



TETRA TECH

NOR-01407

May 4, 2012

Mr. Steven Scharf  
New York Department of Environmental Conservation  
Division of Environmental Remediation  
Bureau of Remedial Action A  
625 Broadway, 11<sup>th</sup> Floor  
Albany, New York 12233-7015

Reference: CLEAN Contract No. N62470-08-D-1001  
Contract Task Order WE62

Subject: Letter Work Plan Addendum – May 2012  
Vertical Profile Borings (VPB-134, VPB-135, and VPB-136)  
Pre-Design Field Investigation, OU-2 Groundwater  
Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, New York

Dear Mr. Scharf:

On behalf of the Navy, please find enclosed a paper copy of the subject Letter Work Plan for your review. This Work Plan Addendum provides requirements for the installation of three vertical profile borings at NWIRP Bethpage. An electronic version of this document has been sent to you via e-mail.

If you have any questions please contact Ms. Lora Fly, NAVFAC Mid-LANT, at (757) 341-2012.

Sincerely

David D. Brayack, P.E.  
Project Manager

Enclosures:

Letter Work Plan Addendum – May 2012  
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Pre-Design Field Investigation, OU-2 Groundwater  
NWIRP Bethpage, New York

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**LETTER WORK PLAN ADDENDUM - MAY 2012**  
**VERTICAL PROFILE BORINGS (VPB-134, VPB-135, and VPB-136)**  
**PRE-DESIGN FIELD INVESTIGATION, OU 2 GROUNDWATER**  
**NWIRP BETHPAGE, NEW YORK**

This Letter Work Plan Addendum has been prepared by Tetra Tech, Inc. (Tetra Tech) for the Naval Facilities Engineering Command Mid-Atlantic under Contract Task Order (CTO) WE62 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract number N62470-08-D-1001. This Work Plan is a supplement to the 2010 Letter Work Plan, Pre-Design Field Investigation, OU 2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York (Tetra Tech NUS, 2010). The OU-2 groundwater investigation is being conducted to assess groundwater conditions downgradient of the Site 1 – Former Drum Marshalling Area on NWIRP Bethpage, Long Island, New York (Figure 1). The work being addressed in this work plan addendum evaluates groundwater quality at the southern edge of the former NWIRP Bethpage facility, and in particular at depths below 200 feet. Regional groundwater flow is south southeast, but is locally affected by the operation of recharge basins and water supply wells.

This work plan provides requirements for the installation of three vertical profile borings (VPBs) (VPB-134, VPB-135, and VPB-136) at NWIRP Bethpage. The location of the proposed vertical profile borings are provided in Figure 2. The vertical profile borings will be drilled to the top of the Raritan Clay layer (estimated 850 feet below ground surface [bgs]) to assess on-site groundwater conditions. As provided in Table 1, groundwater grab samples will be collected from various depths and analyzed for volatile organic compounds (VOCs)

Five or more split spoon samples will be collected per vertical profile boring to confirm lithology and determine the depth of the Raritan Clay layer. These samples are used to correlate gamma logs with soil type. Up to two soil samples per boring will be submitted to a laboratory for Total Organic Carbon (TOC) analysis. The majority of the split spoon samples will be collected to confirm the top of the Raritan Confining Unit. Once the boring has been advanced to the suspected top of the Raritan Confining Unit (see below), split spoon samples will be collected every five feet, until four consecutive samples are collected that are indicative of the confining unit. Evidence that typically identifies the presence of the Raritan Confining Unit is as follows.

- A gravel unit has been at the bottom of the Magothy aquifer.
- A noticeable change in the color of the drilling fluid and/or a decrease in the quantity of sands and gravels in the drilling mud.
- Split spoon samples being predominately dense clay and/or split spoon refusal.

Additional details providing the requirements for investigation derived waste (IDW) handling and reporting are provided in the 2010 Letter Work Plan, Pre-Design Field Investigation, OU 2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York.

## REFERENCES

Tetra Tech NUS, Inc. 2010. 2010 Letter Work Plan, Pre-Design Field Investigation, OU 2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York. September.

