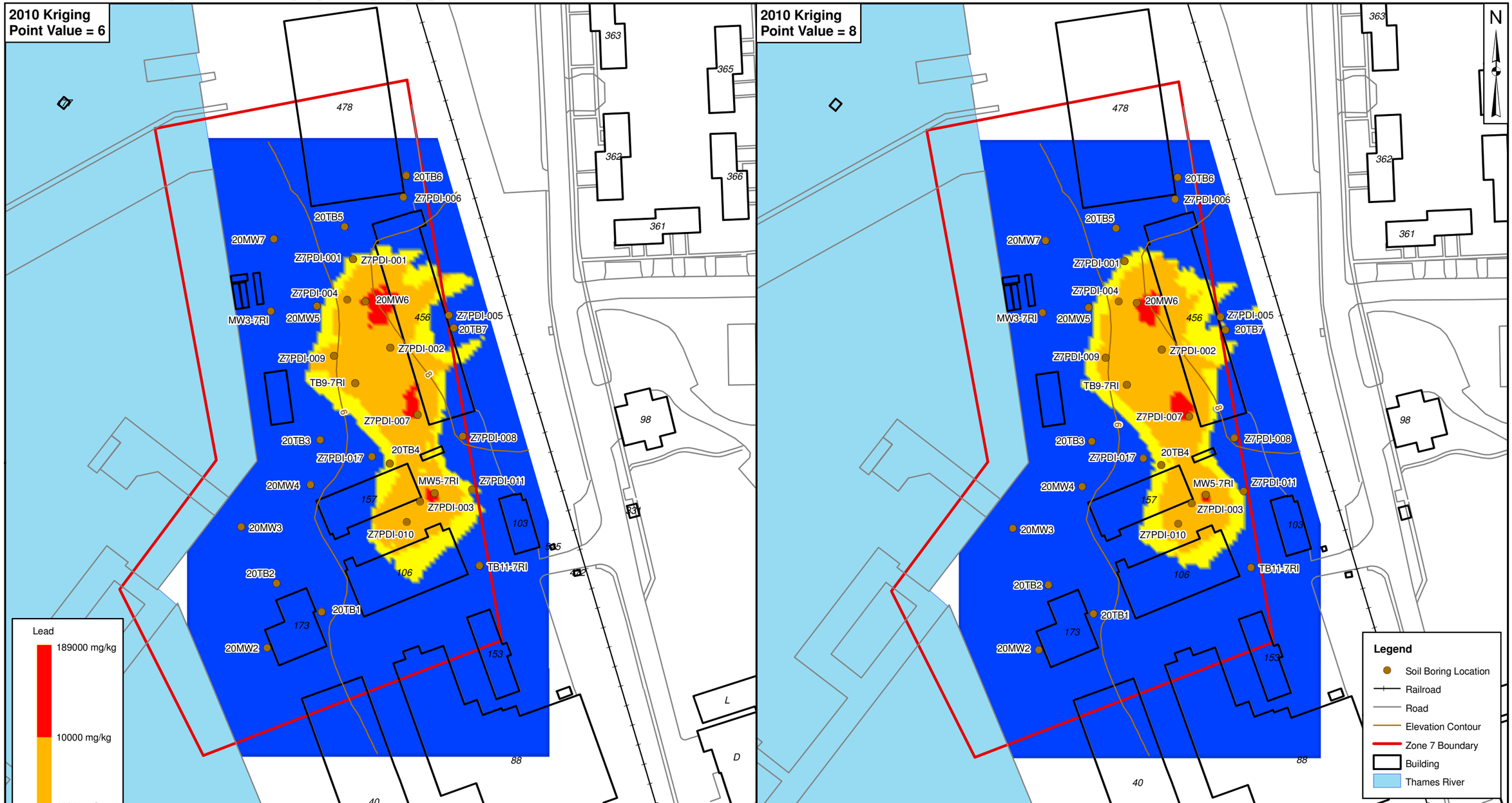

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N. BALSAMO	08/15/11
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S. PAXTON	08/15/11
SCALE	
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TETRA TECH

ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS)
GROUND SURFACE (ELEVATION: 0 TO 2 FEET)
ZONE 7
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

CONTRACT NUMBER	CTO NUMBER
2630	WE57
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FIGURE NO. E.1.48	REV 0

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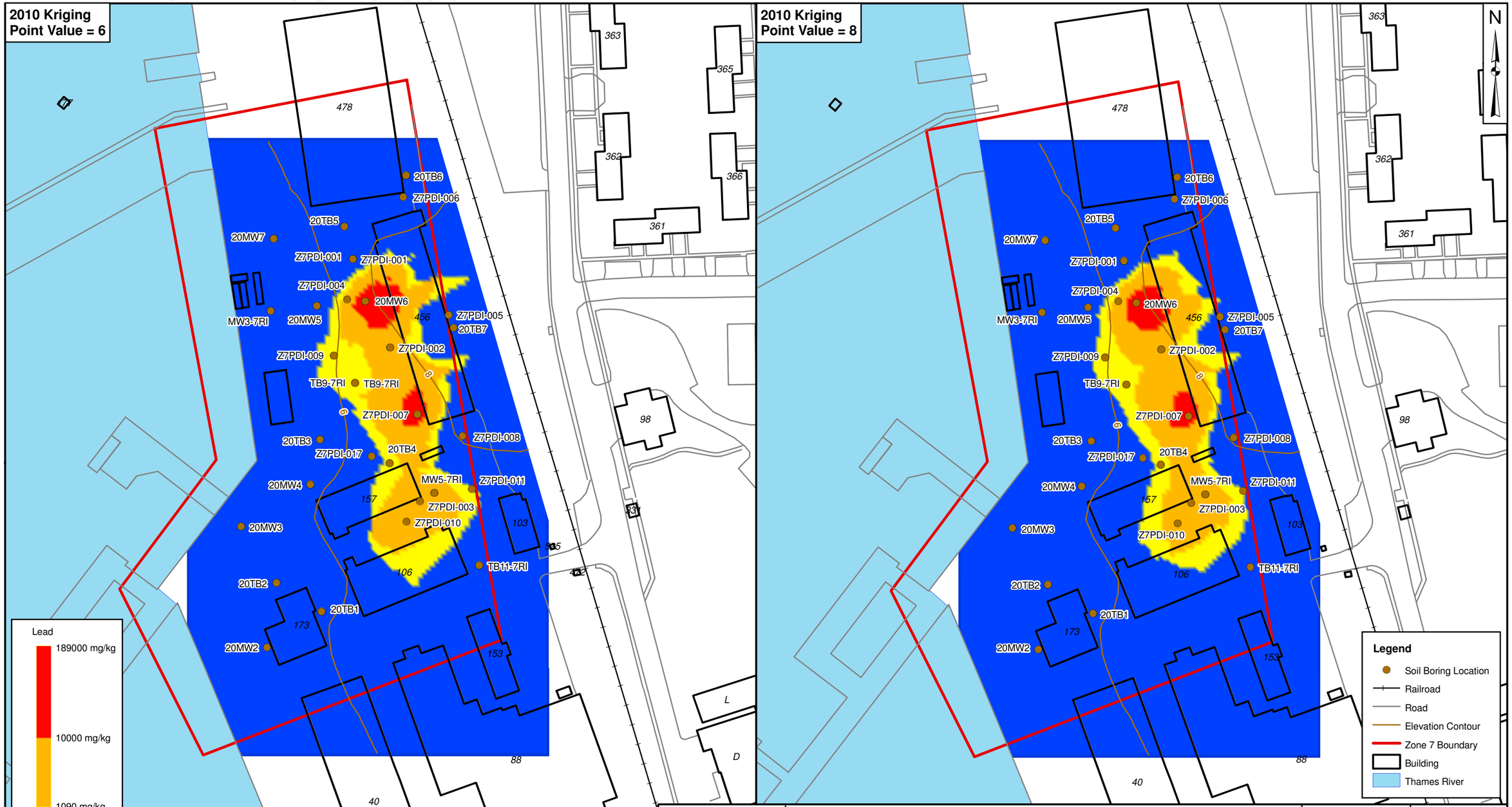

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N. BALSAMO	08/15/11
REVISED BY	DATE
S. PAXTON	08/15/11
SCALE	
AS NOTED	

TETRA TECH

ESTIMATED LEAD CONCENTRATIONS (KRIGING RESULTS)
GROUND SURFACE (ELEVATION: 2 TO 4 FEET)
ZONE 7
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

CONTRACT NUMBER	CTO NUMBER
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FIGURE NO.	REV
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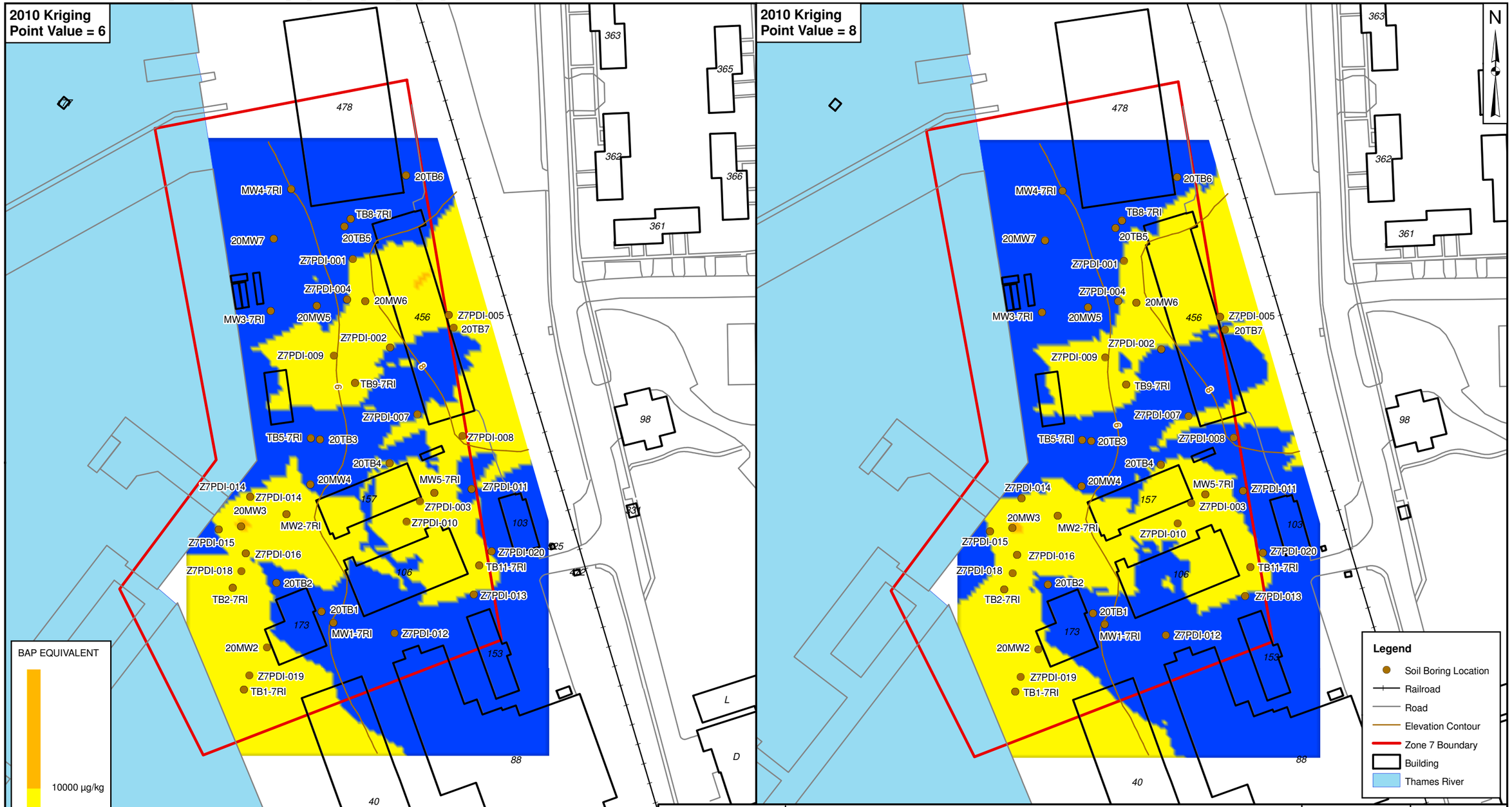

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S. PAXTON	08/15/11
SCALE	
AS NOTED	

TETRA TECH

ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS)
GROUND SURFACE (ELEVATION: 0 TO 2 FEET)
ZONE 7
NAVAL SUBMARINE BASE - NEW LONDON
GROTON, CONNECTICUT

