

**RECORD OF DECISION
SITE 26 PCE PLUME
OPERABLE UNIT 7 (OU 7)**

NAVAL WEAPONS STATION EARLE
Colts Neck, New Jersey



**Naval Facilities Engineering Command
Mid-Atlantic**

**Contract Number N62472-03-D-0057
Contract Task Order 033**

January 2007



TETRA TECH NUS, INC.

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**RECORD OF DECISION
NAVAL WEAPONS STATION EARLE
OPERABLE UNIT 7 (SITE 26 PCE Plume)**

PART I - DECLARATION

I. SITE NAME AND LOCATION

Naval Weapons Station Earle

Colts Neck, Monmouth County, New Jersey

ID Number: NJ0170022172

Operable Unit 7 - Tetrachloroethene (also known as perchloroethylene) component of the solvent plume in Site 26 groundwater.

II. STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the remedial action alternative selected for Operable Unit 7 (OU 7) to address contamination associated with the tetrachloroethene (PCE) portion of the Site 26 groundwater solvent plume southwest of Building GB-1 at the Naval Weapons Station (NWS) Earle located in Colts Neck, New Jersey.

This remedial action decision is in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedial action and is based on the Administrative Record for OU 7. Reports and other information used in the remedy selection process are part of the Administrative Record file for OU 7, which is available at the Monmouth County Library, Eastern Branch, Route 35, Shrewsbury, New Jersey.

The New Jersey Department of Environmental Protection (NJDEP) has commented on the selected remedy and concurs. NJDEP comments have been incorporated into this ROD. A review of the public response to the Proposed Remedial Action Plan (PRAP) is included in the Responsiveness Summary (Part III) of this decision document. The state concurrence letter is included in Appendix A. Terms used in the ROD are presented in Appendix B.

III. ASSESSMENT OF THE SITE

Pursuant to duly delegated authority, I hereby determine, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606, that actual or threatened releases of hazardous substances from OU 7, as discussed in Part II, Section VI (Summary of Site Risks) of this ROD, if not addressed by implementing the remedial action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

IV. DESCRIPTION OF THE SELECTED REMEDY

The Department of the Navy (Navy) and the United States Environmental Protection Agency (USEPA), in consultation with NJDEP, have selected the following remedy for OU 7, Site 26. The remedy relies on long-term monitoring, Land Use Controls (LUCs) and the current OU 3 remediation system (air sparging with soil vapor extraction (AS/SVE)) to limit exposures to site risks. The current OU 3 remediation system began operation in January 2001 to treat the volatile organic contaminant plume [predominately trichloroethene (TCE)] associated with the Site 26 groundwater plume. The selected remedy for the PCE portion of the Site 26 volatile organic contaminant plume (OU 7) includes the following major components:

1. LUCs will be implemented by the Navy according to Department of Defense (DoD) guidelines as set forth in the document entitled "Principles and Procedures for Specifying, Monitoring and Enforcement of LUCs and Other Post-ROD Actions" as agreed between the USEPA and the DoD. LUCs will be incorporated into the Base Master Plan to limit future uses of the groundwater as drinking water. Use of the aquifer beneath the site for purposes other than environmental monitoring and testing without Navy approval, will be prohibited, until groundwater is found to meet Federal Maximum Contaminant Levels (MCLs) and New Jersey groundwater quality standards (GWQS). A Classification Exception Area (CEA) pursuant to N.J.A.C. 7:9-6 will be established to provide the state official notice that the constituent standards will not be met for a specified duration anticipated not to exceed 10 years (unless MCLs and GWQS are not met) and to ensure that use of groundwater in the affected area is prohibited. The Navy is responsible for implementing, maintaining, reporting on and enforcing the LUCs described in the ROD in accordance with the Base Master Plan, as well as maintaining the integrity of any current or future remedial or monitoring system such as monitoring wells. LUCs will be maintained until the contaminant concentrations in groundwater are reduced to levels that allow unrestricted use and exposure.

The LUC objectives are:

- a) Maintain the integrity of the monitoring wells included in the current or future monitoring system; and
- b) Except for environmental monitoring, prevent access or use of untreated groundwater until cleanup levels are met.

These objectives will be implemented through mechanisms, such as groundwater use restrictions amended to the Base Master Plan, establishment of the NJDEP-compliant CEA and conduct of a site review every five years.

2. Long-term periodic groundwater monitoring will be conducted to assess contaminant status and potential threats to human health and the environment. Since the selected remedy is not expected to completely remove the contaminants from groundwater during the AS/SVE treatment period, periodic groundwater monitoring and reporting according to the requirements of the CEA will continue until at least two consecutive periods result in concentrations below MCLs and GWQS. Site conditions and risks will be reviewed every five years as required by CERCLA.

A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, the Navy shall prepare and submit to EPA for review and approval a LUC remedial design that shall contain implementation and maintenance actions, including periodic inspections. Although the Navy may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Navy shall retain ultimate responsibility for remedy integrity.

The remedial action objective (RAO) for restoration of groundwater at Site 26 will not be immediately achieved. LUCs that include groundwater use restrictions will reduce risk by preventing potential human exposure to PCE and other organic compounds in groundwater, until groundwater restoration is achieved. Long-term periodic monitoring will determine when the RAO for groundwater at Site 26 is achieved. The RAO for the PCE component of the Site 26 groundwater plume will be achieved when the preliminary remediation goal (PRG) of 1 ug/l is met.

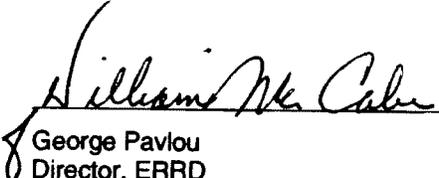
V. STATUTORY DETERMINATION

The selected remedy for OU 7 at Site 26, in conjunction with the OU 3 remedy currently under implementation at the Site 26 groundwater plume, is protective of human health and the environment and is cost effective. The Navy and USEPA believe that the selected remedy will comply with all Federal and state Applicable or Relevant and Appropriate Requirements (ARARS) such as MCLs and GWQS that are legally applicable or relevant and appropriate to the remedial action. The selected alternative would be in

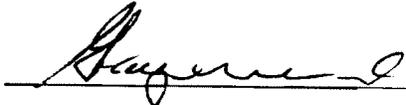
compliance with ARARs because a temporary exemption (CEA) from these requirements will be obtained until the GWQS and MCLs are achieved. Other ARARs, such as the Endangered Species Act of 1973 (16 USC 1531 et seq.); (50 CFR Part 200) and New Jersey Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A) may be applicable and have been considered in the preparation of this ROD.

The selected remedy utilizes a permanent solution to the maximum extent practicable.

Because this remedy will result in hazardous substances remaining in Site 26 groundwater at concentrations above health-based levels, a review by the Navy, USEPA and NJDEP will be conducted within five years after initiation of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.


George Pavlou
Director, ERRD
U.S. Environmental Protection Agency, Region II

8-14-07
Date


G. A. Maynard
Captain, U.S. Navy
Commanding Officer
Naval Weapons Station Earle

26 Feb 2007
Date

**RECORD OF DECISION
NAVAL WEAPONS STATION EARLE
OPERABLE UNIT 7
SITE 26**

PART II - DECISION SUMMARY

I. SITE NAME, LOCATION AND DESCRIPTION

A. General

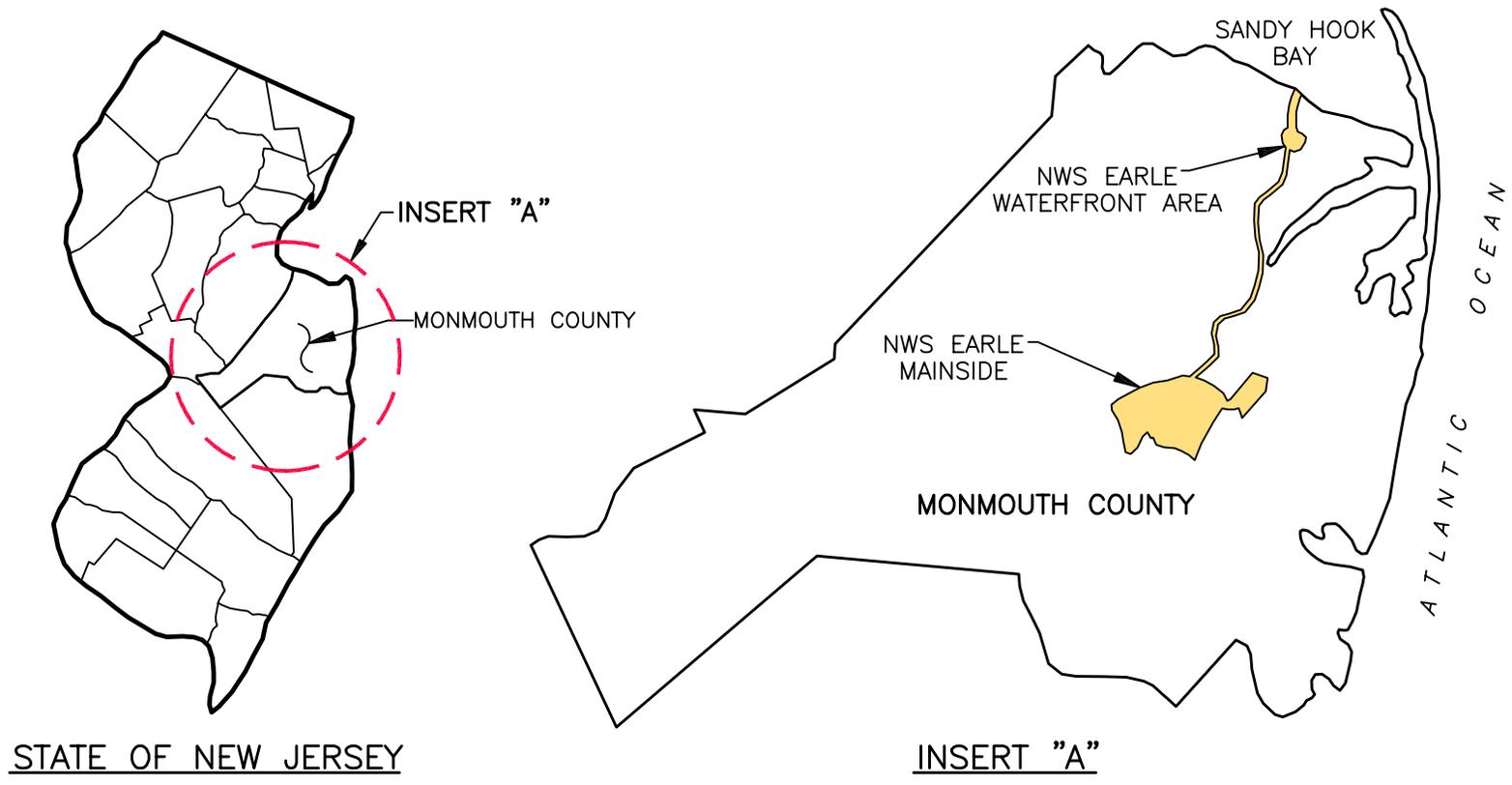
NWS Earle is located in Monmouth County, New Jersey, approximately 47 miles south of New York City. The station consists of two areas, the 10,248-acre Main Base (Mainside area), located inland and the 706-acre Waterfront area (Figure 1). The Mainside and Waterfront areas are connected by a narrow strip of land that serves as a government-controlled right-of-way containing a road and railroad. The facility was commissioned in 1943 and its primary mission is to supply ammunition to the naval fleet. An estimated 2,500 people either work or live at the NWS Earle station.