## TABLE

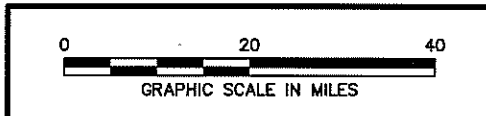
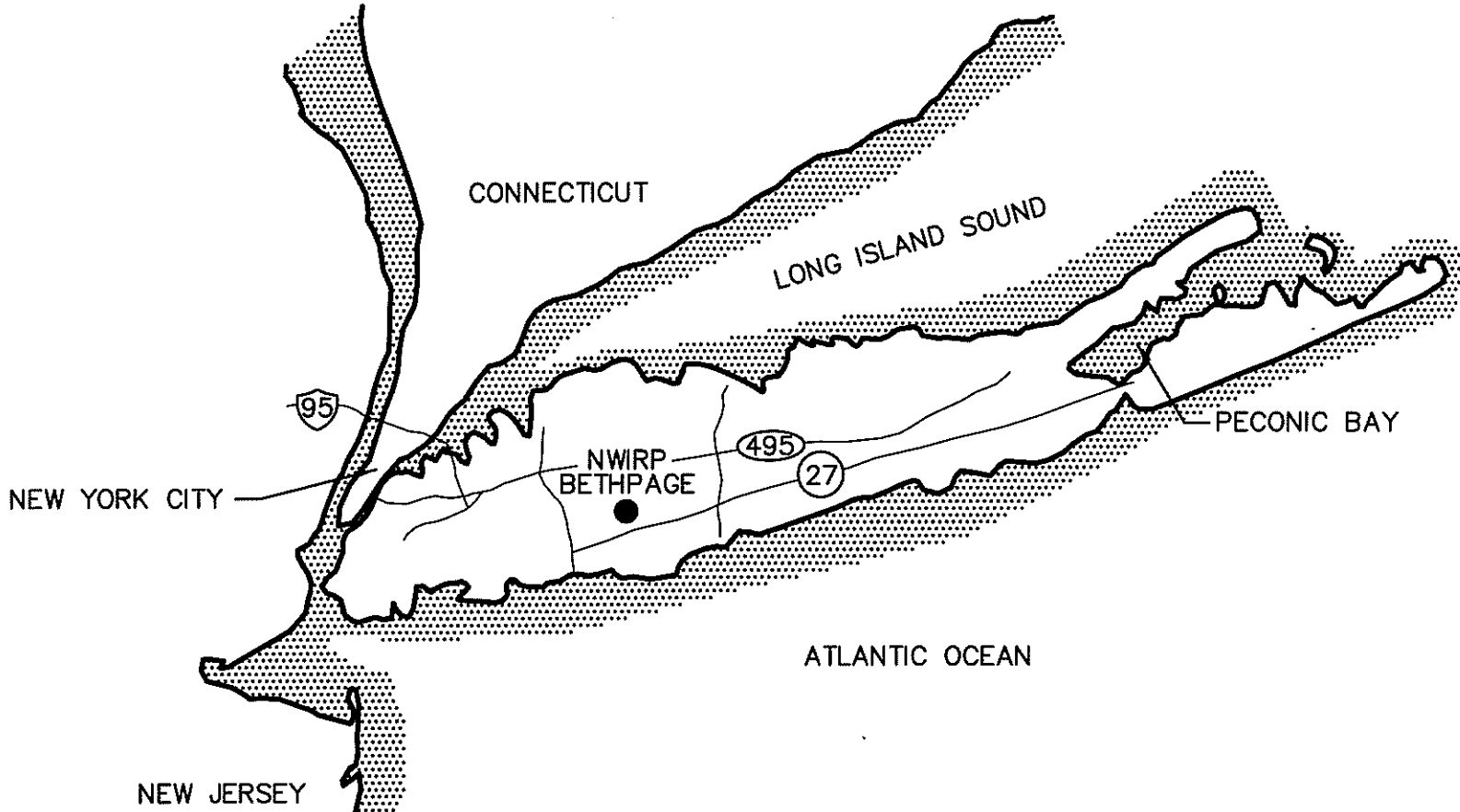
**TABLE 1**  
**VERTICAL PROFILE BORINGS**  
**VPB-134, VPB-135, and VPB-136 SAMPLING PROGRAM**  
**ON-SITE LOCATION – OU-2 WORK PLAN ADDENDUM, APRIL 2012**  
**NWIRP BETHPAGE, NEW YORK**  
Page 1 of 1

Boring Number	Drilling Method	Total Depth (feet) <sup>1</sup>	Depth (feet)	Split Spoon Sampling	Groundwater Sampling	Gamma Log	Air Sample
VPB-134	MR	850	50 to 200	0 to 1	50, 100, 150, and 200 feet (4 samples)	Yes	No
			220 to 600	1 to 2	20-foot intervals (20 samples)		
			620 to 860	1 to 2	20-foot intervals (13 samples)		
			800 to 850	Up to 10, at 5-foot intervals	Up to 3, at 20-foot intervals, if sand is encountered.		
VPB-135	MR	850	50 to 200	0 to 1	50, 100, 150, and 200 feet (4 samples)	Yes	No
			220 to 600	1 to 2	20-foot intervals (20 samples)		
			620 to 800	1 to 2	20-foot intervals (13 samples)		
			800 to 850	Up to 10, at 5-foot intervals	Up to 3, at 20-foot intervals, if sand is encountered.		
VPB-136	MR	850	50 to 200	0 to 1	50, 100, 150, and 200 feet (4 samples)	Yes	Yes
			220 to 600	1 to 2	20-foot intervals (20 samples)		
			620 to 800	1 to 2	20-foot intervals (13 samples)		
			800 to 850	Up to 10, at 5-foot intervals	Up to 3, at 20-foot intervals, if sand is encountered.		

<sup>1</sup> Total depth will be to the top of the Raritan Clay Unit, at a depth of approximately 850 feet below ground surface.

VBP: vertical profile boring.  
MR: mud rotary.

## FIGURES



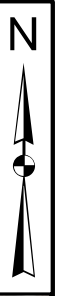
DRAWN BY	DATE
MF	12/9/06
CHECKED BY	DATE
REVISD BY	DATE
SCALE AS NOTED	



GENERAL LOCATION MAP  
ESD  
NWIRP BETHPAGE  
BETHPAGE, NEW YORK

CONTRACT NO. 9845	
OWNER NO. 0002	
APPROVED BY	DATE
DRAWING NO. FIGURE 1	REV. 0





**Legend**

- Monitoring Well
- Proposed Vertical Profile Boring

0 125 250 500  
  
 Feet

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**OU-2 Groundwater Investigation  
 Proposed On-Site  
 Vertical Profile Boring Locations  
 NWIRP Bethpage  
 Bethpage, New York**

FILE	SCALE AS NOTED
FIGURE NO. <b>2</b>	REV DATE 4/26/12