CONTRACT NUMBER	CTO NUMBER
2630	WE57
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APPROVED BY	DATE
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FIGURE NO.	REV
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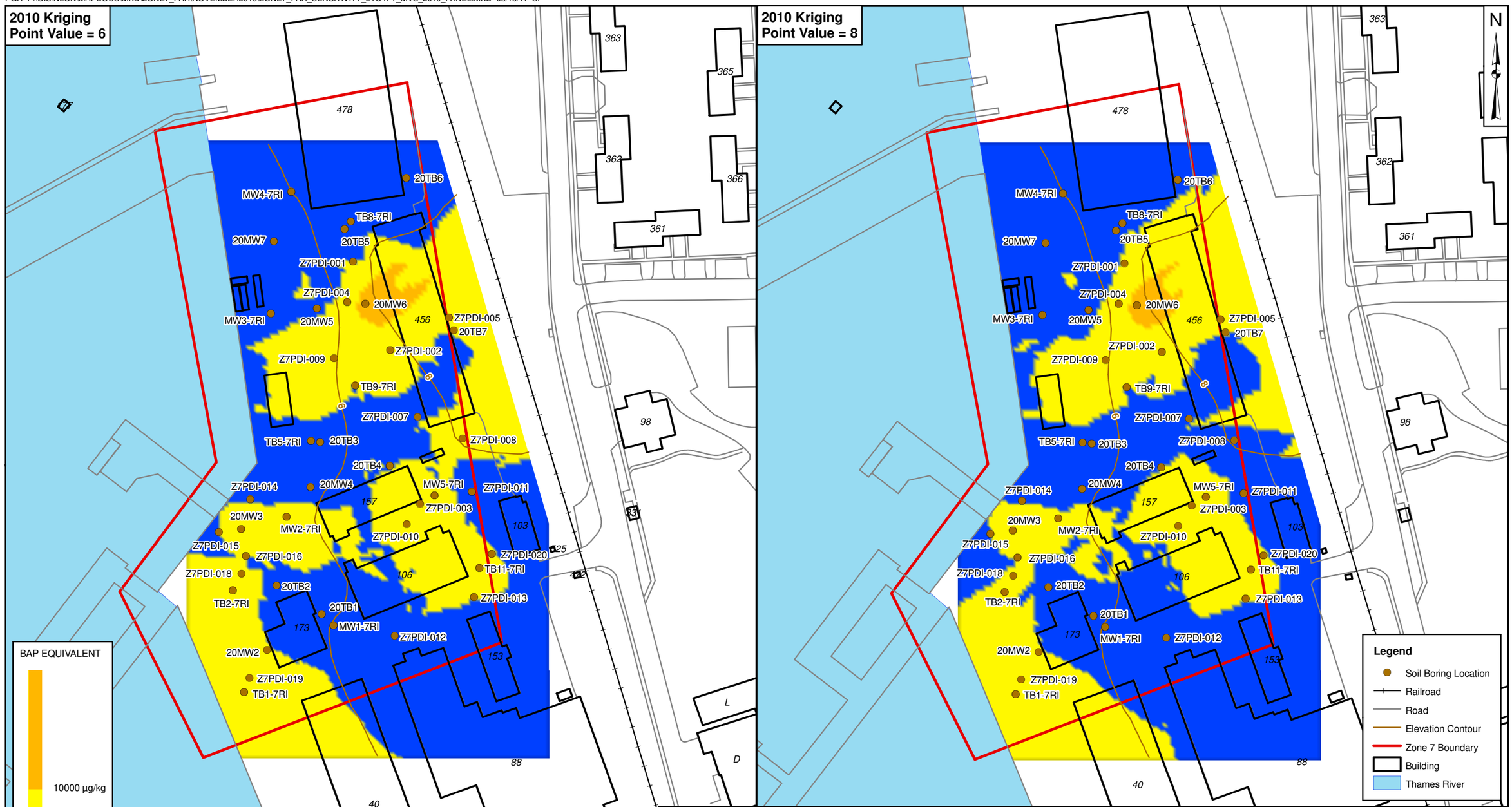

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S. PAXTON	12/22/10		2630	WE57
CHECKED BY	DATE	ESTIMATED BAP EQUIVALENT CONCENTRATIONS (KRIGING RESULTS)	APPROVED BY	DATE
N. BALSAMO	08/15/11	GROUND SURFACE (ELEVATION: 2 TO 4 FEET)	—	—
REVISED BY	DATE	ZONE 7	APPROVED BY	DATE
S. PAXTON	08/15/11	NAVAL SUBMARINE BASE - NEW LONDON	—	—
SCALE		GROTON, CONNECTICUT	FIGURE NO.	REV
AS NOTED			E.1.51	0

E.2 UNCERTAINTY ANALYSIS

Technical Memorandum

Uncertainty Modeling in Support of Sampling Design for Lower Subase Soil PDI SAP

NSB-NLON, Groton, Connecticut

By: B. Li

Date: December 29, 2010

INTRODUCTION

Upon review of the Draft Lower Subase Feasibility Study (Tetra Tech, 2008), EPA recommended that a Pre-Design Investigation (PDI) be performed prior to selecting the final soil remedies and performing the remedial designs for each zone. The purposes of the PDI for soil at the Lower Subase are 1) to sample and analyze soil for primary contaminants of concern (COCs) at horizontal and vertical locations of greatest uncertainty of complying with the Industrial/Commercial (I/C) regulatory criteria to determine a more accurate estimate of the volume of soil requiring remediation in each zone, and 2) to sample and analyze soil for primary COCs at horizontal and vertical locations of greatest uncertainty of complying with the Residential regulatory criteria to determine a more accurate estimate of the area of soil requiring Land Use Controls (LUCs) as long as the soil presents risks .

In support of development of the PDI Sampling and Analysis Plan (SAP), three-dimensional (3D) uncertainty modeling was conducted using Geostatistical Software Library (GSLIB) to process the soil data of primary COCs, including polycyclic aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), and lead from Zones 1 through 4 and Zone 7 at the Lower Subase. Due to the requirement of data quantity, only Zones 1 through 4 and Zone 7 data were analyzed. The data from Zones 1 through 4 were analyzed together because the four zones are physically connected and spatial continuity in data was observed.

The results of the uncertainty modeling are 3D maps that show the uncertainty scale at horizontal and vertical locations for individual contaminants. On each map, the uncertainty scale at each location is determined by a specific uncertainty model that considers several factors, including spatial distribution of data (data sparsity), level of contamination, and contaminant concentrations in relation to regulatory criteria. For presentation purposes, the 3D uncertainty maps are presented in a series of two dimensional (2D) maps representing two-foot intervals in the vertical direction. The 2D uncertainty maps are provided in Appendix E.2.

Based on the uncertainty maps, locations for additional sampling were selected, primarily in the zones with the greatest uncertainty. The PDI sampling was then conducted and new data were obtained for the selected locations. In support of the Lower Subase Soil PDI Completion Report and Lower Subase Feasibility Study Addendum, the uncertainty analysis was conducted again using the old data and the new data collected from the PDI sampling. The updated uncertainty maps show new locations with the

greatest uncertainty of complying with the I/C regulatory criteria. Note that, the process of uncertainty analysis – additional sampling will eventually lead to reduction of the overall spatial uncertainty (the extreme case is every location is sampled and hence there is no uncertainty). However, at the early stage of this process with limited number of data, the overall spatial uncertainty may not necessarily be reduced. Instead, the benefit of uncertainty analysis is realized through the assistance to the additional sampling design and the subsequent refinement of the contaminant concentration maps (i.e., the kriging maps) with a focus on the boundary of the zones exceeding the I/C regulatory criteria.

METHODOLOGY

The uncertainty modeling methodology used for the Lower Subase was developed and tested by researchers in the University of Michigan in 2001. The methodology was built on the concepts and theories of geostatistical uncertainty modeling. The state-of-the-art technology was published in Environmental Science & Technology (Barabas et al., 2001), where the technology was tested and demonstrated using 3D dioxin data from sediments in an estuarine river. As stated, this uncertainty modeling technology differs from the others (e.g. kriging variance-based technologies, such as the one used in Environmental Visualization System) in that it considers both where existing samples are located and the concentration levels of existing samples. Kriging-variance based technologies only consider sample locations, which may lead to unnecessary sampling in relatively clean areas. Moreover, the technology used herein was designed to consider regulatory criteria, which makes it specifically suitable for criteria-based zone delineation problems. An example of this technology using Zone 7 lead data was presented to the Partnering Team on May 14, 2009 (see Appendix A of the Lower Subase Soil PDI SAP) and the team subsequently provided approval of the method for use in developing the Lower Subase Soil PDI SAP.

The methodology consists of the followingsteps:

1) Local Uncertainty Modeling

A 3D grid is first established to bound the two study areas (i.e., Zones 1 through 4 and Zone 7). Based on the density of existing sample data (i.e., the sparsity level of data), a 5-foot by 5-foot grid was established. The sample data were then analyzed for spatial features (e.g., semi-variograms) and the features were mathematically modeled. The sample data and the modeled spatial features were then used to derive a conditional cumulative distribution function (ccdf) $F(\mathbf{u}; z|(n))$ for each location (represented by $\mathbf{u}$) within the 3D grid to provide a measure of local uncertainty. The ccdf is conditioned to the n existing sample data in the neighborhood of $\mathbf{u}$, represented by $z|(n)$. Several approaches exist to derive the ccdf from existing sample data. For the Lower Subase study, a non-parametric indicator approach was used because it does not make assumptions about the multiple-point distribution function of the data.

2) Uncertainty Scale Computation

Once a ccdf is derived at each location of the 3D grid, a statistic is computed at each location to quantify its uncertainty of complying with a certain regulatory criterion (i.e., the uncertainty in zone delineation in relation to this criterion). This statistic is a unitless, non-negative, real number that represents the scale of uncertainty. A value of zero represents the least uncertainty. A large value represents high uncertainty. There is no maximum on the monotonic uncertainty scale. The statistic is computed as

$$r(\mathbf{u}) = \frac{s(\mathbf{u})}{\left| z_E^*(\mathbf{u}) - z_c \right|} \qquad with \quad z_E^*(\mathbf{u}) \neq z_c \tag{1}$$

Here, $s(\mathbf{u})$ is the standard deviation of the ccdf at location $\mathbf{u}$, and can be calculated from the ccdf as follows:

$$s^2(\mathbf{u}) = \int_{-\infty}^{+\infty} [\mathrm{z} - \mathrm{z}_\mathrm{E}^*(\mathbf{u})]^2 \cdot f(\mathbf{u}; z \mid (n)) dz \tag{2}$$

In Equations (1) and (2), $f(\mathbf{u};z|(n))$ is the probability density function of the random variable $\mathrm{Z}(\mathbf{u})$ (e.g. contaminant concentration), $\mathrm{z}^*_\mathrm{E}(\mathbf{u})$ is the expectation of the ccdf, and z_c is the regulatory criterion. For the Lower Subase study, the kriging estimates (see Technical Memorandum on Kriging in Appendix B of the Lower Subase Soil PDI SAP) were used for $\mathrm{z}^*_\mathrm{E}(\mathbf{u})$ to ensure consistency between the kriging maps and the uncertainty maps.

As stated, one of the benefits provided by this technology is its incorporation of regulatory criteria in defining a zone. As reflected in Equation (1), locations with the largest $r(\mathbf{u})$ values are the ones with the highest uncertainty in delineating a contaminated zone defined by the regulatory criterion z_c. The $r(\mathbf{u})$ value will be large (i.e., high uncertainty) in two cases: 1) when there is great uncertainty in estimating the contaminant concentration at a location (e.g. because of sparse data or contrasting data), reflected by a large value of the standard deviation of the ccdf ($s(\mathbf{u})$); and 2) when the estimated contaminant concentration ($z^*_\mathrm{E}(\mathbf{u})$) is close to the regulatory criterion z_c, indicating high uncertainty about whether the criterion is exceeded (i.e. the uncertainty in delineating the boundary of the contaminated zone). As a result, if sampling occurs according to the uncertainty scale, priority is placed on the boundary of the contaminated zone defined by the specified regulatory criterion, not the areas with very high concentrations (sure exceedances) or the areas with very low concentrations (sure non-exceedances).

Execution of the described methodology was through the use of GSLIB. GSLIB is a collection of geostatistical programs developed at Stanford University (Deutsch and Journel, 1992).

RESULTS

For presentation purposes, the 3D uncertainty scale maps were processed into a series of 2D plan view maps at 2-foot elevation intervals in the vertical direction of the 3D domain. Each 2D map shows the

plan view uncertainty at the mid-elevation of the 2-foot interval. The 2D maps are provided in Appendix E.2. For each chemical, both the I/C regulatory criterion and the Residential criterion were considered in the uncertainty modeling and two sets of maps were created. The uncertainty maps for the I/C criterion can be used to determine the locations with greatest uncertainty in support of the delineation of the zones that need soil remediation. The maps for the Residential criterion can be used to determine the locations with greatest uncertainy for the delineation of the zones that require LUCs.

For illustration purposes, the maximum of the uncertainty scale was set to 10 for all maps. A color was assigned to each grid location of the map according to its uncertainty scale. The rainbow color scale was set so that high uncertainty is presented by red and low uncertainty is represented by blue. Examination of the uncertainty maps in combination of the kriging maps suggest that high uncertainty is typically observed near the boundary of criteria-defined zones as expected. Comparison of the kriging maps generated before and after the PDI sampling (Appendix E.1) suggests that the extent of the zones exceeding regulatory criteria has been refined with additional data placed at locations with the greatest uncertainty of compliance with corresponding regulatory criteria.

References

Barabas, N, Gooaverts, P, and Adriaens, P, 2001, *Geostatistical Assessment and Validation of Uncertainty for Three-Dimentional Dioxin Data from Sediments in an Estuarine River*, Environmental Science & Technology, 35, 3294-3301

Deutsch, C. V. and Journel, A. G., 1992, *GSLIB: Geostatistical Software Library and User's Guide*, Oxford University Press, New York

Tetra Tech (Tetra Tech NUS, Inc.), 2008. Draft Lower Subase Feasibility Study Report, Naval Submarine Base – New London, Groton, Connecticut. King of Prussia, Pennsylvania, March.