The Mainside area is located approximately 10 miles inland from the Atlantic Ocean in Colts Neck, Howell and Wall Townships and Tinton Falls Borough. The combined population of these municipalities is approximately 100,000 people. The surrounding area includes agricultural land, vacant land and low-density housing. The Mainside area consists of a large, undeveloped portion associated with ordnance operations, production and storage; this portion is encumbered by explosive safety quantity distance (ESQD) arcs, essentially limiting land use between existing buildings near Site 26 to maintenance activities only. Other land use in the Mainside administration area consists of residences, offices, workshops, warehouses, recreational space, open space and undeveloped land. The Waterfront area is located adjacent to Sandy Hook Bay in Middletown Township, which has a population of approximately 68,200 people.

B. Site 26: Former Munitions Reconditioning and Maintenance Facility

Site 26 is a former munitions reconditioning and maintenance facility which included Building GB-1 and GB-2. Site 26 is situated at the intersection of Macassar and Midway Roads (Figure 2). Two railway lines adjacent to the site run toward the northeast. The ground surface at the site is relatively flat, approximately 150 feet above mean sea level. Reportedly, Building GB-1 was used for the reconditioning of munitions casings/shells. Solvents were used in the reconditioning process. Spent solvents and wash waters were discarded into an unknown receptacle, possibly a collection tray or utility sink at the formerly used paint spray booth, which drained to the process leaching system. The GB-1 process leaching system appears to have been used for the disposal of TCE, 1,2-dichloroethene (1,2-DCE), or related compounds.

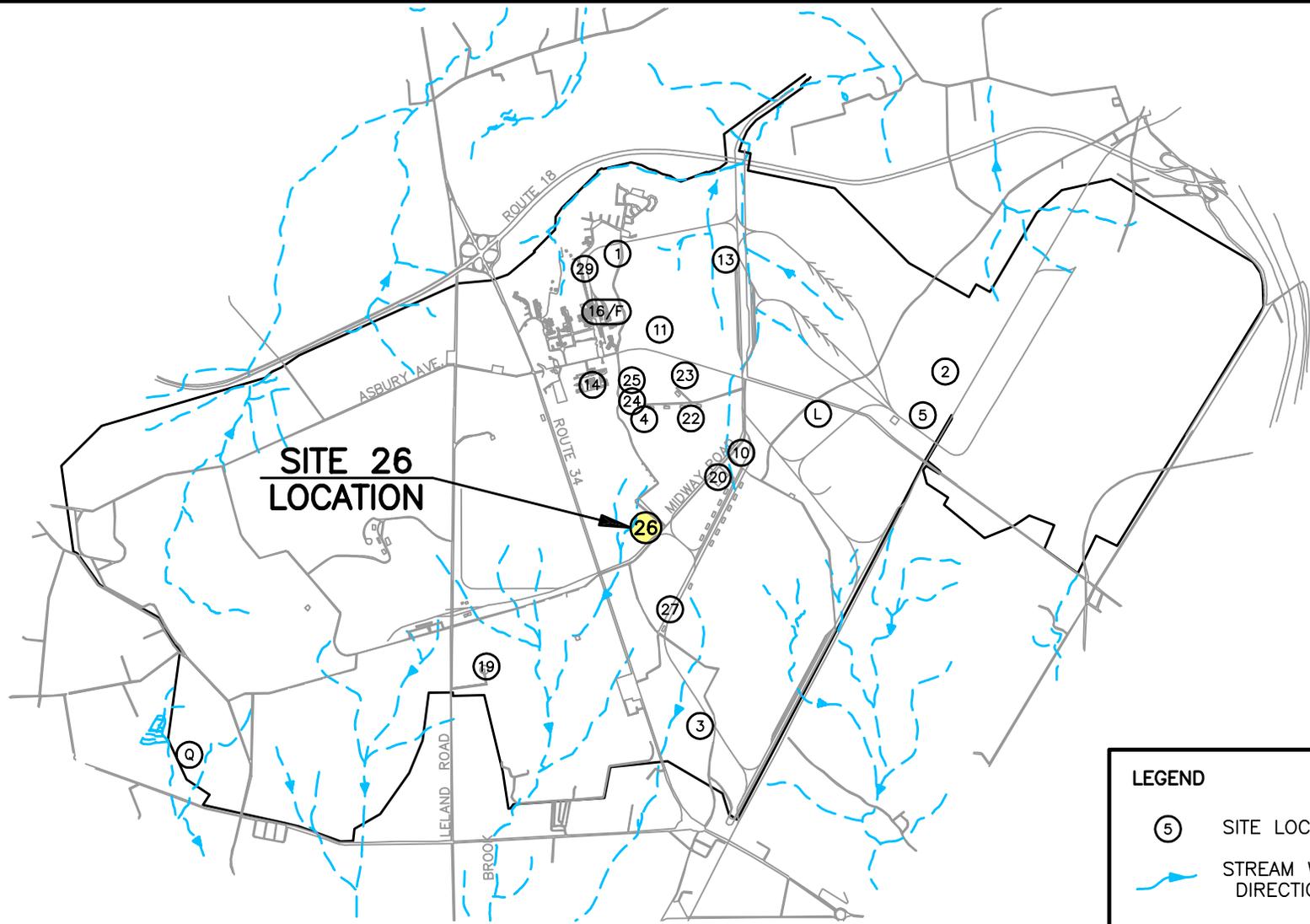
11-2



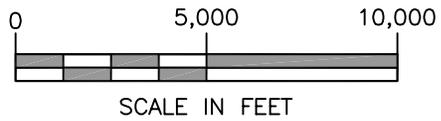
REGIONAL SITE MAP
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

SCALE NOT TO SCALE	
FILE 2128CM01	
REV 0	DATE 07/14/05
FIGURE NUMBER FIGURE 1	

11-3



LEGEND	
	SITE LOCATION
	STREAM WITH FLOW DIRECTION



MAINSIDE AREA
SITE 26 LOCATION
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

SCALE AS NOTED	
FILE 2128CP02	
REV 0	DATE 07/14/05
FIGURE NUMBER FIGURE 2	

Former Building GB-2 (demolished in 1998) was located southwest of Building GB-1 and had a septic/leaching system similar to the leaching system used at Building GB-1. Supplemental subsurface soil and groundwater investigations performed in 2001 in groundwater between Building GB-1 and former Building GB-2 indicated that the probable PCE source area (now depleted) may have been in the storage/lay-down area south of Building GB-1 and east of former Building GB-2.

OU 7 consists of the PCE component of the solvent plume at Site 26. This solvent plume overlaps with the estimated OU 3 solvent plume currently under active remediation (Figure 3).

II. SITE HISTORY AND ENFORCEMENT ACTIVITY

Potential hazardous substance releases at NWS Earle were addressed in an Initial Assessment Study (IAS) in 1982, a Site Inspection Study (SI) in 1986 and a Phase I Remedial Investigation (RI) in 1993. These were preliminary investigations to determine the number of sources, compile histories of waste-handling and disposal practices at the sites and acquire data on the types of contaminants present and potential human health and/or environmental receptors.

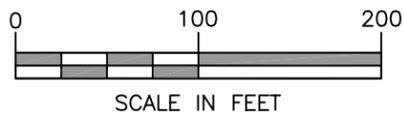
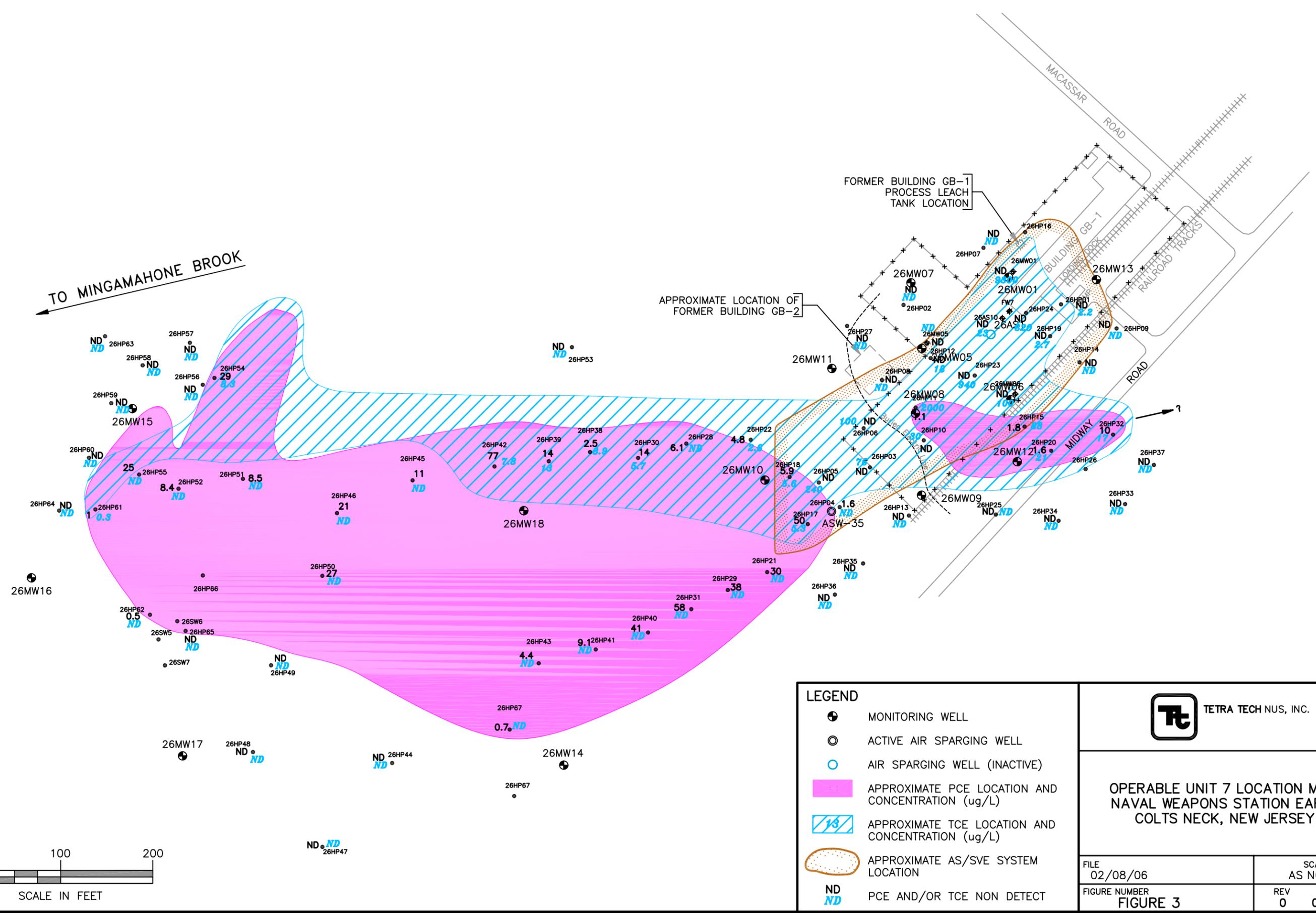
In 1990, NWS Earle was placed on the National Priorities List (NPL), which is a list of sites where uncontrolled hazardous substance releases may present serious threats to human health and the environment. The sites at NWS Earle were then addressed by Phase II RI activities to determine the nature and extent of contamination at these sites. Activities included installation and sampling of groundwater monitoring wells, surface water and sediment sampling and excavation of test pits to observe wastes and define the southern limit of fill materials.

The IAS in 1983, consisting of a document search and employee interviews, concluded minimal probable impact at Site 26. The IAS did not recommend actual sampling and analysis of site-related media. Despite the recommendation of the 1983 IAS, the Navy performed a SI in 1986 and a Phase I RI was performed in 1993. These were preliminary investigations that included records review as well as actual site-related groundwater and soil sampling and laboratory analysis to determine the number of sources, compile histories of waste-handling and disposal practices at the site and acquire data on the types of contaminants present and potential human health and/or environmental receptors.

Site 26 was subsequently addressed during Phase II RI activities in 1995 to further define the nature and extent of contamination at the site. Phase II activities included a soil gas survey, installation and sampling of groundwater monitoring wells and surface and subsurface soil sampling. The Phase II RI was initiated in 1995 and completed in July 1998, when the final RI addendum report was released.



TO MINGAMAHONE BROOK



LEGEND

- MONITORING WELL
- ACTIVE AIR SPARGING WELL
- AIR SPARGING WELL (INACTIVE)
- APPROXIMATE PCE LOCATION AND CONCENTRATION (ug/L)
- APPROXIMATE TCE LOCATION AND CONCENTRATION (ug/L)
- APPROXIMATE AS/SVE SYSTEM LOCATION
- ND**
ND PCE AND/OR TCE NON DETECT

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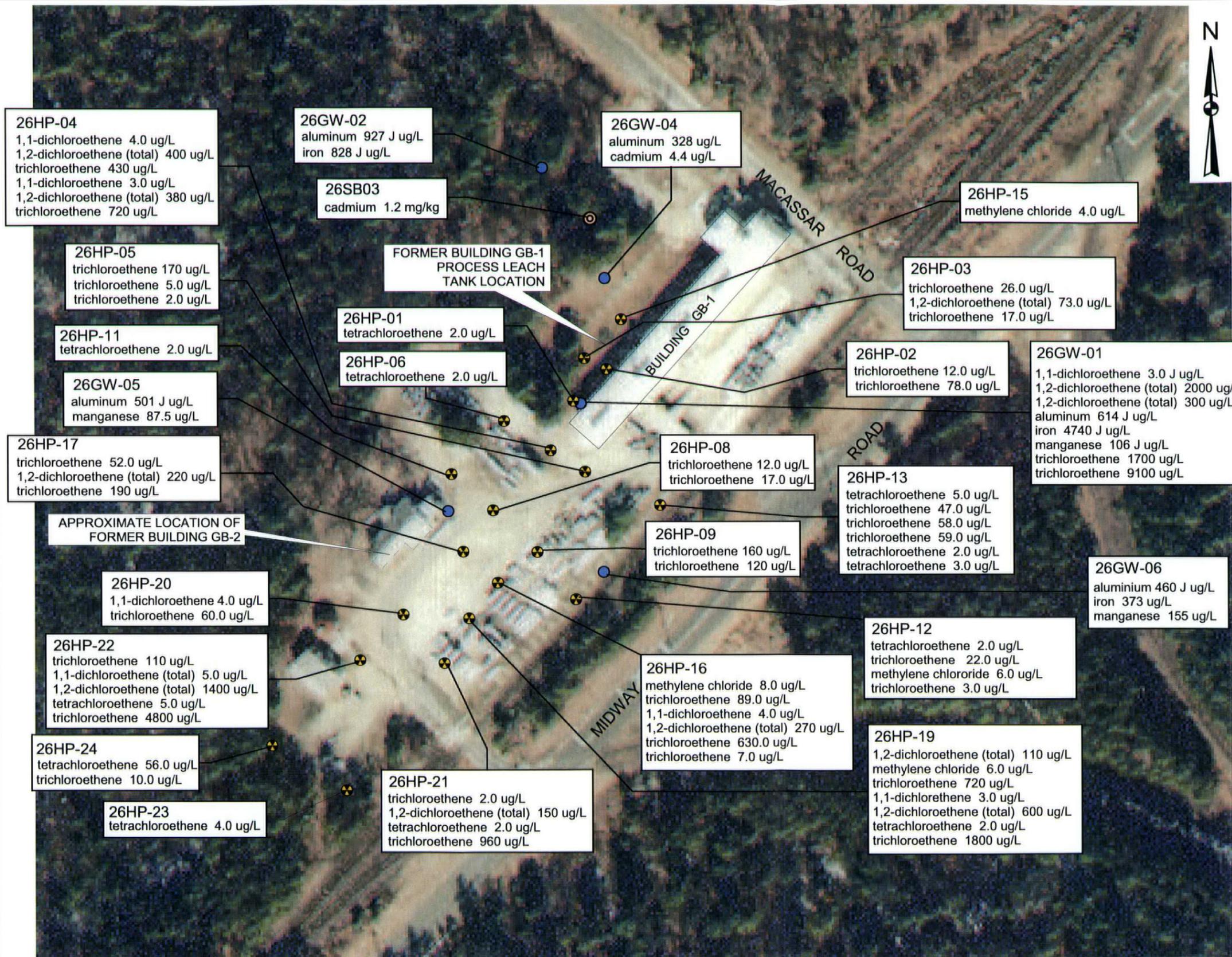
**OPERABLE UNIT 7 LOCATION MAP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY**

FILE 02/08/06	SCALE AS NOTED
FIGURE NUMBER FIGURE 3	REV DATE 0 02/08/06

The Site 26 RI (RI Addendum Report, 1998) delineated a groundwater plume of chlorinated hydrocarbons that emanated from the former process leach tank at Building GB-1 and extended approximately 350 feet southwest from this source. The major organic constituents were TCE and 1,2-DCE, which is a breakdown product of TCE. The TCE concentrations in the vicinity of the leach tank were as high as 9,000 ug/L in the groundwater (at monitoring well 26MW01) and 74.0 ug/kg in the soil. Groundwater samples obtained from permanent and temporary (direct push) monitoring wells exhibited a wide range of chlorinated compounds at concentrations above regulatory guidelines. In addition to the TCE and 1,2-DCE, organic compounds detected at concentrations exceeding regulatory levels included 1,1-DCE, methylene chloride and PCE. Figure 4 illustrates the location and concentration of compounds in groundwater exceeding regulatory screening levels in 1997. Although PCE had not been detected at the leach tank, the presence of PCE within the groundwater in the general vicinity of Building GB-1 was known at the conclusion of the RI. No special note of the PCE was taken at that time, as it simply was interpreted to be one of the volatile organic compound (VOC) components of the site's groundwater plume. Since the PCE was not yet realized to be a separate source, it was included as a contaminant of concern in the remedial alternatives selection for OU 3.

Following the Site 26 RI Reports, a Feasibility Study (FS), PRAP and ROD were developed for OU 3. An active remediation system designed to remove the solvent components of the OU 3 groundwater plume through AS/SVE was initiated by the Navy in January 2001. Quarterly sampling of the groundwater monitoring wells commenced in April 2001. Pre-startup concentrations for TCE and PCE are plotted on Figure 5. The following observations are drawn from this figure:

- There appear to be different sources for the PCE and the TCE groundwater components. The TCE component emanates from the former leach tank at building GB-1. The PCE component appears to emanate from an area south of Building GB-1.
 - There appears to be a smaller, secondary source of PCE within the eastern portion of the VOC plume in the vicinity of sampling point 26HP32. These PCE detections are relatively low (at or less than 10 ug/L) and are coincident with a segment of the OU 3 plume previously identified.
- The downgradient extents of the TCE and PCE components within the VOC plume are approximately the same. Both components were detected in direct-push screening samples as far downgradient as sampling point 26HP61, which is located on the opposite (western) side of the Mingamahone Brook.
 - The detection of VOCs in screening samples located on the western side of the Mingamahone Brook was not duplicated in samples from actual monitoring wells installed to gauge the possibility of groundwater flow beneath the tributary.