ZONE 1-4

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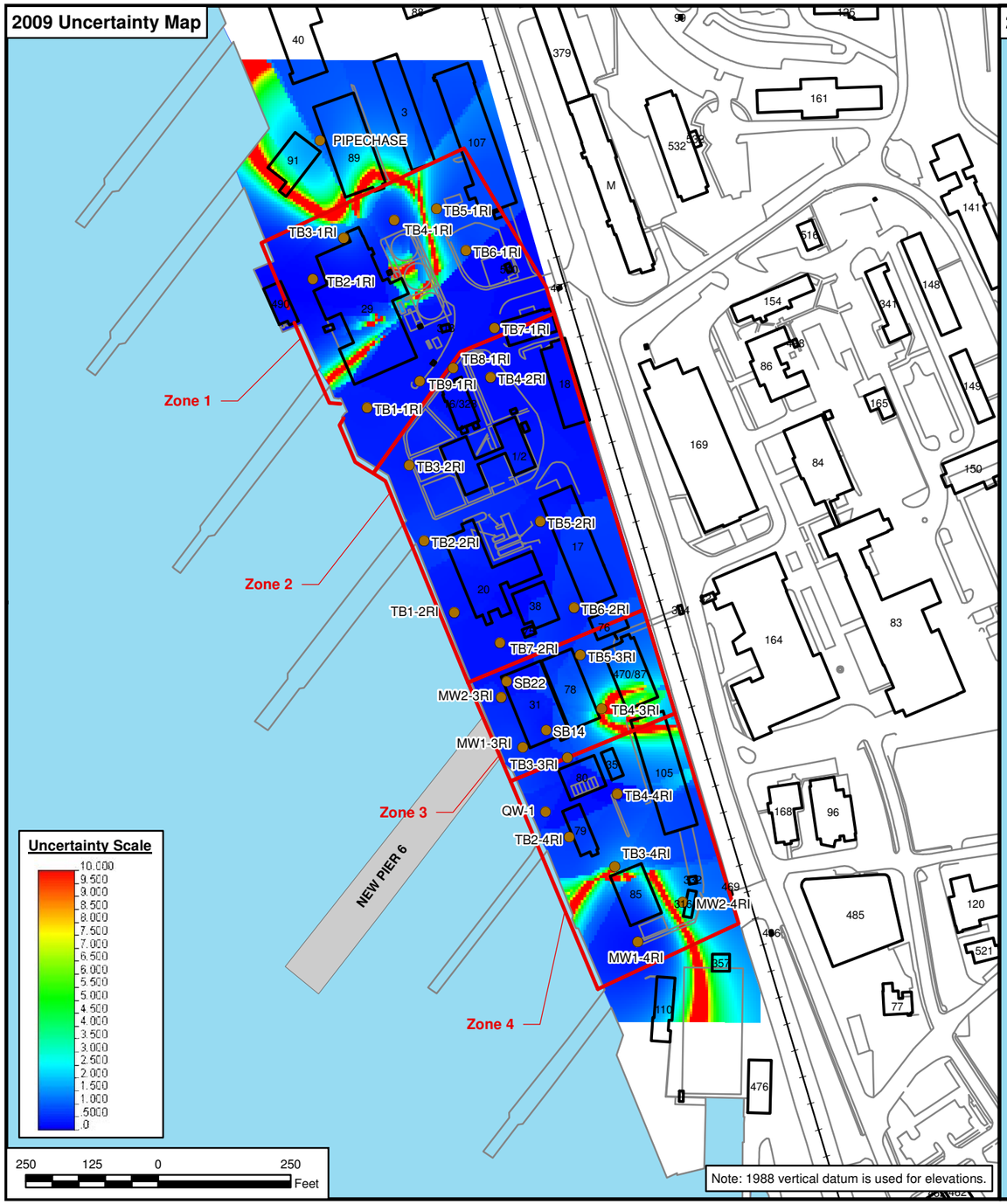

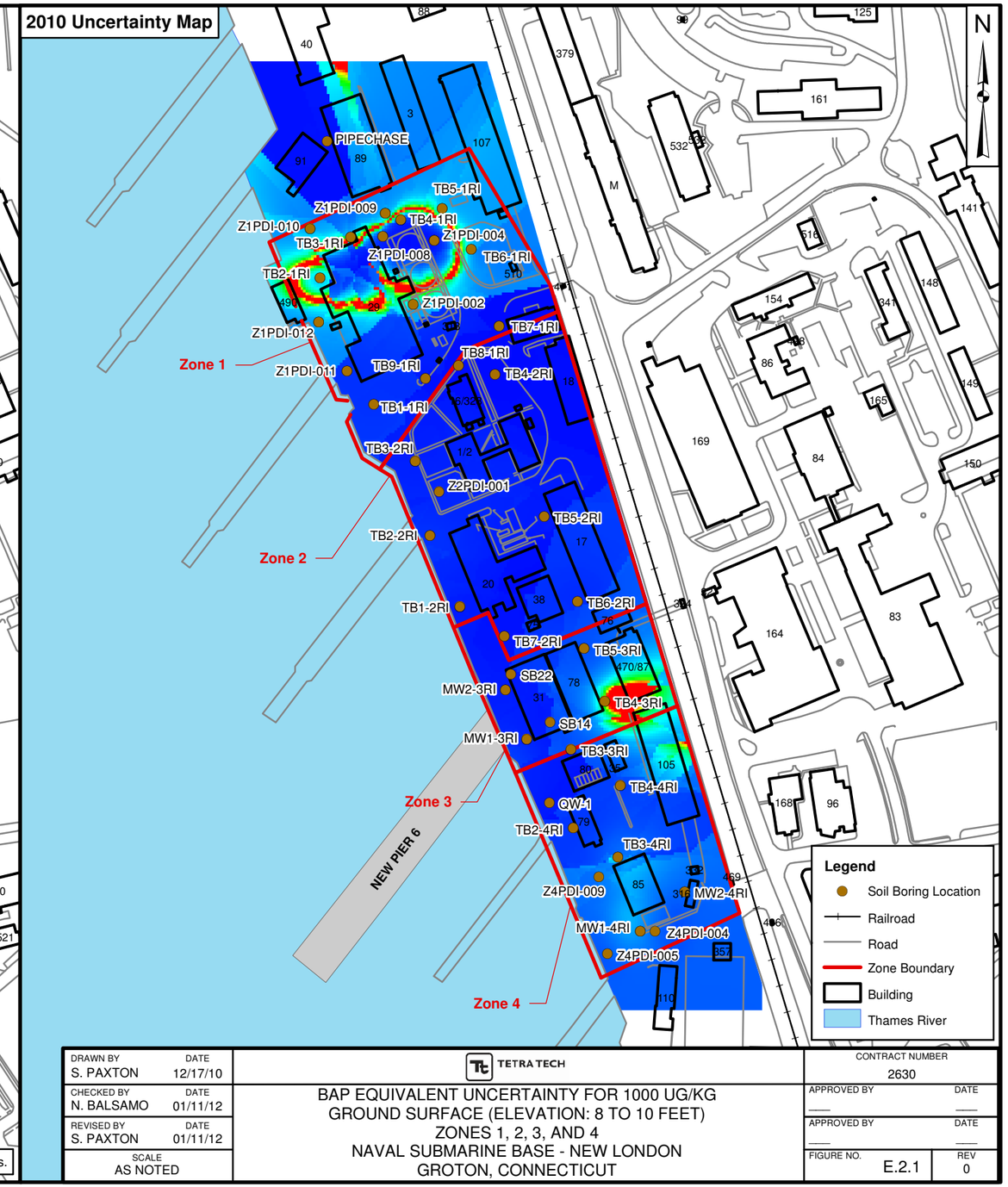

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.1 REV 0

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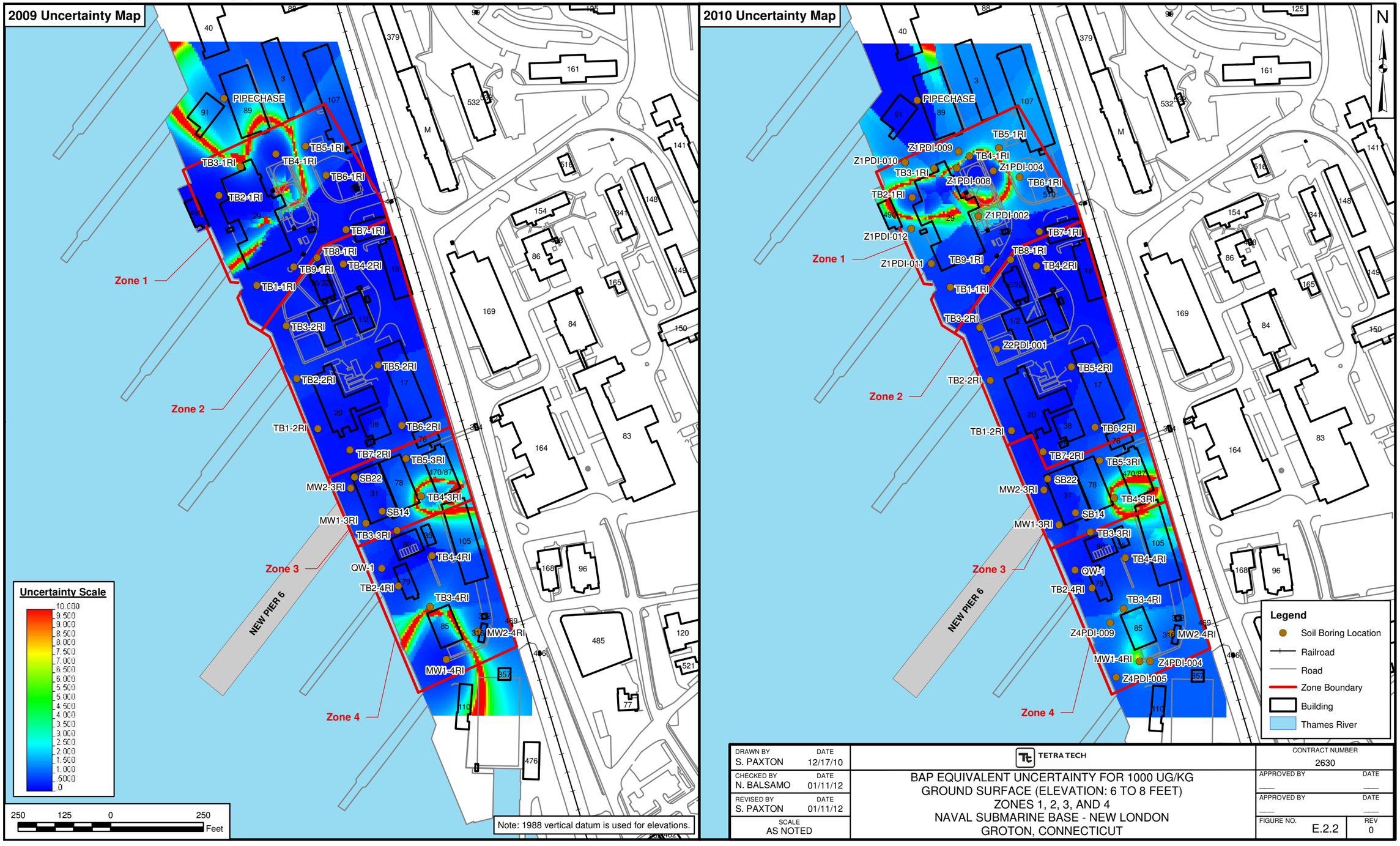

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.2 REV 0

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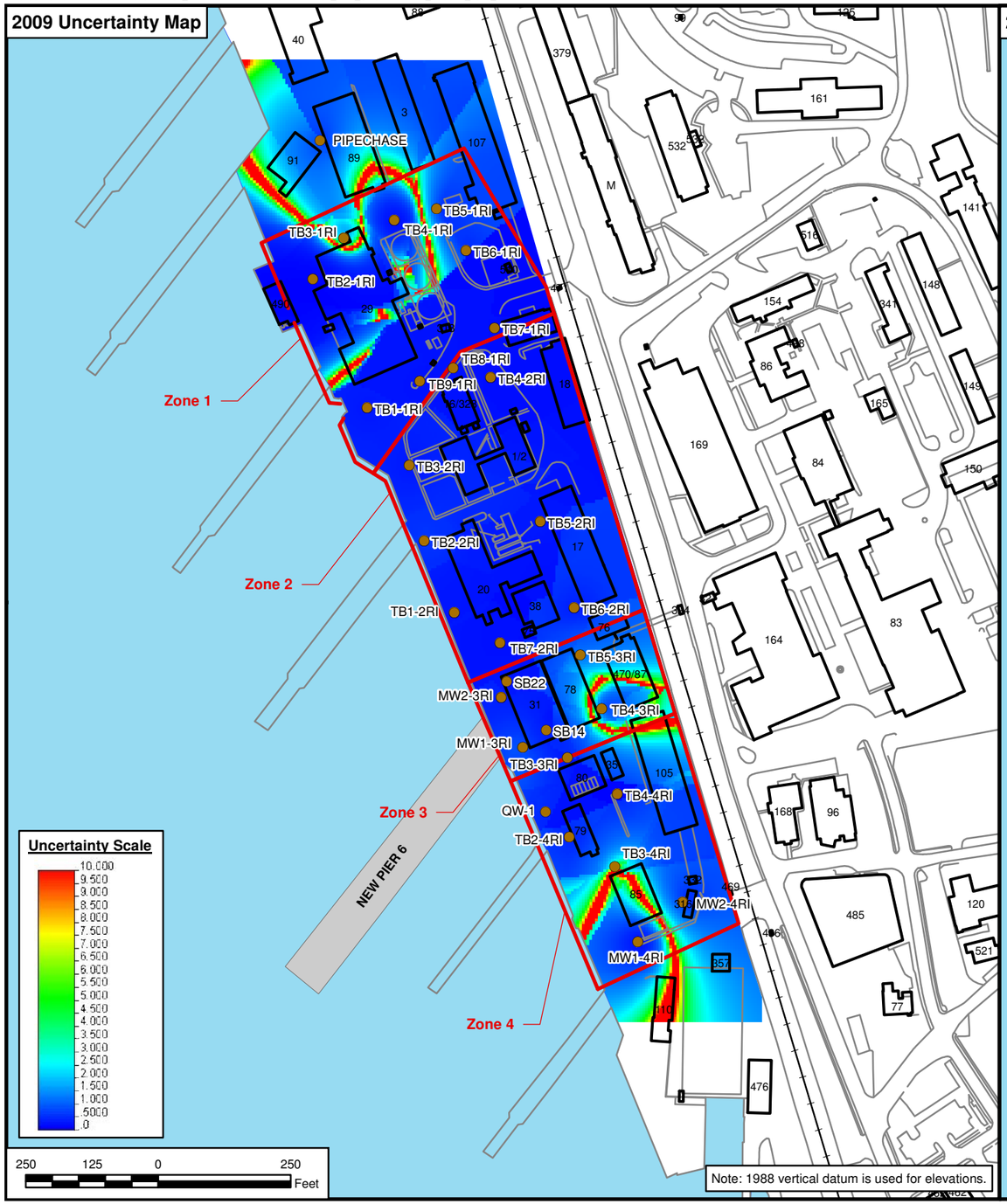

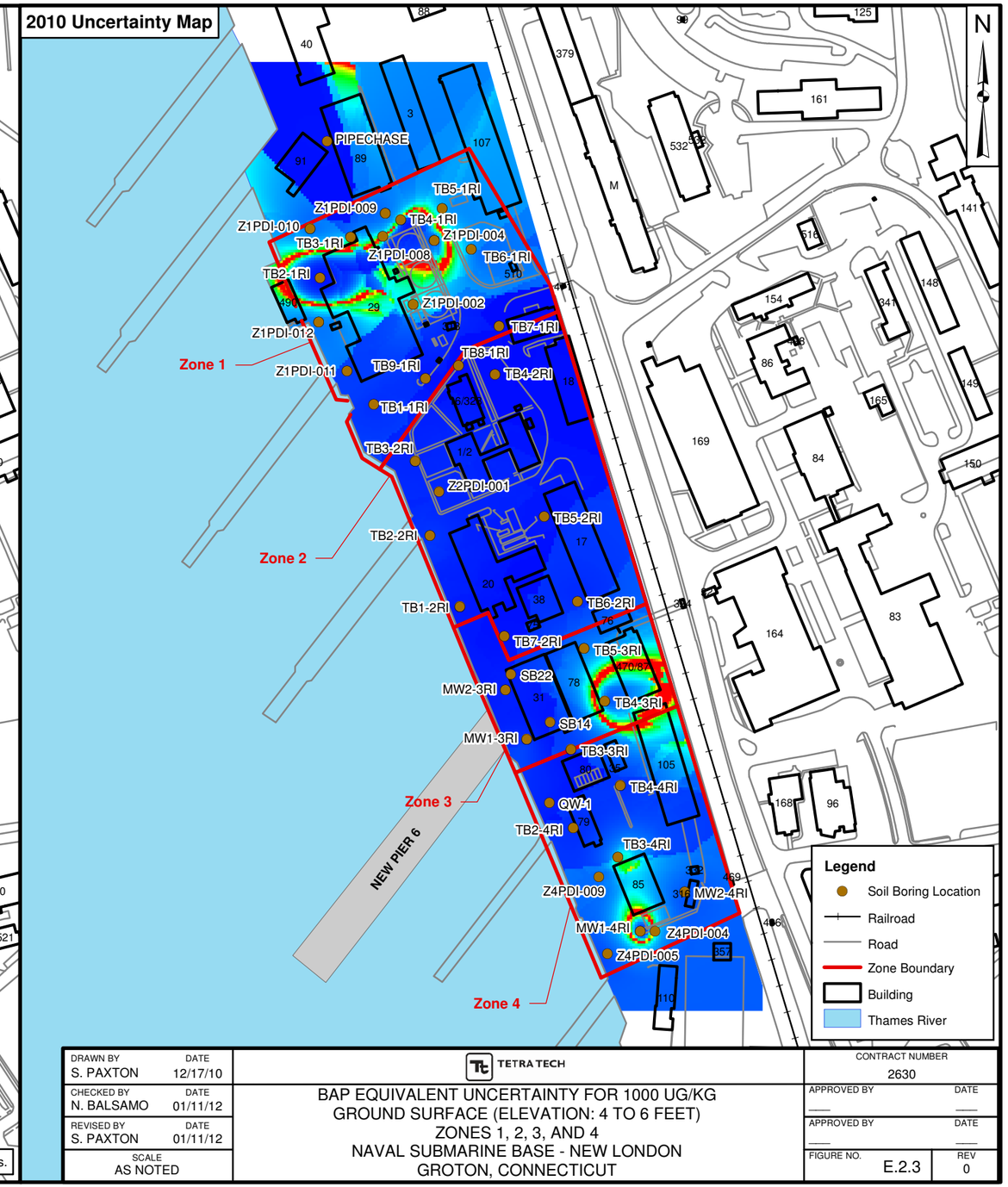

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.3 REV 0

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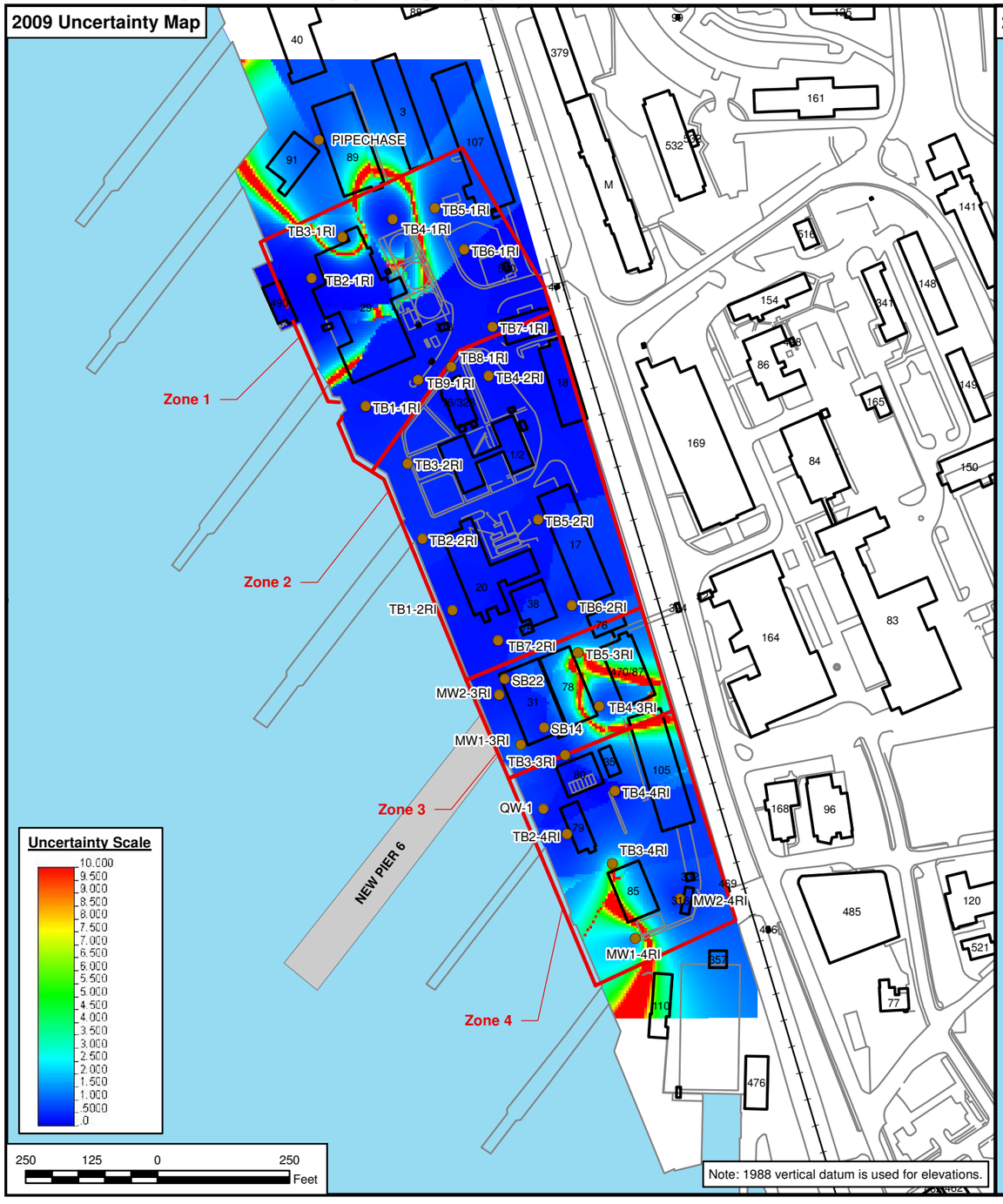

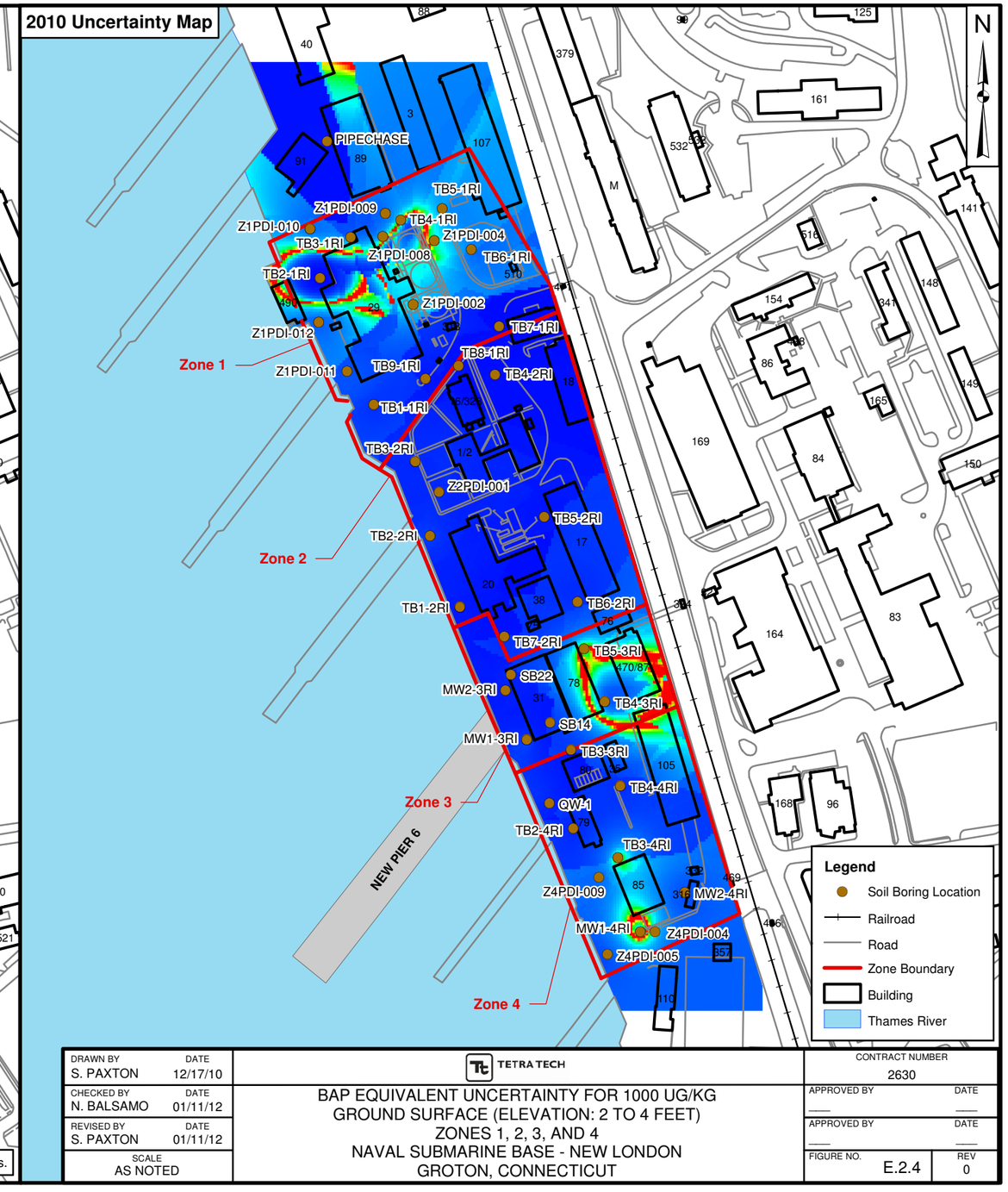

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY — DATE —
SCALE AS NOTED			FIGURE NO. E.2.4 REV 0