LEGEND
 ☢ HYDROPUNCH
 ● MONITORING WELL
 ⊙ SOIL BORING



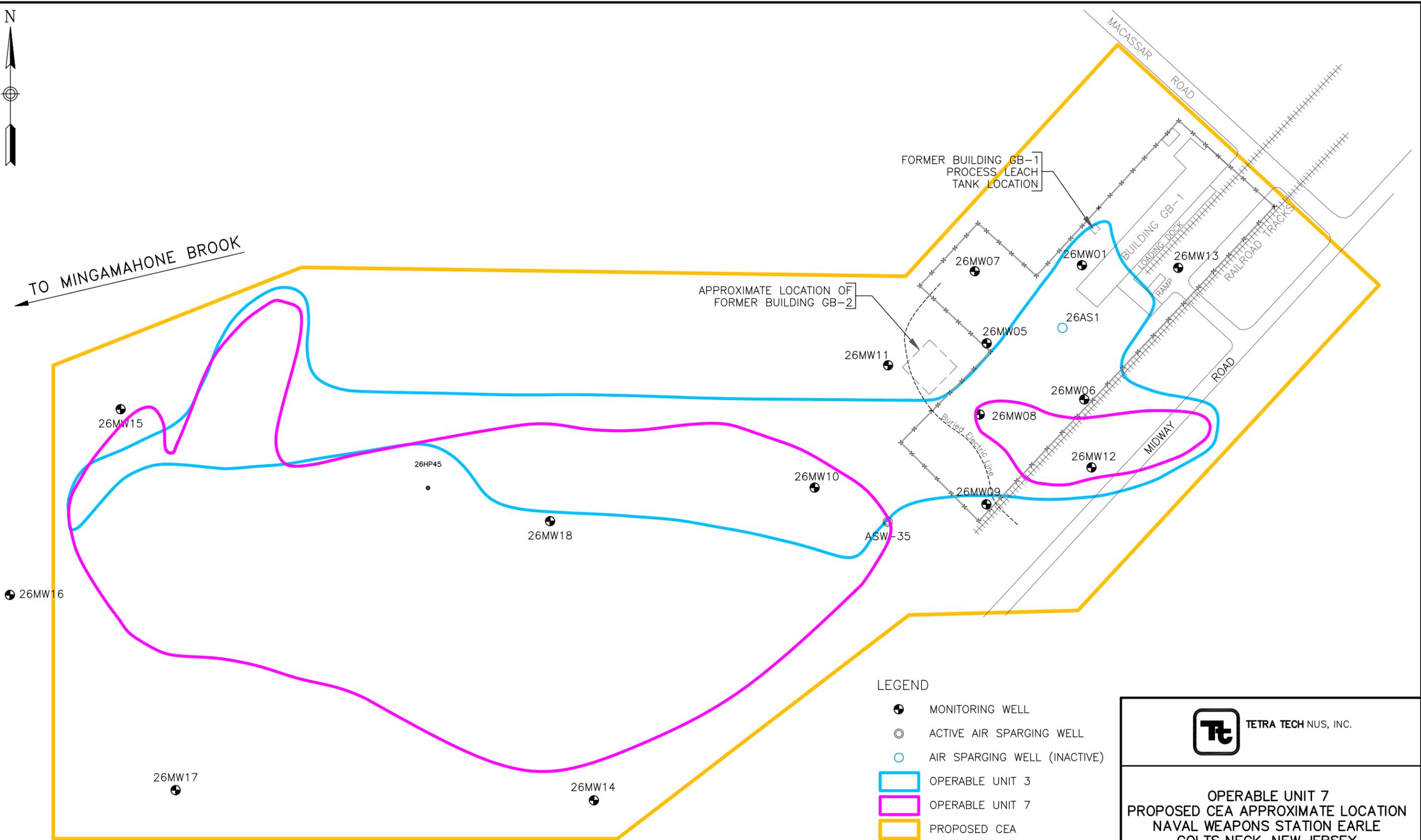
Tetra Tech NUS, Inc.

1997 GROUNDWATER CONCENTRATIONS ABOVE SCREENING LEVELS NAVAL WEAPONS STATION EARLE COLTS NECK, NEW JERSEY

FILE	2128-0240-01	SCALE	AS NOTED
FIGURE NUMBER	FIGURE 4	REV	DATE
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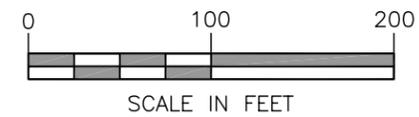


TO MINGAMAHONE BROOK



LEGEND

- MONITORING WELL
- ACTIVE AIR SPARGING WELL
- AIR SPARGING WELL (INACTIVE)
- OPERABLE UNIT 3
- OPERABLE UNIT 7
- PROPOSED CEA



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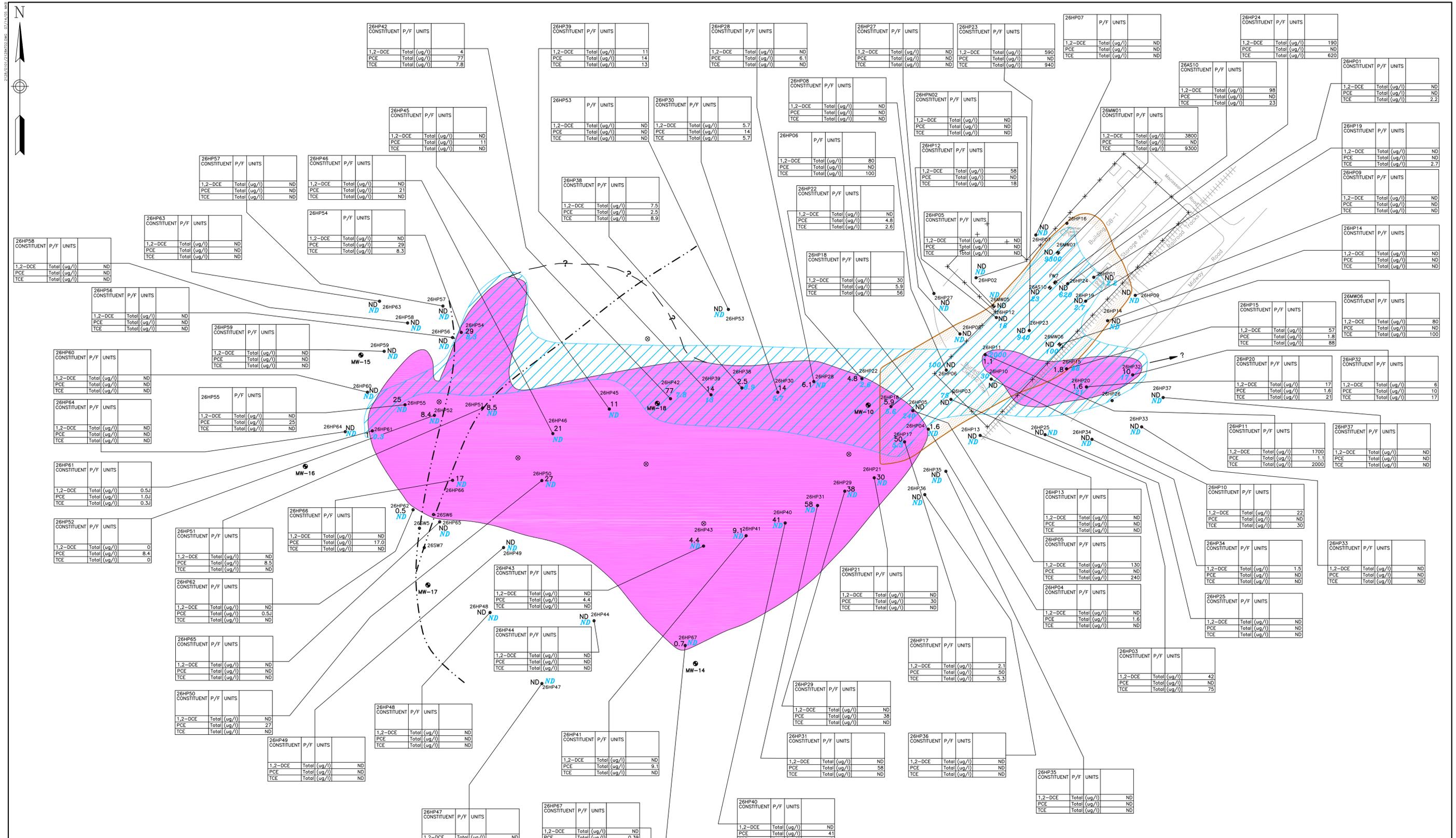
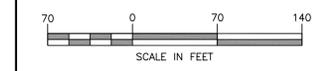
OPERABLE UNIT 7
 PROPOSED CEA APPROXIMATE LOCATION
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

FILE 2128CP05

SCALE AS NOTED

FIGURE NUMBER
FIGURE 4

REV 0 DATE 02/09/06



26HP42 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 4
PCE	Total	(ug/l) 7.7
TCE	Total	(ug/l) 7.8

26HP39 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 11
PCE	Total	(ug/l) 14
TCE	Total	(ug/l) 13

26HP28 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) 6.1
TCE	Total	(ug/l) ND

26HP27 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) ND

26HP23 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 590
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 940

26HP07 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) ND

26HP24 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 190
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 620

26HP01 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 2.2

26AS10 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 98
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 23

26HP19 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 2.7

26HP09 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) ND

26HP14 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) ND

26HP15 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) 1.8
TCE	Total	(ug/l) 88

26HP20 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 17
PCE	Total	(ug/l) 1.6
TCE	Total	(ug/l) 21

26HP32 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 6
PCE	Total	(ug/l) 10
TCE	Total	(ug/l) 17

26HP11 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 1700
PCE	Total	(ug/l) 1.1
TCE	Total	(ug/l) 2000

26HP37 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) ND

26HP13 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 22
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 30

26HP34 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 1.5
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) ND

26HP25 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) ND
PCE	Total	(ug/l) 1.8
TCE	Total	(ug/l) ND

26HP03 CONSTITUENT	P/F	UNITS
1,2-DCE	Total	(ug/l) 42
PCE	Total	(ug/l) ND
TCE	Total	(ug/l) 75

LEGEND

- ⊗ SUGGESTED LOCATIONS OF ADDITIONAL MONITORING WELLS
- 26HP45 SAMPLING LOCATION
- 11 PCE CONCENTRATION (ug/L)
- Blue hatched area TCE CONCENTRATION (ug/L)
- APPROXIMATE POSITION OF EXISTING MW'S
- Orange hatched area APPROXIMATE AREA EXTENT OF AS/SVE SYSTEM
- ND PCE AND/OR TCE NON DETECT



PRE-REMEDIATION INVESTIGATION
GROUNDWATER SAMPLE LOCATIONS
AND VOC CONCENTRATIONS
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

FILE 2128KT02	SCALE AS NOTED
FIGURE NUMBER FIGURE 5	REV 0
	DATE 07/14/05

As a result of pre-OU 3 remediation testing, a decision was made to create a new operable unit, OU 7, to further investigate the PCE plume and its source(s). OU 7 was defined as the PCE component of the Site 26 VOC plume. Results from the final Site 26 RI, which includes human health and ecological risk assessments, and results from OU 3 pre-remedial action testing performed by the Navy were used as the basis for performing a FS of potential remedial alternatives for OU 7. The FS for OU 7 was submitted in February 2004. Five rounds of quarterly groundwater monitoring for OU 3 remediation had been completed by the time the OU 7 FS was completed. The results of the quarterly sampling events are summarized in Table 1-1 of the OU 7 FS. These results indicate that:

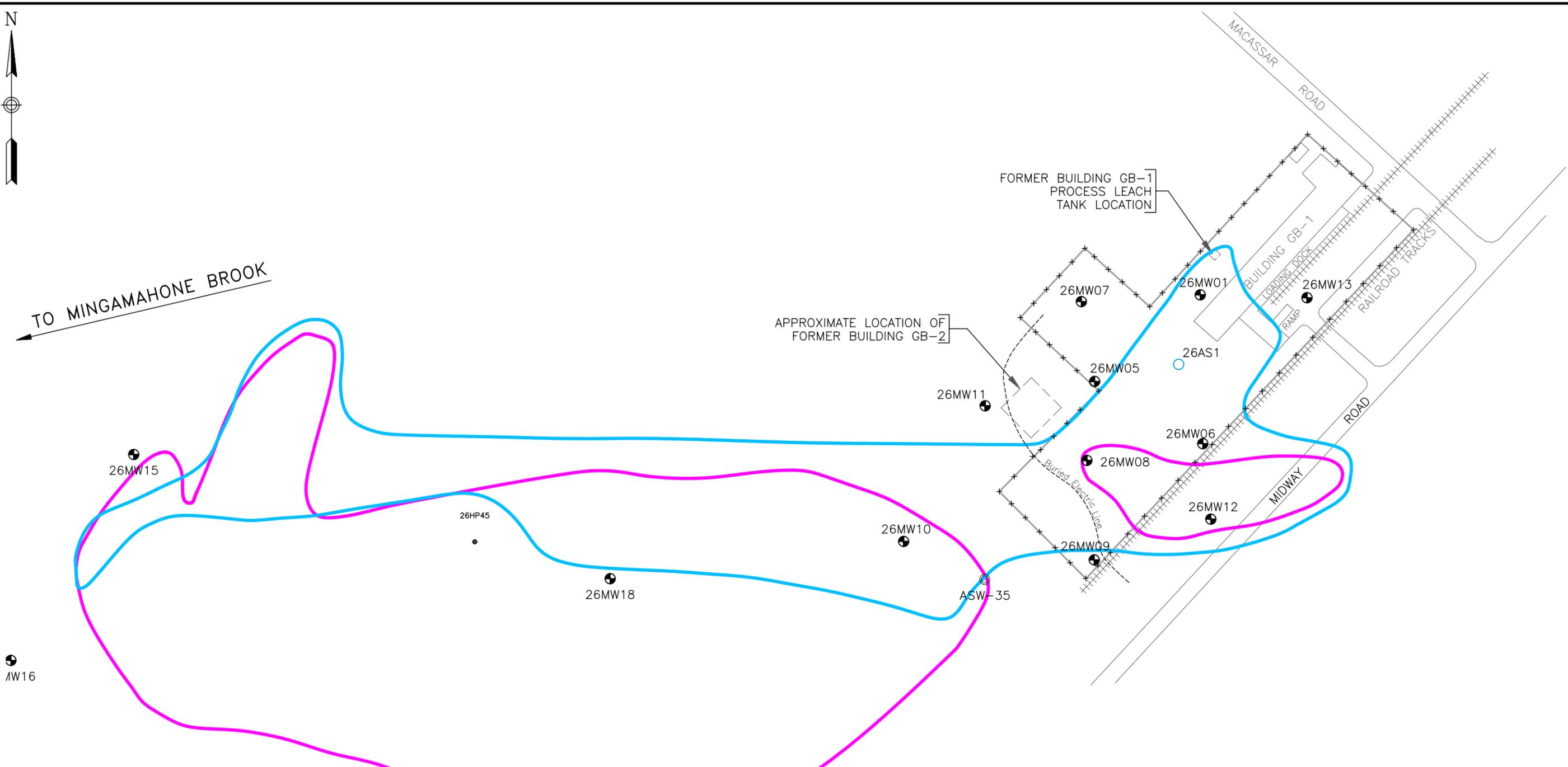
- The AS/SVE system has greatly reduced the TCE concentrations in the vicinity of the TCE source. The TCE concentrations in monitoring well 26MW01 have decreased from a pre-startup (August 2000) concentration of 3,700 ug/L to a concentration of 15 ug/L (November 2005).
- The effect of the AS/SVE system on the PCE component of the plume is difficult to evaluate because only two monitoring wells (26MW10 and 26MW18) are located within that portion of the VOC plume. Monitoring well 26MW10, which is located approximately 60 feet northwest of the interpreted source near sampling location 26HP17, displayed a pre-startup (August 2000) PCE concentration of 6.2 ug/L and most recently (November 2005) was non-detect for PCE at a detection limit of 1 ug/L. Monitoring well 26MW18, located west of 26MW10, demonstrated a maximum PCE concentration of 1.3J ug/L during the September 18, 2004 sampling round (all other 26MW18 samples were non detect for PCE). The data suggest that the PCE is being adequately remediated.
- There are no detections of VOCs at the periphery or outermost boundary of the approximate plume areas in monitoring wells 26MW14, 26MW16 and 26MW17 as shown on Figure 6.

The quarterly data presented in the OU 7 FS indicates that the AS/SVE system is successfully reducing the volume of the TCE (OU 3) and PCE (OU 7) contaminants. As these sources are removed, the extent and magnitude of the dissolved-phase VOC plume emanating from source areas should similarly decrease through processes of natural attenuation (in other words, the plume should begin to retract or “shrink”).

The continued lack of VOC detections at the periphery or outermost boundary of the approximate plume area in monitoring wells 26MW14, 26MW16 and 26MW17 indicates that the OU 7 plume continues to exist under steady-state conditions and it is not migrating beyond the boundaries established by the temporary well screening program. However, hydrogeological environment and the system verification data collected suggest that the VOC plume can be expected to contract as more contaminants are removed. Thus, as part of long term monitoring to address this concern the Navy will install additional permanent monitoring wells



TO MINGAMAHONE BROOK



LEGEND

- MONITORING WELL
- ACTIVE AIR SPARGING WELL
- AIR SPARGING WELL (INACTIVE)
- OPERABLE UNIT 3
- OPERABLE UNIT 7



PERMANENT WELL LOCATION MAP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

FILE 2128CP04
 FIGURE NUMBER **FIGURE 6**

SCALE AS NOTED
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SOURCE: FOSTER WHEELER ENVIRONMENTAL CORPORATION WELL LOCATION MAP, TITLED: FIG5_MW.dwg.

within the OU 7 VOC plume. These wells will allow monitoring of VOC concentrations in groundwater to observe the degree and rate of PCE plume attenuation as the more concentrated source area concentrations are reduced.

Based on the alternatives development from the FS for OU 7, the Navy and USEPA, in consultation with NJDEP, prepared the PRAP for OU 7. The PRAP is the basis for the selected remedial alternatives presented in this ROD for OU 7. The RI, FS, PRAP and community input are discussed in this ROD.

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

The documents that the Navy and USEPA used to develop, evaluate and select a remedial alternative for OU 7 have been maintained in the official Administrative Record repository at the Monmouth County Library (Eastern Branch), Route 35, Shrewsbury, New Jersey.

The PRAP related to OU 7 was released to the public on September 22, 2004. The notice of availability of this document was published in the Asbury Park Press on September 29 and 30, 2004 and October 1, 2004. A public comment period was held from October 1, 2004 to October 30, 2004.

A public meeting was held during the public comment period on October 5, 2004. At this meeting, representatives from the Navy, USEPA and NJDEP were available to answer questions about OU 7 and the remedial alternatives under consideration. The results of the public comment period are included in the Responsiveness Summary, which is included in Part III of this ROD.

IV. SCOPE AND ROLE OF RESPONSE ACTION FOR OU 7

To address contamination associated with the Site 26 groundwater at NWS Earle, the Department of the Navy completed an RI and FS for Site 26. These studies resulted in the development of two OUs for the solvent plume in Site 26 groundwater southwest of Building GB-1. OU 3 consists of the portion of the solvent plume southwest of Building GB-1 composed primarily of TCE and 1,2-DCE. OU 7 consists of a PCE plume that overlaps and partially coincides with the estimated OU 3 solvent plume. PRAPs have been developed for both OU 3 and OU 7. Following the PRAP for OU 3, a ROD was developed and an active remediation system designed to remove the solvent components of the groundwater plume through AS/SVE was initiated by the Navy in January 2001. The PRAP for OU 7 was developed to address the PCE component of the solvent plume at Site 26. The selected remedy to address the OU 7 PCE groundwater contamination plume is described in this document.

V. SUMMARY OF SITE CHARACTERISTICS

A. General

NWS Earle is located in the coastal lowlands of Monmouth County, New Jersey, within the Atlantic Coastal Plain Physiographic Province. The Mainside area, which includes OU 7, lies in the outer Coastal Plain, approximately 10 miles inland from the Atlantic Ocean. The Mainside area is relatively flat, with elevations ranging from approximately 100 to 300 feet above mean sea level. The most significant topographic relief within the Mainside area is Hominy Hills, a northeast-southwest-trending group of low hills located near the center of the station. The New Jersey Coastal Plain is a seaward-dipping wedge of unconsolidated Cretaceous to Quaternary sediments that were deposited on a pre-Cretaceous basement-bedrock complex. The Coastal Plain sediments are primarily composed of clay, silt, sand and gravel and were deposited in continental, coastal and marine environments. The sediments generally strike northeast-southwest and dip to the southeast at a rate of 10 to 60 feet per mile. The approximate thickness of these sediments beneath NWS Earle is 900 feet. The pre-Cretaceous complex consists mainly of PreCambrian and lower Paleozoic crystalline rocks and metamorphic schists and gneisses. The Cretaceous to Miocene Coastal Plain Formations are either exposed at the surface or subcrop in a banded pattern that roughly parallels the shoreline. The outcrop pattern is caused by the erosion truncation of the dipping sedimentary wedge. Where these formations are not exposed, they are covered by essentially flat-lying post-Miocene surficial deposits.

The rivers and streams draining NWS Earle ultimately discharge to the Atlantic Ocean, which is approximately 9 or 10 miles east of the Mainside area. The headwaters and drainage basins of three major Coastal Plain rivers (Swimming, Manasquan and Shark) originate on the Mainside area. The northern half of the Mainside is in the drainage basin of the Swimming River and tributaries include Mine Brook, Hockhockson Brook and Pine Brook. The southwestern portion of the Mainside drains to the Manasquan River via either Marsh Bog Brook or Mingamahone Brook. The southeastern corner of the Mainside drains to the Shark River. Both the Swimming River and the Shark River supply water to reservoirs used for public water supplies. Surface runoff from Site 26 discharges to the Mingamahone Brook, which discharges to the Manasquan River. The Manasquan River is not used as a public water supply.

Groundwater classification areas were established in New Jersey under NJDEP Water Technical Programs Groundwater Standards in New Jersey Administrative Code N.J.A.C. 7:9-6. The Mainside area is located in the Class II-A: Groundwater Supporting Potable Water Supply area. Class II-A includes those areas where groundwater is an existing source of potable water with conventional water supply treatment or is a potential

source of potable water. In this part of New Jersey, in general, the deeper aquifers are often used for public water supplies and the shallower aquifers may be used for private home owner well domestic supplies.