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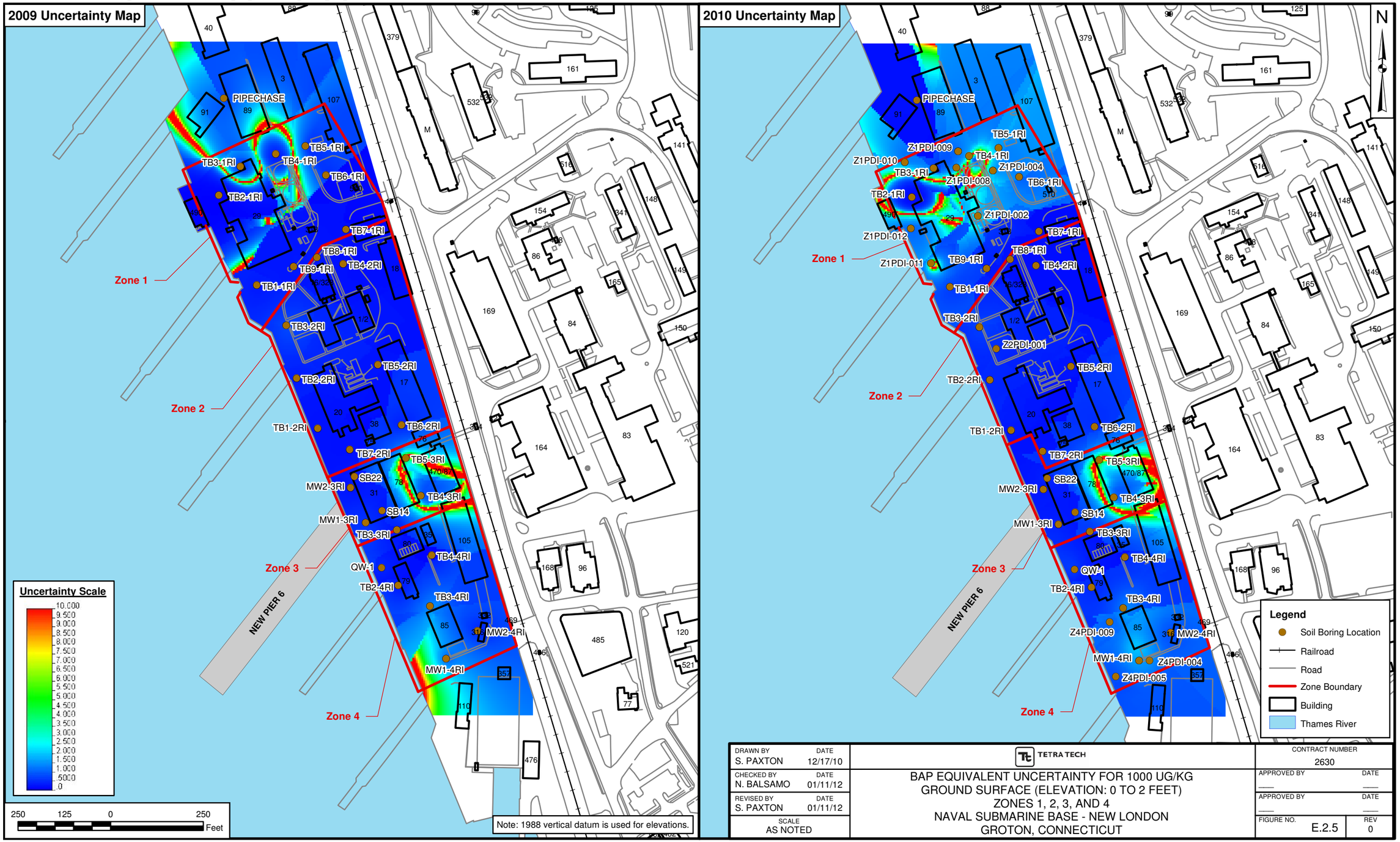

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.5 REV 0

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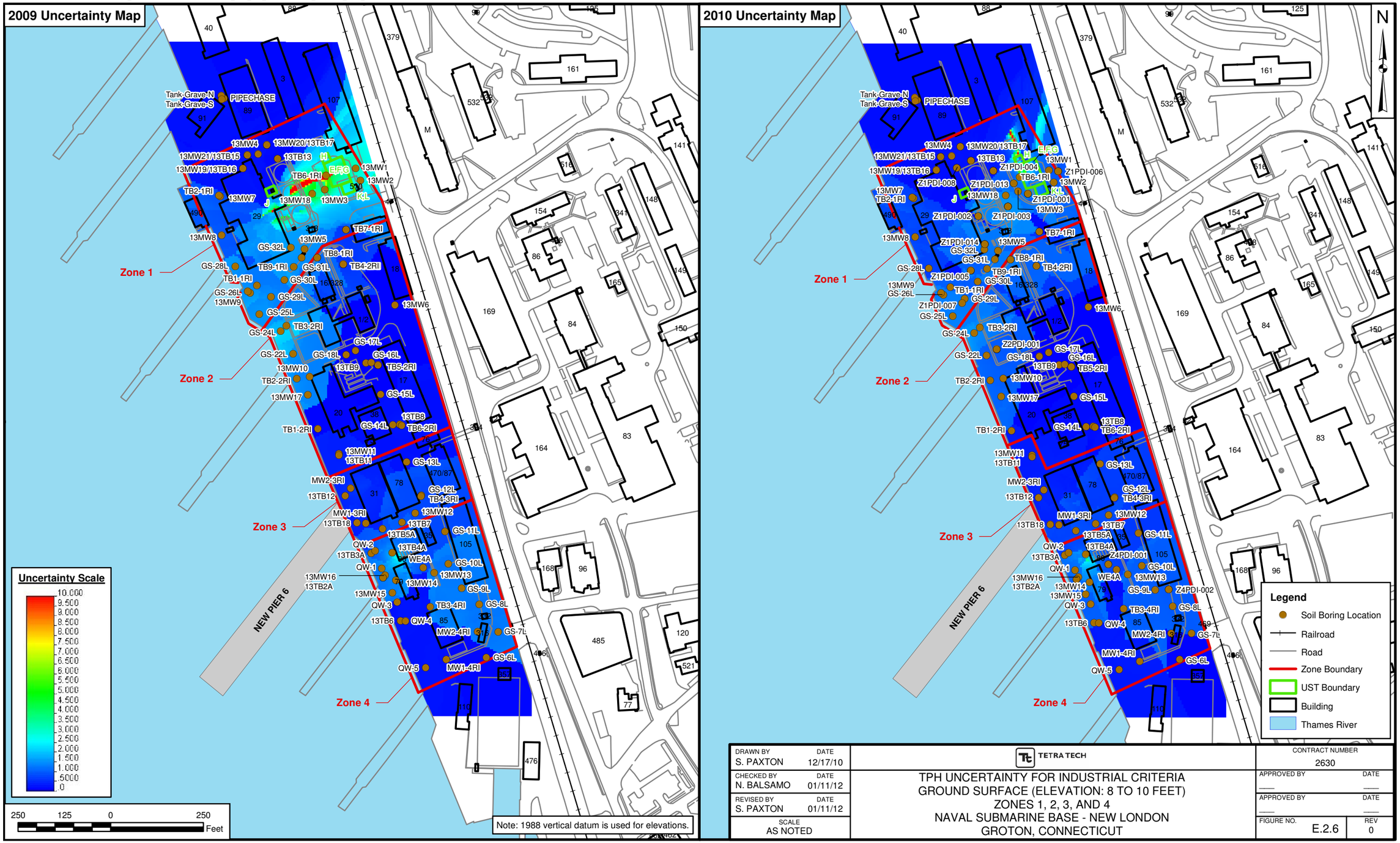

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.6 REV 0

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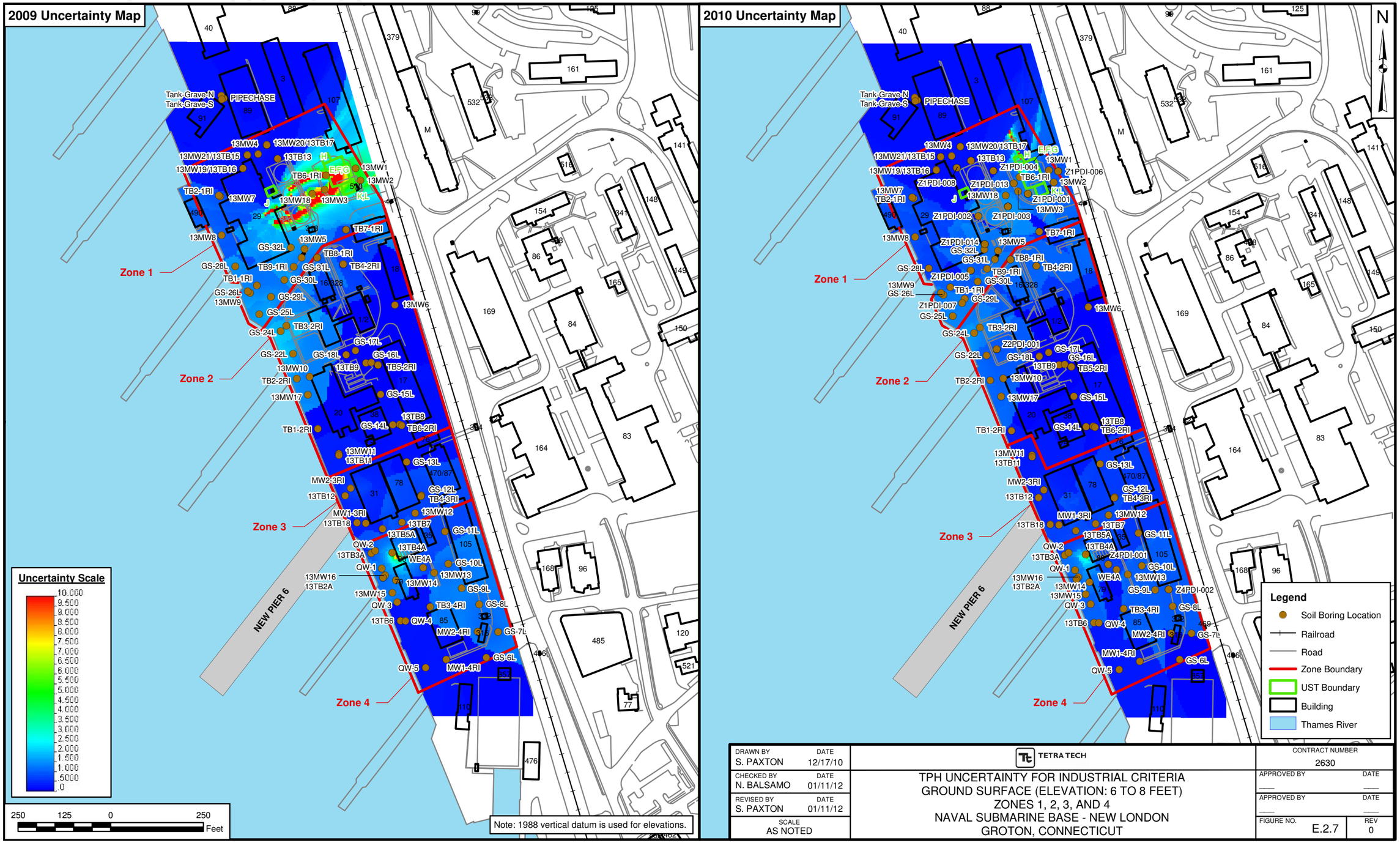

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REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.7 REV 0

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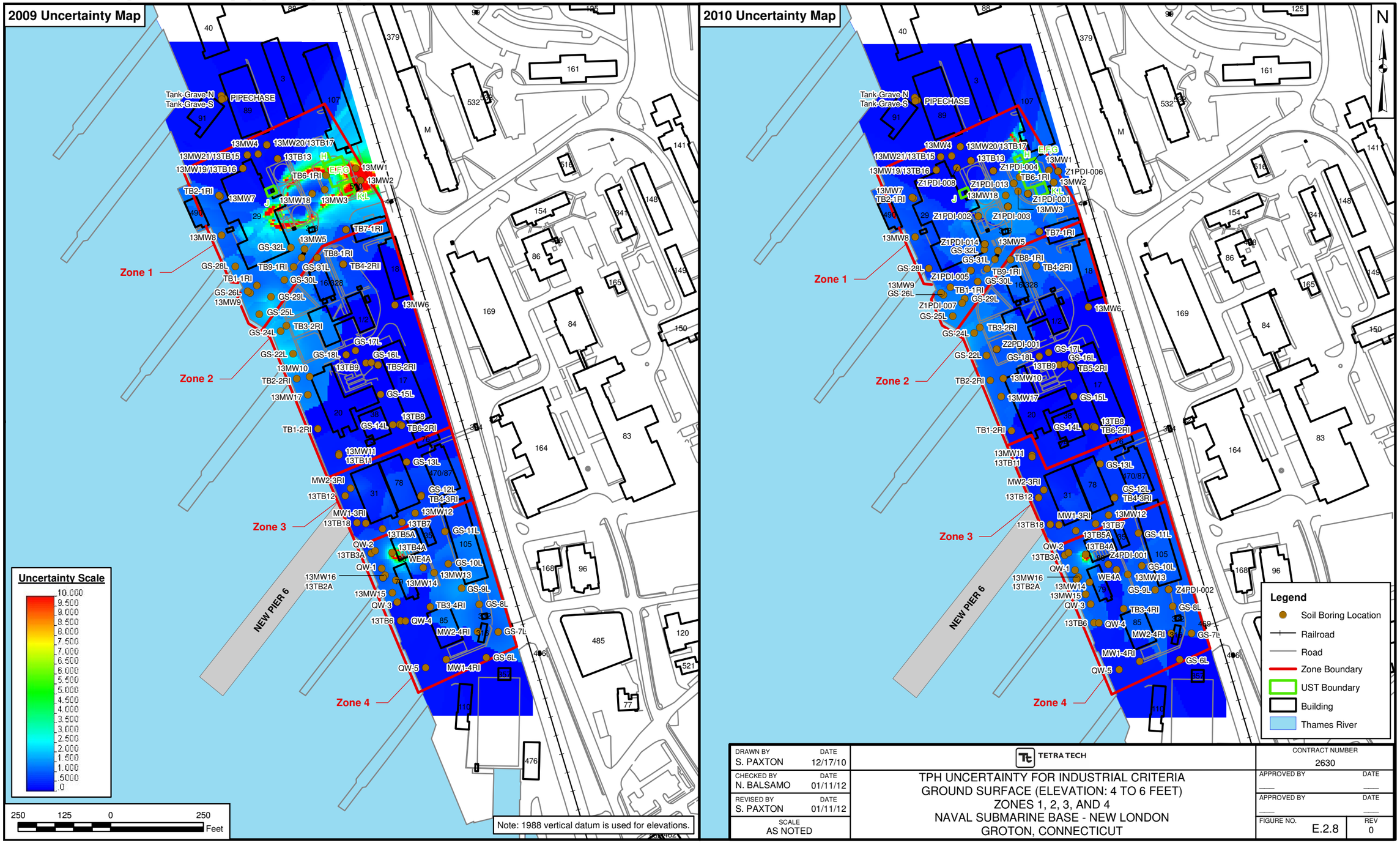