OU 7 is situated in the recharge area of the Kirkwood-Cohansey aquifer system. The Kirkwood-Cohansey aquifer system is a source of water in Monmouth County and is composed of the generally unconfined sediments of the Cohansey Sand and Kirkwood Formation. The Kirkwood-Cohansey aquifer system has been reported in previous investigations as being used for residential wells in the Mainside area. Along the coast, this aquifer system is underlain by thick diatomaceous clay beds of the Kirkwood Formation.

All facilities located in the Mainside Administration area are connected to a public water supply (New Jersey American Water Company). Water for the public supply network comes from surface water intakes, reservoirs and deep wells. No public water supply wells or surface water intakes are located on the NWS Earle facility. A combination of private wells and public water supply from the New Jersey American Water Company serves businesses and residences in areas surrounding the Mainside facilities. There are private wells located within a one-mile radius of NWS Earle and several within the NWS Earle boundaries. On-Base wells (located at remote building locations) are not used for potable water supply.

There is a rich diversity of ecological systems and habitats at NWS Earle. Knieskern's beaked-rush (*Rynchospora knieskernii*), a sedge species on the Federal endangered list, has been seen on the station and some species on the New Jersey endangered list, such as the swamp pink (*Helonias bullata*), may be present. An osprey has visited Mainside and may nest in another area at NWS Earle. The Mingamahone Brook supports bog turtles downstream of the Mainside area and provides an appropriate habitat for them at the Mainside area.

B. Surface Water Hydrology

Site 26 is surrounded by wooded upland areas. The upland areas are dominated by pitch pine, blackjack oak, blueberry and *Clethra* sp. Soils in this area contain no evidence of saturation, no wetland hydrology present and no streams or watercourses exist near the site. The closest wetlands are located approximately 300 yards to the northwest. The East Branch of Mingamahone Brook is located approximately 300 yards southwest of Site 26 and the site is in the Mingamahone Brook watershed.

C. Geology

Regional mapping places Site 26 in the outcrop area of the Kirkwood Formation; upland gravel may be present at the site. The upland gravel has a maximum thickness of 10 feet, the Kirkwood Formation ranges between 60 to 100 feet in thickness. However, groundwater contamination is limited to the upper 25 feet by

an underlying clay layer, so the RI soil borings were extended to no more than 24 feet deep to avoid disrupting the clay layer barrier. The lithology of the sediments encountered in the on-site borings generally agrees with the published description of the upland gravel and the Kirkwood Formation. In general, the borings encountered light yellowish-brown sand and gravel (probably representative of the upland gravel) and brownish-yellow, brown and gray, fine- to medium-grained and medium- to coarse-grained sand (probably representative of the Kirkwood Formation).

Based upon the boring log descriptions, wells MW26-02, MW26-03, MW26-05 and MW26-06 penetrated the upland gravel and the Kirkwood Formation and wells MW26-01 and MW26-04 penetrated the Kirkwood Formation.

D. Hydrogeology

Groundwater in the Kirkwood aquifer beneath the site occurs under unconfined conditions as defined by the limits of this investigation. Borings drilled during the RI and post-RI activities consistently detected a semi-confining clay layer underlying the entire site at variable depths of up to 25 feet below ground surface, depending on the surface elevation of the boring. This clay is interpreted to effectively limit the vertical migration of groundwater and the VOC plume to the portion of the aquifer overlying the clay.

The direction of shallow groundwater flow in the aquifer is toward the southwest. There does not appear to be a significant seasonal variation in groundwater flow direction. Based on boring log descriptions, the wells are screened in the Kirkwood Formation. The hydraulic conductivities calculated for MW26-01, MW26-03 and MW26-04 are 3.85×10^{-4} cm/sec (1.09 ft/day), 1.92×10^{-3} cm/sec (5.44 ft/day) and 7.09×10^{-4} cm/sec (2.01 ft/day), respectively.

Investigations were performed on borings at Site 26 during the RI to determine if the clay layer was acting as a semi-confining layer. Based on pore pressure plots, the water table was encountered at approximately 10 feet and a lower water bearing zone was encountered at approximately 42 feet bgs. The clayey silty zone penetrated between approximately 25 and 45 feet bgs shows a sharp rise in pre-pressure, indicating this zone serves as a semi-confining layer. Two pieces of evidence corroborate the findings of the cone penetrometer cone pressure plots, confirming the presence of the semi-confining layer. Efforts to obtain groundwater samples using the direct-push sampler from within the clay and silt zone yielded no water and the tool screen was found to be smeared with a plastic, clayey soil after attempts to obtain groundwater samples from the clay and silt zone. This indicates the likelihood of clay soils. Also, the vertical distribution of chlorinated compounds detected in groundwater samples demonstrated contaminant concentrations orders of magnitude lower below the clay layer than above it, indicating that the clay layer is acting as an aquitard.

E. Nature and Extent of Contamination

1. Initial Assessment Study and Confirmation Study

The 1983 IAS, which consisted of interviews and site observations, concluded that there was a minimal probability of impact, based on the presumption that lost material would have been lost as a direct discharge to surface water and would no longer be present. No sampling was performed under the IAS investigation. The site was not recommended for a confirmation study.

During the 1993 SI, three monitoring wells were installed. Groundwater samples were analyzed for picric acid and pH. Picric acid was not detected and pH was within expected levels.

2. Phase I Remedial Investigation

During the 1993 Weston RI/FS, four soil samples were collected from the Building GB-1 septic/leach field system. Lead was detected at elevated levels defined in three samples. All other metals were within normal background ranges. Picric acid was detected in one sample. No other explosive compounds were detected.

One monitoring well was installed near the septic/leach system. Groundwater samples from all SI and RI/FS wells were collected and analyzed for Target Compound List/Target Analyte list (TCL/TAL) analytes and explosive compounds. TCE was detected in the sample from MW26-01 at elevated levels (660 ug/L). Other VOCs, such as dichloroethanes (related to TCE as impurities or breakdown products) were also present. Low concentrations of several explosive compounds were detected in samples from wells MW26-01 and MW26-04.

3. Phase II Remedial Investigation

Between June and October 1995, B&R Environmental conducted the following field investigation activities at Site 26 which includes OU 7:

- Soil gas survey at 68 locations
- Sampling and analysis of subsurface soil samples from four soil borings
- Drilling and installation of two shallow permanent monitoring wells
- Sampling and analysis of groundwater from the newly installed well and existing wells
- Measurement of static-water levels in the wells

B&R Environmental conducted a survey to establish the horizontal locations and vertical elevations of the soil gas grid corners, soil boring locations, selected existing monitoring wells and the newly installed wells.

The site 26 Phase II RI concluded that a groundwater plume of chlorinated VOCs from the former process leach tank at Building GB-1 extended approximately 350 feet southwest from the source. TCE and 1,2-DCE, were the major contaminants in the groundwater plume. TCE concentrations in the vicinity of the source area were as high as 9,000 ug/L in the groundwater (at 26MW01) and 74.0 ug/kg in the soil. Groundwater samples contained a wide range of chlorinated compounds at concentrations above regulatory guidelines. In addition to the TCE and 1,2-DCE, organic compounds detected at concentrations exceeding regulatory levels included 1,1-DCE, methylene chloride and PCE. Figure 4 illustrates the location and concentration of compounds in groundwater exceeding regulatory screening levels in 1997.

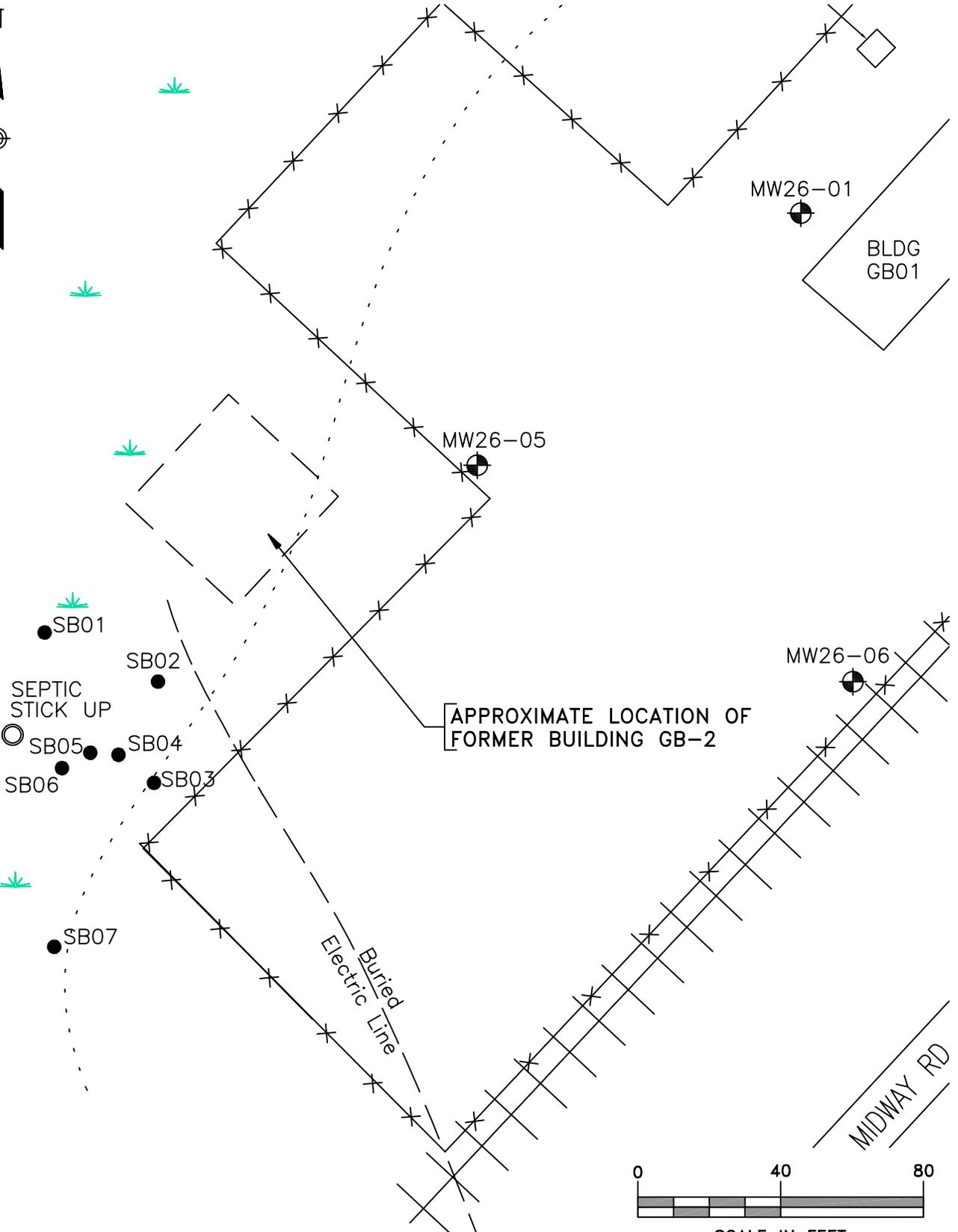
The Site 26 RI was followed by a FS to identify, develop and evaluate remedial alternatives for groundwater contaminated with VOCs at Site 26. The Navy prepared a PRAP in agreement with USEPA and NJDEP, selecting a remedial alternative for the contaminated Site 26 (OU 3) groundwater. The PRAP was distributed for public comments, there was a notice in the local newspaper advertising the availability of the PRAP and a public meeting was held to encourage public participation in the decision-making process during the advertised public comment period. After public participation comments were received and considered, a remedy was selected for the ROD. The OU 3 ROD for Site 26 was signed in September 1998. The selected remedy included source removal, AS/SVE, LUCs and long-term monitoring. The Navy contracted Foster Wheeler Environmental Corporation (FWENC) to perform pre-design studies and the design and construction of the selected remedy.

4. Pre-OU 3 Remediation Testing/Supplemental Investigation for OU 7

As part of their pre-design studies for OU 3 remediation, the Navy investigated the septic tank and leaching system of former Building GB-2, formerly located to the southwest of Building GB-1 and obtained the following environmental testing results (leading to the decision to institute OU 7 for the PCE plume at Site 26) between August 1999 and March 2000:

Soil Sample Results

Five soil samples from six borings (SB01 - SB06) in close proximity to the septic tank at the former Building GB-2 and one soil sample from a soil boring (SB07) located beneath a nearby abandoned painting equipment area were collected. The soil boring locations are illustrated in Figure 7. Samples were submitted for TCL VOC analysis. All samples were non-detect for all VOCs except for 2-butanone, a common laboratory solvent that is not a compound of concern at this site (2-butanone was also found in the trip blank).



TETRA TECH NUS, INC.

PRE-REMEDIATION INVESTIGATION
 SEPTIC TANK ORIENTATION AND SOIL BORINGS
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

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Aqueous Sample Results

One aqueous sample was collected from the septic tank at the former Building GB-2. There was no appreciable amount of sludge in the tank. The sample was submitted for TCL VOC analysis. No VOCs were detected.

Surface Water and Sediment Sample Results

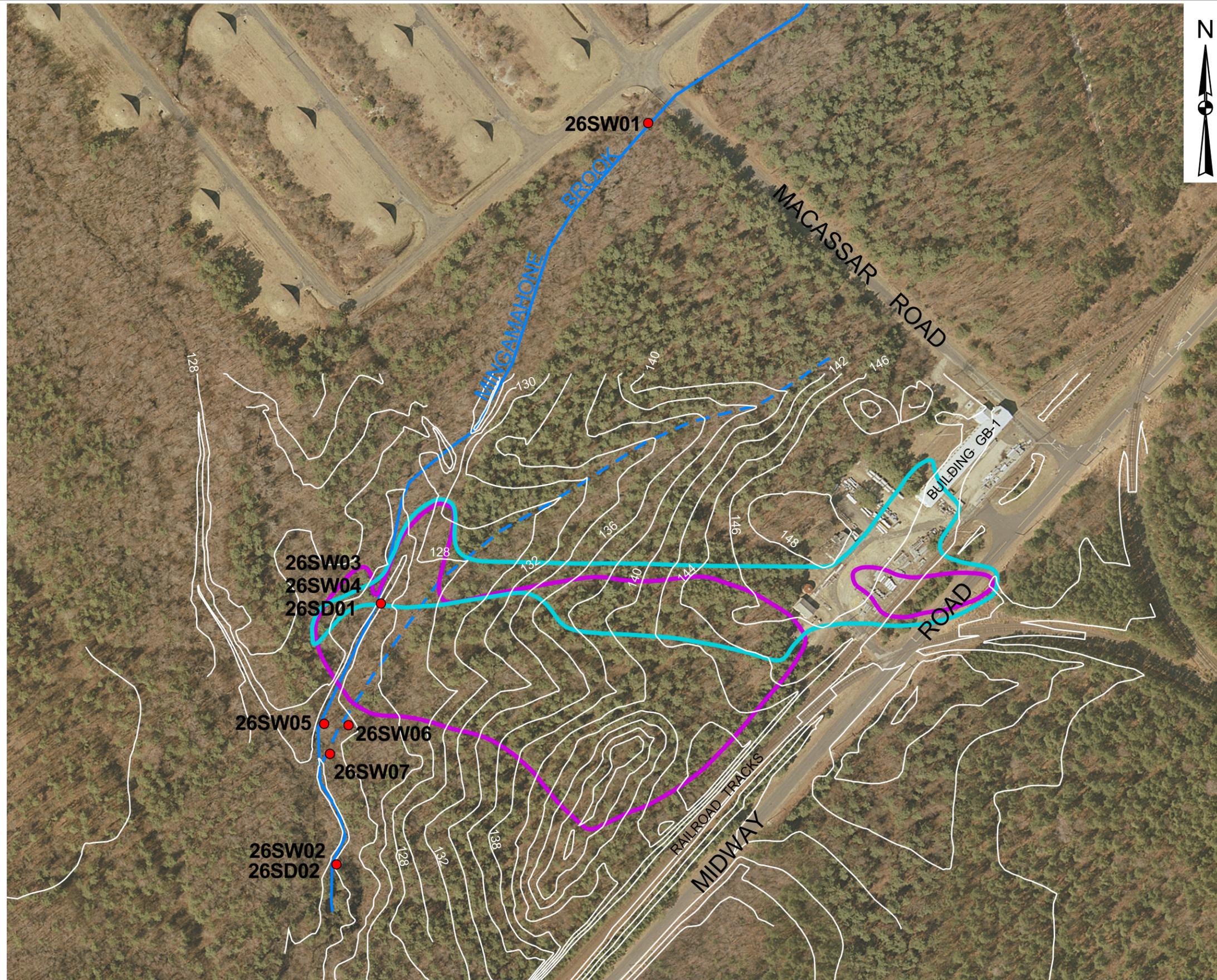
One surface water sample (26SW01) upstream and one surface water sample (26SW02) and sediment sample (26SD02) downstream from Site 26 in the Mingamahone Brook were collected. Two surface water (26SW03 and 26SW04) and one sediment sample (26SD01) were collected in the Mingamahone Brook southwest of Site 26 and in the projected path of groundwater migrating from the Site 26 area. The locations of the surface water and sediment samples are illustrated in Figure 8. Samples were submitted for TCL VOC analysis. No VOCs were detected in any surface water or sediment samples.

Groundwater Sample Results

Groundwater samples were collected from four monitoring wells and 72 direct-push (hydropunch) temporary well screening locations. The coverage area for the screening wells was far greater than that of the permanent wells and eventually extended to the western banks of Mingamahone Brook. All samples were analyzed for VOCs. For AS/SVE system design purposes, selected monitoring well samples were also analyzed for metals. The analytical results from the monitoring wells were very similar to those from the RI, with the highest concentration of TCE detected at monitoring well 26MW01 (9,300 ug/L). The groundwater samples from the screening wells contained TCE at concentrations ranging up to 2,000 ug/L, 1,2-DCE at concentrations ranging up to 1,700 ug/L and PCE at concentrations ranging up to 77 ug/L. The analytical results from this sampling effort are illustrated in Figure 5.

Summary of Findings

The analytical results from the screening wells indicated that the VOC plume extended farther downgradient from the source (to the vicinity of Mingamahone Brook) than was possible to interpret or depict with the previous (RI) well network and confirmed that PCE was a consistent component of the plume, in addition to the primary components of TCE and 1,2-DCE. The screening results also indicated that the PCE component of the plume extended further to the south than the multi-component segment of the plume (also beyond the existing monitoring well network), resulting in the delineation of a plume segment containing mainly the PCE component. Similar to the mixed-component portion of the plume, the VOC plume segment containing mainly PCE extended downgradient to the vicinity of Mingamahone Brook. The historical VOC concentrations through time in the monitoring wells (consistent VOC concentrations) and the lateral distribution of VOCs as delineated in the screening wells (VOC concentrations are highest upgradient near



LEGEND

● SURFACE WATER/SEDIMENT LOCATION

TRIBUTARIES OF MINGAMAHONE BROOK
 INTERMITTENT
 PERENNIAL

OPERABLE UNITS
 □ OU3
 □ OU7



Tetra Tech NUS, Inc.

PRE-REMEDATION INVESTIGATION
 SURFACE WATER/SEDIMENT
 SAMPLE LOCATIONS
 NAVAL WEAPONS STATION EARLE
 COLTS NECK, NEW JERSEY

SOURCE:
 BASEMAP PREPARED BY FOSTER WHEELER ENVIRONMENTAL CORPORATION

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the source and decrease in the downgradient direction to eventual non-detections) are consistent with the existence of a steady-state plume emanating from a residual source(s).

During the construction of the AS/SVE system, the Navy installed 7 additional monitoring wells (26MW07 through 26MW-13 (see Figure 5)) to aid in the evaluation of the progress of the groundwater remediation. As a result of the expanded VOC plume that was delineated through the temporary well program, the Navy installed an additional 5 monitoring wells (26MW14 through 26 MW18, see Figure 6) downgradient (or beyond) the delineated plume. Because it was not known whether the plume was at a steady-state condition or was continuing to migrate, these wells were intentionally installed downgradient of the plume to serve as downgradient plume limit monitoring wells that would indicate if the plume continued to migrate beyond its extent as delineated by the screening wells.

F. Current and Potential Future Land and Resource Use

Since NWS Earle is not on the current (thought to be final) Base Realignment and Closure (BRAC) list, reasonably anticipated future land use at Site 26 is limited to its current military-related mission associated with ordnance operations with existing encumbrances for explosive safety quantity distance (ESQD) arcs which essentially limit land use between existing buildings near Site 26 to maintenance activities only.

VI. SUMMARY OF SITE RISKS

As part of the Phase II RI, a human health risk assessment and an ecological risk assessment were performed for Site 26. Table 1 presents the contaminants of concern.

A Human Health

The human health risk assessment estimated the potential risks to human health posed by exposure to contaminated groundwater, surface water and sediment at the site. To assess these risks, the exposure scenarios listed below were assumed:

- Ingestion of groundwater as a drinking water source.
- Inhalation of contaminants in groundwater (i.e., volatile compounds emitted during showering).
- Dermal exposure to contaminants in groundwater (i.e., showering, hand washing, bathing).
- Dermal contact from contaminated soil.