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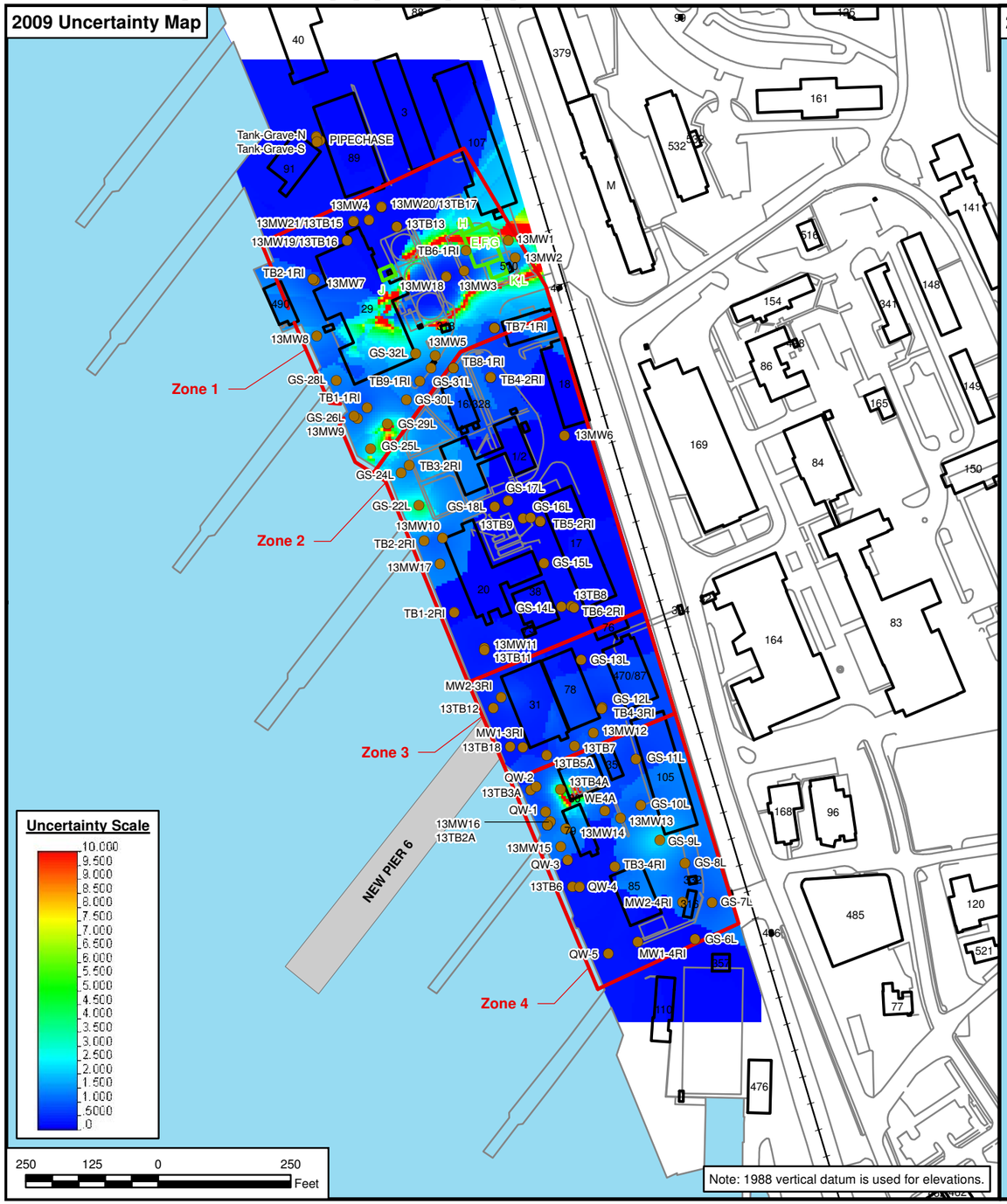
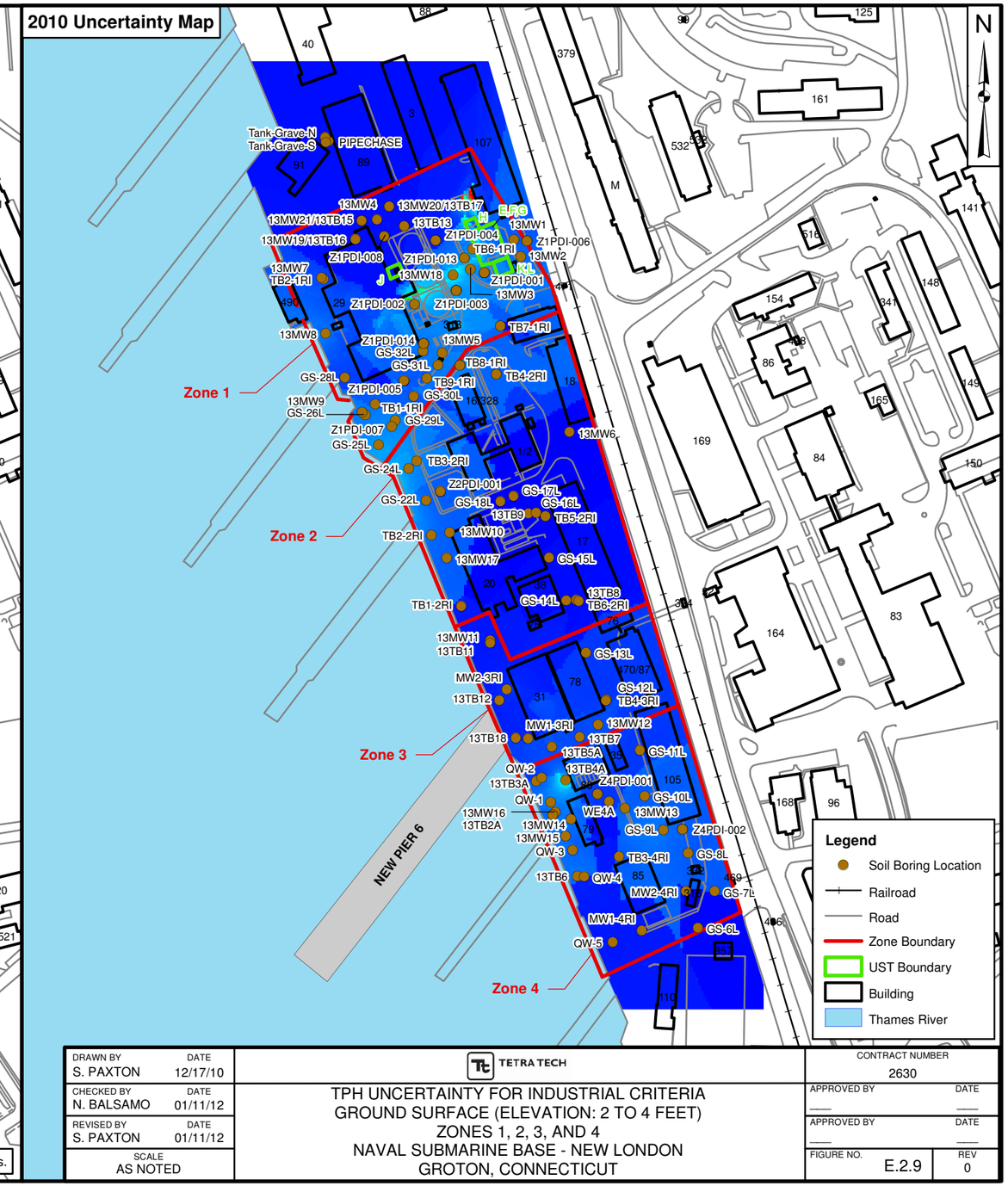
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.8 REV 0

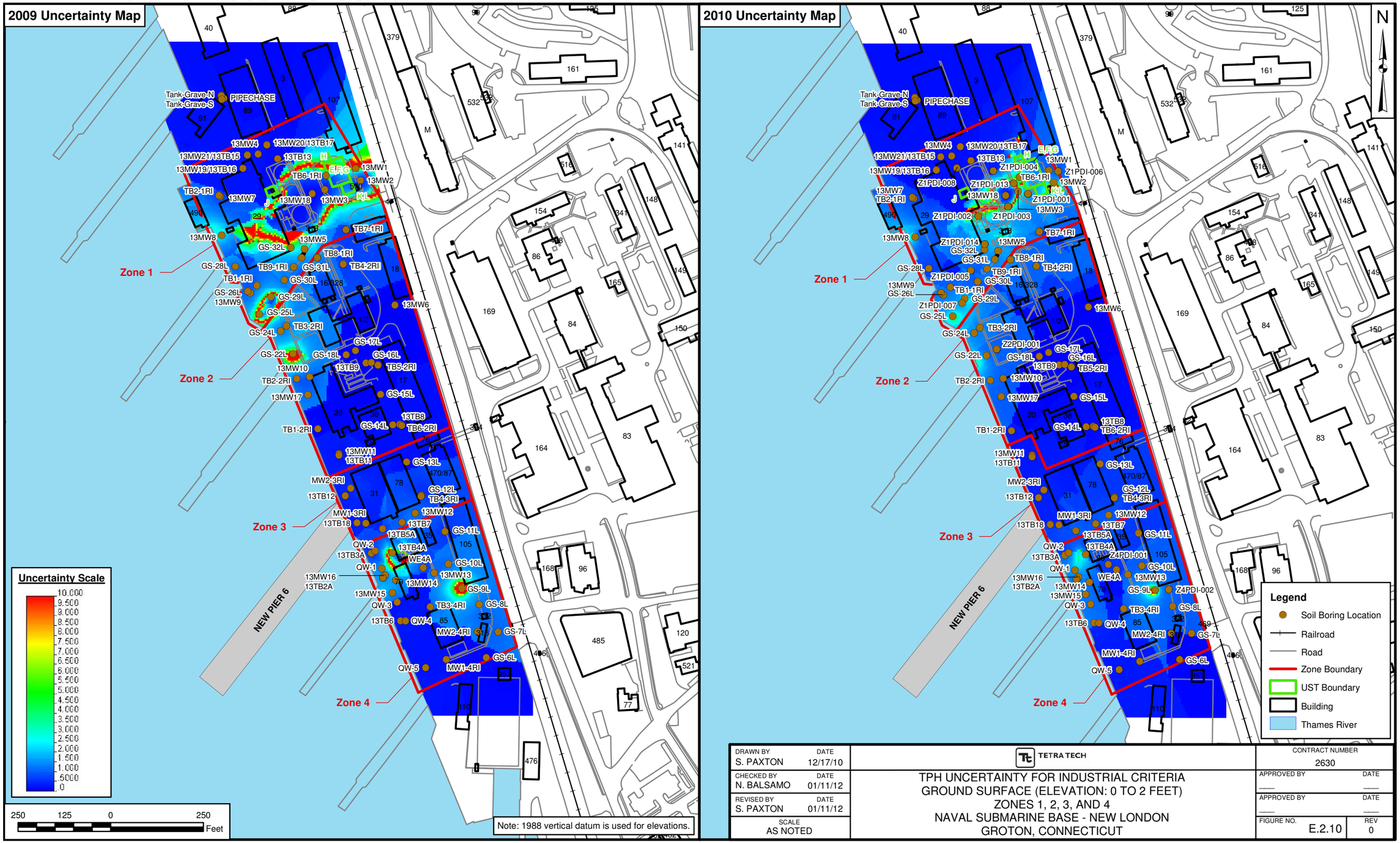
P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_TPH\NOVEMBER2010\ZONE1234_TPH_IND_UNCERTAINTY_2TO4FT_2010_PANEL.MXD 01/11/12 SP





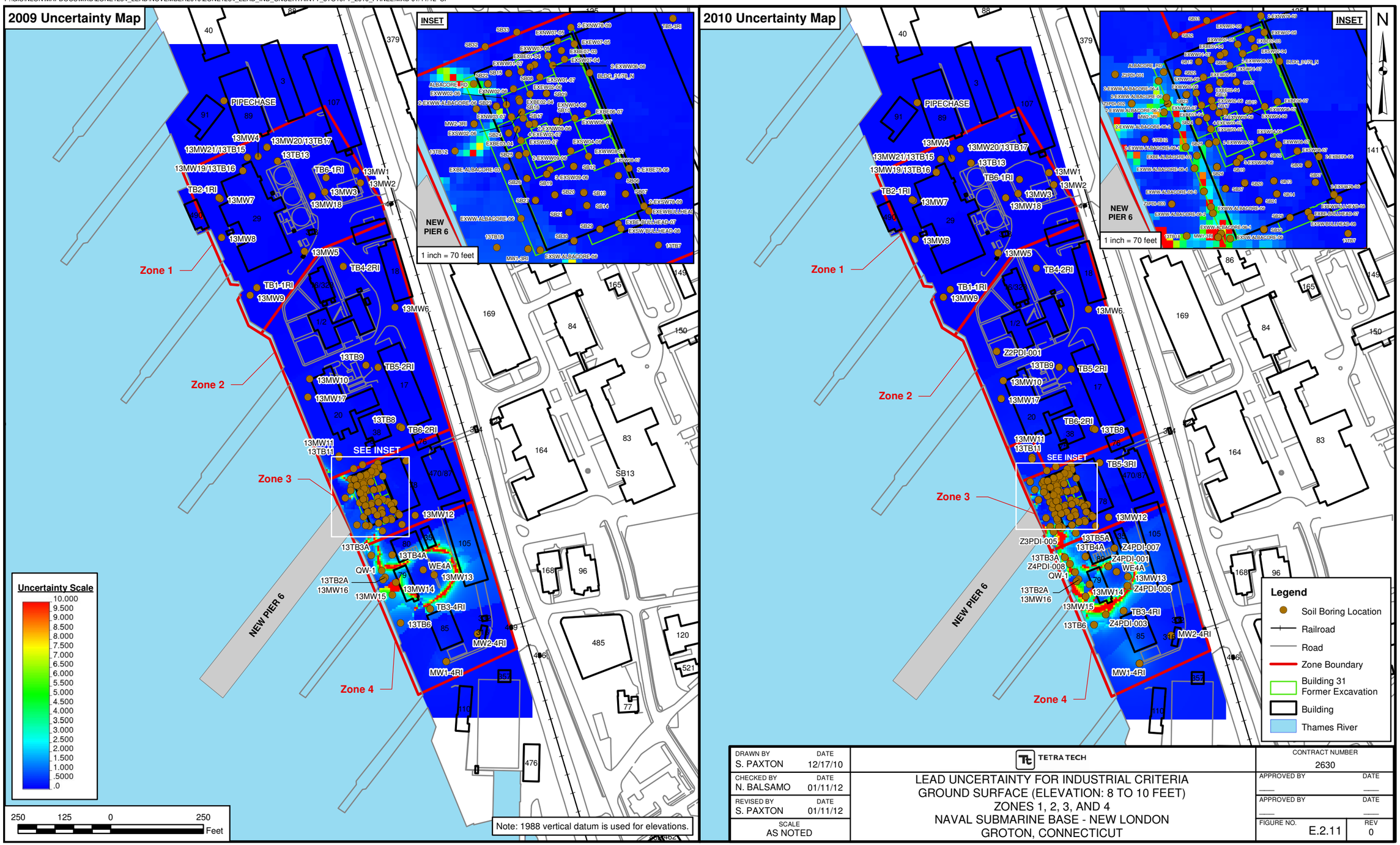
DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 01/11/12	TPH UNCERTAINTY FOR INDUSTRIAL CRITERIA GROUND SURFACE (ELEVATION: 2 TO 4 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.9 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_TPH\NOVEMBER2010\ZONE1234_TPH_IND_UNCERTAINTY_0TO2FT_2010_PANEL.MXD 01/11/12 SP



DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 01/11/12	TPH UNCERTAINTY FOR INDUSTRIAL CRITERIA GROUND SURFACE (ELEVATION: 0 TO 2 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.10 REV 0

P:\GIS\NLON\MAPDOCS\MXD\ZONE1234_LEAD\NOVEMBER2010\ZONE1234_LEAD_IND_UNCERTAINTY_8TO10FT_2010_PANEL.MXD 01/11/12 SP



DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 01/11/12	LEAD UNCERTAINTY FOR INDUSTRIAL CRITERIA GROUND SURFACE (ELEVATION: 8 TO 10 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.11 REV 0

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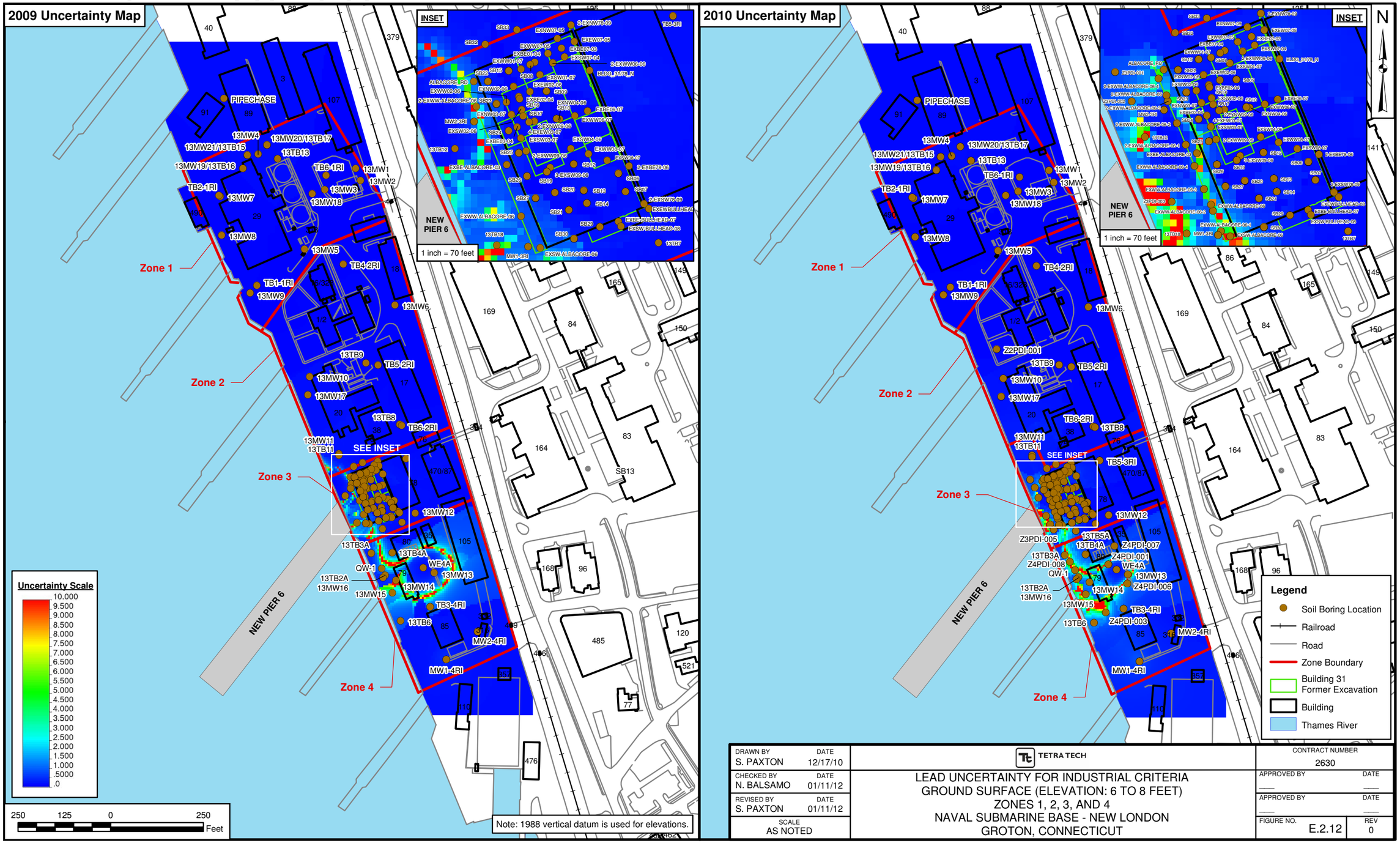
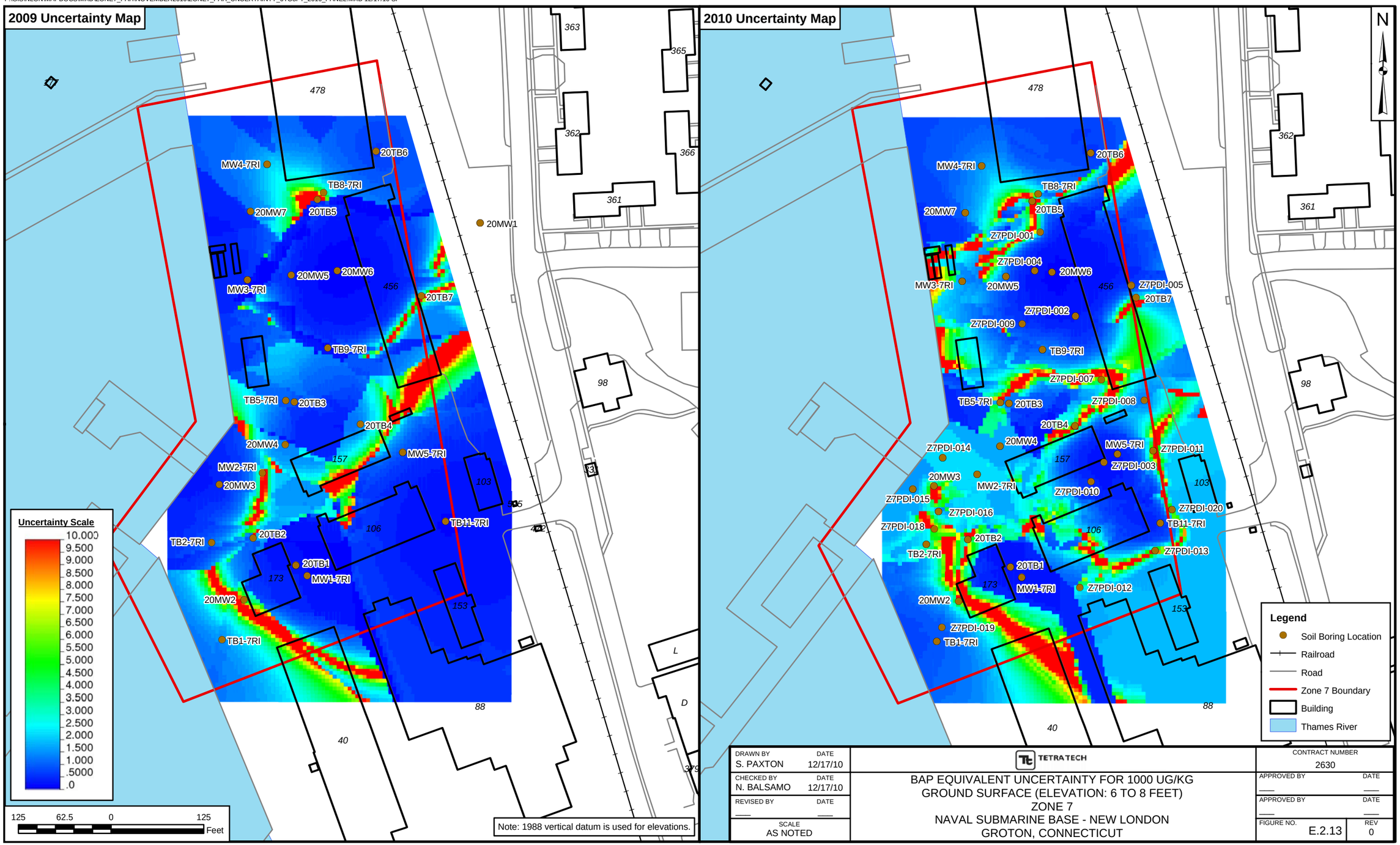


DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 01/11/12	LEAD UNCERTAINTY FOR INDUSTRIAL CRITERIA GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONES 1, 2, 3, AND 4 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY S. PAXTON	DATE 01/11/12		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.12 REV 0

ZONE 7

P:\GIS\NLON\MAPDOCS\MXD\ZONE7_PAH\NOVEMBER2010\ZONE7_PAH_UNCERTAINTY_6TO8FT_2010_PANEL.MXD 12/17/10 SP



DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	BAP EQUIVALENT UNCERTAINTY FOR 1000 UG/KG GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.13 REV 0

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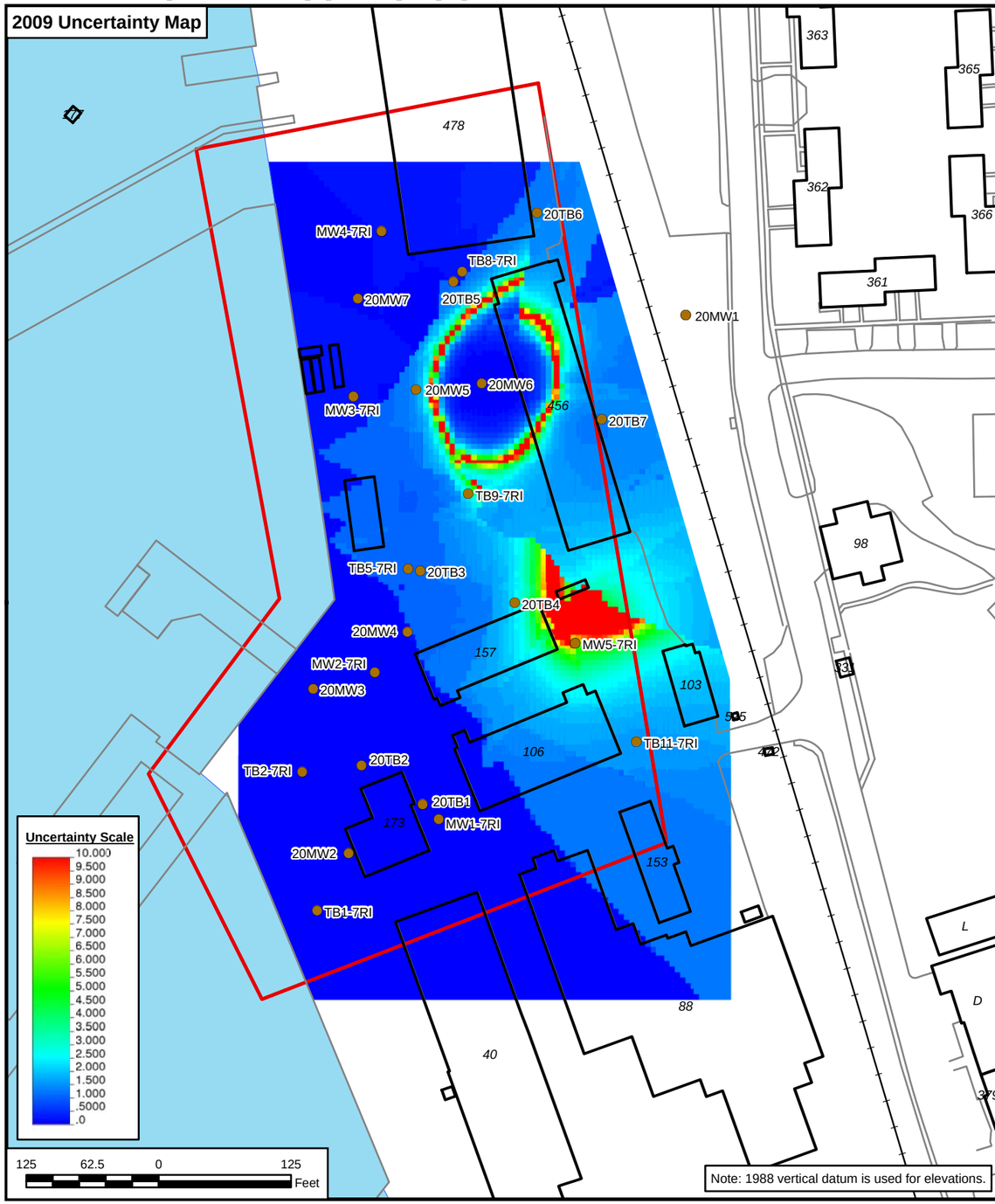

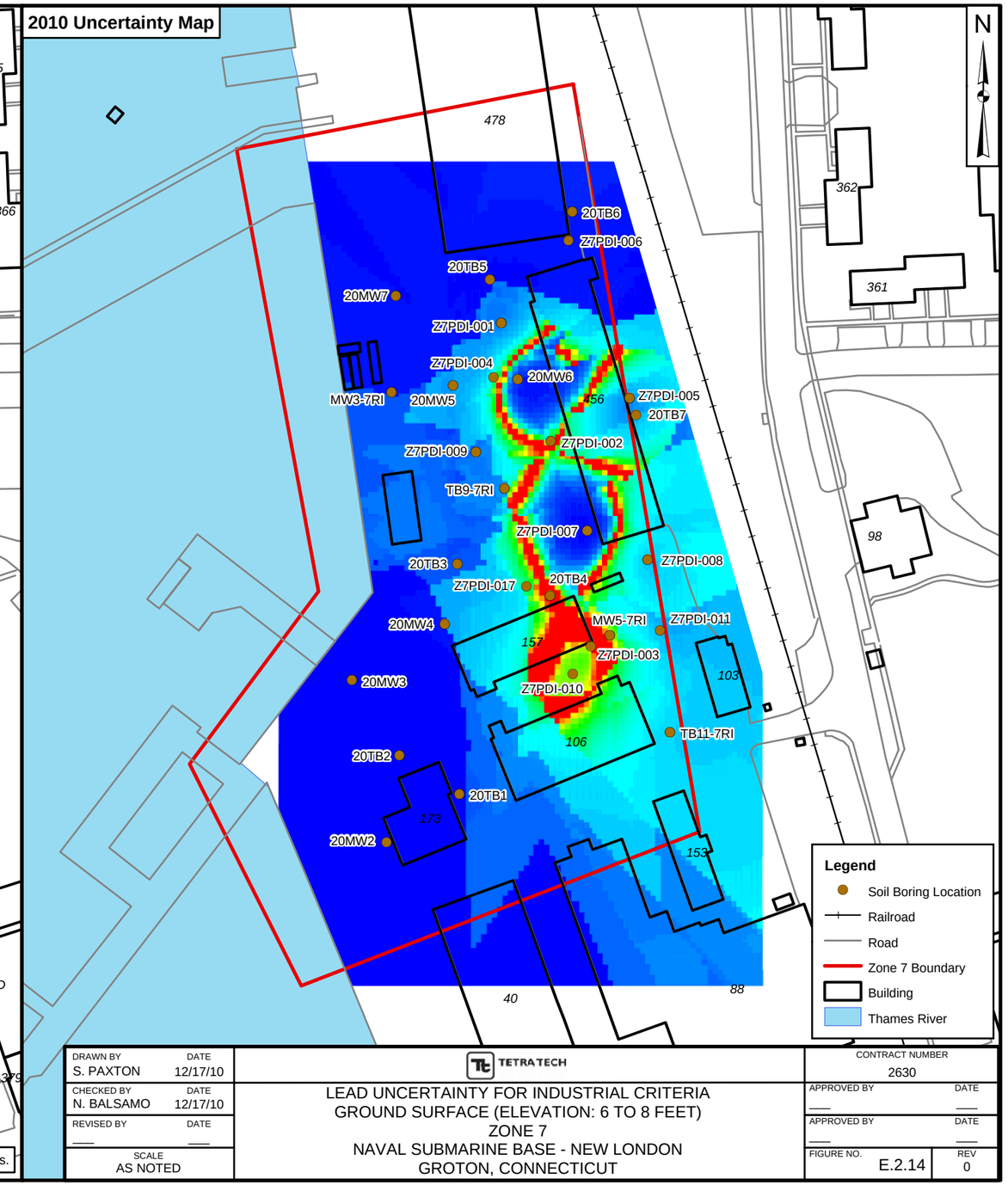

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	LEAD UNCERTAINTY FOR INDUSTRIAL CRITERIA GROUND SURFACE (ELEVATION: 6 TO 8 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.14 REV 0

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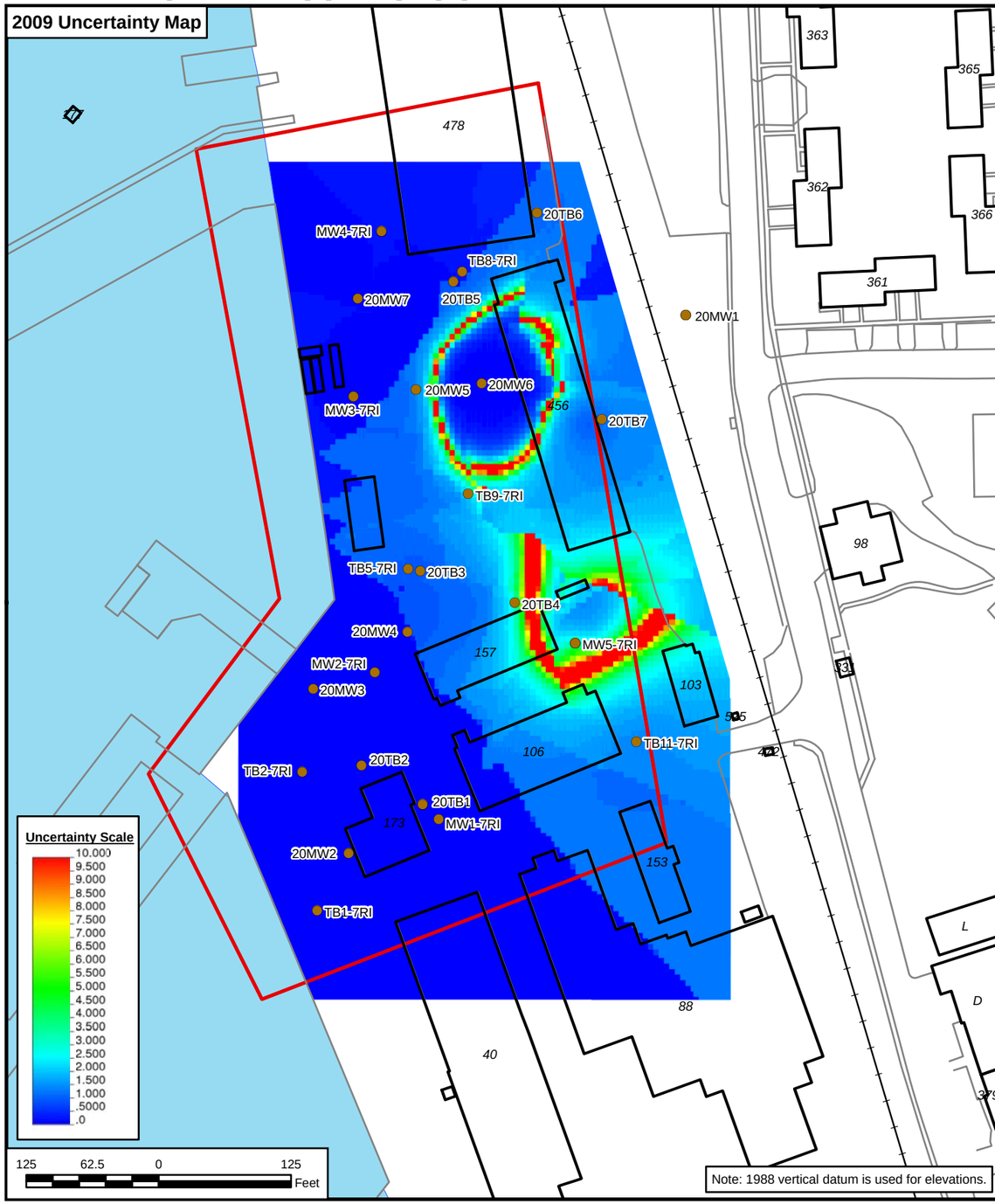

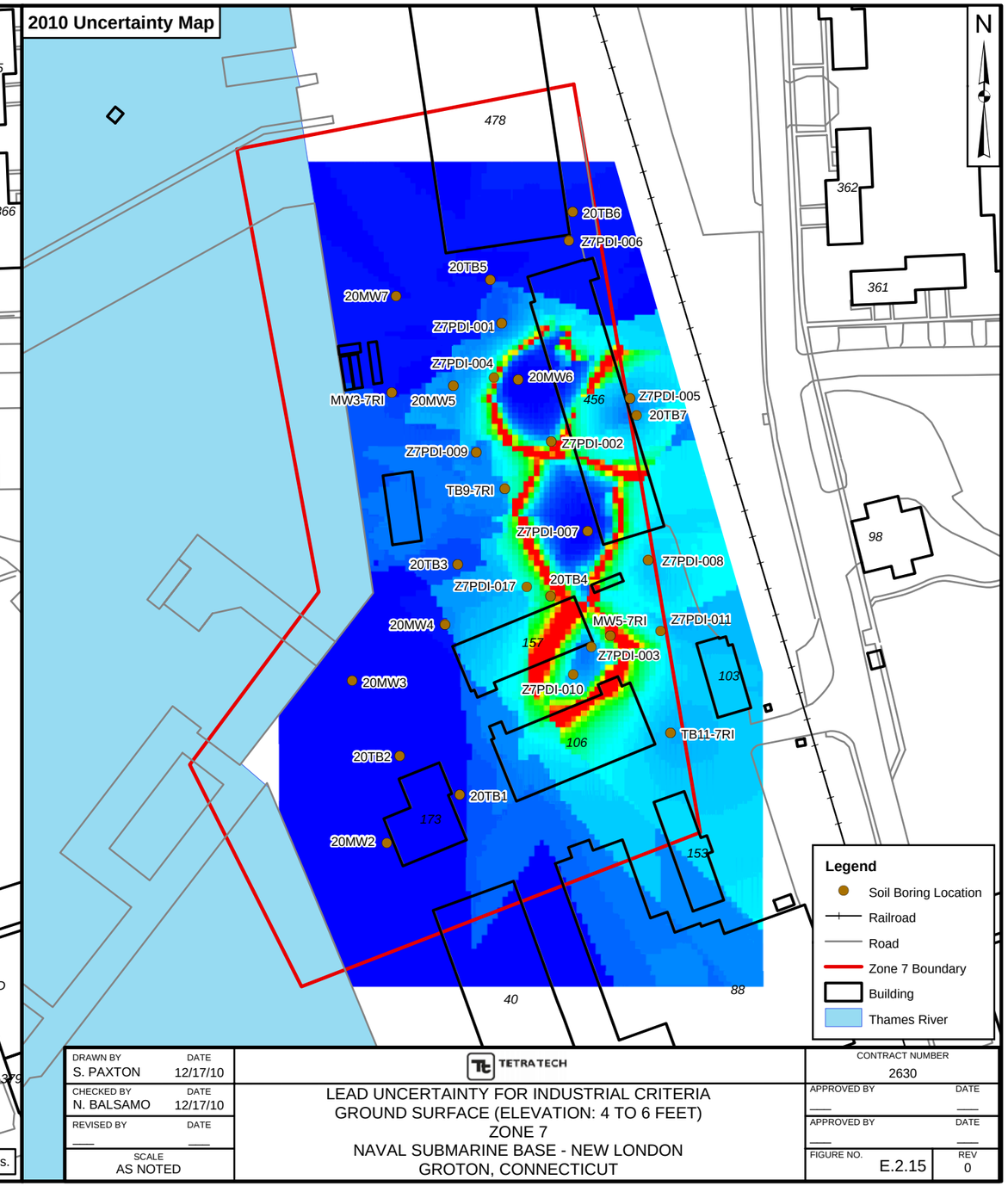

DRAWN BY S. PAXTON	DATE 12/17/10	TETRA TECH	CONTRACT NUMBER 2630
CHECKED BY N. BALSAMO	DATE 12/17/10	LEAD UNCERTAINTY FOR INDUSTRIAL CRITERIA GROUND SURFACE (ELEVATION: 4 TO 6 FEET) ZONE 7 NAVAL SUBMARINE BASE - NEW LONDON GROTON, CONNECTICUT	APPROVED BY ___ DATE ___
REVISED BY ___	DATE ___		APPROVED BY ___ DATE ___
SCALE AS NOTED			FIGURE NO. E.2.15 REV 0