TABLE 1
GROUNDWATER CONTAMINANTS OF CONCERN
OU 7 RECORD OF DECISION
NAVAL WEAPONS STATION EARLE, COLTS NECK, NEW JERSEY

Contaminant of Concern	Exceeds GWQS	Exceeds MCLs	Poses Human Health Risk
Trichloroethene	X	X	X (2)
1,1-Dichloroethene	X	--	X (2)
1,2-Dichloroethene	X	X	X (3)
Benzene	X (1)	X	--
Carbon tetrachloride	X (1)	X	--
Tetrachloroethene	X (1)	X	--
Cadmium	X	--	--

Notes:

- X indicates the basis for selection of the compound or element as a COC.
- The New Jersey State GWQS are ARARs.
- SDWA MCLs regulate organic and inorganic constituents in public drinking water supplies; included as a TBC for comparison purposes.
- -- Does not exceed GWQS, SWDA MCLs, or pose potential human health risks.
- (1) COC exceeds GWQS, based on direct push sampling and analysis data.
- (2) COC contributes to excess carcinogenic risks for the future residential adult through RME ingestion, dermal and inhalation exposures.
- (3) COC contributes to HI > 1.0 for future industrial worker, adult resident future under RME exposures, or for residential child under RME exposures.

- Inhalation of contaminants in soil (i.e., fugitive dusts).
- Ingestion of contaminated soil.
- Incidental ingestion of surface water and sediment.
- Dermal contact with contaminated surface water and sediment.

These scenarios were applied to various site use categories, including future industrial, residential and recreational receptors.

The estimated total cancer risk for the most restrictive (future residential receptor) scenario exposure to groundwater at Site 26 indicated a total risk of 2.0×10^{-3} . TCE and 1,1-dichloroethene (via groundwater ingestion and inhalation during showering) and arsenic (via ingestion of and dermal contact with soil) are the principal COPCs that contributed to the cancer risks exceeding guideline limits (1×10^{-6} to 1×10^{-4}) for these exposure scenarios.

Noncarcinogenic risks were estimated using Hazard Indices (HI), where an HI exceeding one is considered an unacceptable health risk. TCE and 1,2-dichloroethene were the COPCs that exceeded 1.0 or contributed to the HI exceeding 1.0 for these exposure scenarios. In addition, central tendency risk estimates for residential and industrial exposure to groundwater yielded HIs greater than 1.0; affected target organs include liver, cardiovascular system and central nervous system.

Lead concentrations detected at the site during the RI were below the groundwater guidelines and are not expected to be associated with a significant increase in blood-lead levels based on the results of the IEUBK Lead Model (v. 0.99).

B Ecological

Site 26 is relatively small and consists of turfgrass or developed areas, providing little ecological habitat. Wooded uplands are present northwest of the site. These upland areas provide excellent habitat for a wide variety of terrestrial organisms. No wetlands, other sensitive habitats, or threatened or endangered species of any kind exist in the vicinity of Site 26.

No significant contaminant migration pathways to the upland habitats exist at the site. Overland runoff of contaminants from the percolation pit is unlikely since water percolates through and is not expected to overflow the edges of the pit. Water in the leaching tank/grease trap area is not expected to migrate via

overland runoff to the upland areas since water tends to settle in this area and the wooded areas are a few feet higher on grade than the area next to Building GB-1. Groundwater discharge of contaminants to surface water is also insignificant since no wetlands or other surface waters are present near the site.

VII. REMEDIAL ACTION OBJECTIVES AND PRELIMINARY REMEDIATION GOALS

The overall objective for the remedy at OU 7 is to protect human health and the environment. Based on the baseline human health risk assessment, the ecological risk assessment and the RI results, RAOs were developed to address environmental media status at the Site 26 PCE plume (OU 7).

Protection of Human Health RAO

- Prevent potential human exposure to organic contaminants in groundwater.

Protection of the Environment RAOs

- Mitigate migration of organic contaminants in groundwater.
- Restoration of groundwater aquifer quality.

These RAOs will be met when the PCE within the site 26 groundwater plume has been removed or reduced in concentration to below the PRG. The PRG for PCE is 1 ug/l. PRGs for the combined OU 3 and OU 7 Site 26 VOC plume are included in Table 2.

VIII. DESCRIPTION OF REMEDIAL ACTION ALTERNATIVES

The purpose of developing alternatives and the alternative screening process is to assemble an appropriate range of possible remedial options to achieve the RAOs identified for the site. In this process, technically feasible technologies are combined to form remedial alternatives that provide varying levels of risk reduction that comply with Federal (USEPA) and state (NJDEP) guidelines for site remediation.

Engineering technologies capable of eliminating the unacceptable risks associated with exposure to site-related soils or groundwater were identified and those alternatives determined to best meet RAOs after screening were evaluated in detail.

TABLE 2
GROUNDWATER PRGs
OU 7 RECORD OF DECISION
NAVAL WEAPONS STATION EARLE, COLTS NECK, NEW JERSEY

Contaminant of Concern	Proposed PRGs	Basis of Selection
Trichloroethene	1	GWQS
1,1-Dichloroethene	1	GWQS
1,2-Dichloroethene (cis/trans)	70/100	GWQS
Benzene	1	GWQS
Carbon tetrachloride	1	GWQS
Tetrachloroethene	1	GWQS
Cadmium	4	GWQS

Notes:

- All PRGs in µg/L.
- GWQS are ARARs.

A. Detailed Summary of Alternatives

Summaries of the remedial alternatives that passed the screening step for Site 26 OU 7 are presented in the following sections and summarized on Table 3.

1. Alternative 1: No Action

The no-action alternative is developed as a baseline case, as required by the NCP. No additional measures (beyond the groundwater remediation underway for OU 3) would be implemented to remove or contain the groundwater contaminants, to prevent potential human exposure to site groundwater, or to mitigate contaminant migration in the environment. Because a portion of the OU 7 plume overlaps with the OU 3 plume currently under active remediation by AS/SVE, under the no action alternative remediation of the OU 7 PCE groundwater plume will continue. However, no additional actions for OU 7 would be performed under this alternative.

2. Alternative 2: Limited Action (Long-Term Monitoring)

In addition to the remedial action underway for OU 3, Alternative 2 relies on long-term groundwater monitoring to achieve the RAOs. Over time, PCE groundwater contamination is expected to decrease by the active remediation program in place for OU 3 and later by natural effects in the environment. Long-term annual monitoring and five-year reviews would assess contaminant status and potential threats to human health and the environment. The annual monitoring and five-year reviews will be required until clean up goals are achieved and confirmed.

Long-Term Monitoring - Under Alternative 2, the groundwater would be sampled annually to monitor the migration of PCE-related contaminants from the site and the potential for impacts to downgradient areas. Background well data would be used for evaluation of site contaminant status. The data would be evaluated during the five-year review period.

Five-Year Reviews - Since contaminants remain in groundwater, a review of site conditions and risks would be conducted every five years, as required by CERCLA. The reviews would consist of evaluating analytical and hydrogeologic data, assess whether contaminant migration has increased and determining whether human or ecological receptors or natural resources are at risk.

TABLE 3
SITE 26 - OU 7 REMEDIAL ALTERNATIVE COMPONENTS
NWS EARLE, COLTS NECK, NEW JERSEY

	ALTERNATIVE	KEY COMPONENTS OF ALTERNATIVE
1	No Action	No actions would be taken Cost**
2	Limited Action (Long-Term Monitoring)	Long-term annual groundwater monitoring Five-year reviews Cost**
3	Limited Action (Long-Term Monitoring and LUCs)	Long-term annual groundwater monitoring LUCs (CEA*) Five-year reviews Cost**

Notes:

* Classification Exception Area pursuant to the New Jersey Groundwater Quality Standards (N.J. A.C 7:9-6) would be established for groundwater that does not meet state GWQS.

** There are no capital or maintenance costs for the no-action alternative (Alternate 1) since no activities would be performed under this alternative. Under OU 7 Alternatives 2 and 3, there would be no capital costs. Marginal costs for additional (or exchange of) monitoring wells to monitor state of the OU 3 and OU 7 plumes are minor and can be applied to the approved OU 3 remediation project underway for Site 26. Additionally, costs for preparing the proposed CEA under Alternative 3 are already budgeted under the OU 3 remediation underway for Site 26.

3. Alternative 3: Limited Action (Long-Term Monitoring and LUCs)

In addition to the remedial action underway for OU 3, Alternative 3 relies on long-term groundwater monitoring and LUCs to achieve RAOs. Active treatment (other than that for OU 3) is not employed to address site contamination. LUCs will be implemented to prevent the use of the groundwater and long-term monitoring of site groundwater would be conducted to assess contaminant status and potential threats to human health and the environment. Over time, the contaminants in groundwater (PCE for OU 7) will likely gradually decrease through adsorption, dispersion and precipitation. However, since groundwater is above GWQS and MCLs, site conditions and risks would be reviewed every five years.

A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, the Navy shall prepare and submit to EPA for review and approval a LUC remedial design that shall contain implementation and maintenance actions, including periodic inspections.

LUCs - Because site groundwater does not meet GWQS, a CEA pursuant to N.J.A.C 7:9-6 would be established to provide the state official notice that the constituent standards will not be met for a specified duration, anticipated not to exceed 10 years and to ensure that use of groundwater in the affected area is suspended until MCLs and GWQS are achieved.

Long-Term Monitoring - Under Alternative 3, additional downgradient wells would be installed to monitor plume status. The groundwater would be sampled periodically to monitor the migration of PCE-related contaminants from the site and the potential impacts to downgradient areas. As with Alternative 2, background well data would be used for comparison to evaluate site contaminant status. The collected data would be evaluated during the five-year review period.

Five-Year Reviews - Because contaminants remain on the site, a review of site conditions and risks would be conducted every five years, as required by CERCLA. The reviews would consist of evaluation of analytical and hydrogeologic data to assess whether contaminant migration has increased and whether human or biological receptors or groundwater resources are at risk.

IX. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

A groundwater remediation program consisting of source removal, AS/SVE, LUCs and long-term monitoring is underway as a result of the ROD for OU 3. The active remediation program is currently in effect at the adjacent OU 3 and OU 7 plume, effectively treating areas of higher concentrations in both plumes, ensuring

protection of human health and the environment.

None of the three retained OU 7 alternatives contains any proposed action that would protect human health or the environment more actively than the program already underway. Therefore it is concluded that each of the three retained remedial alternatives retained for OU 7 would be equally protective of human health and the environment. However, Alternative 3 includes implementation of a CEA and long-term monitoring, which can provide added assurance to address potential long-term future exposure scenarios.

1. Overall Protection of Human Health and the Environment

Alternatives 1 and 2 do not contain proposed action that would provide additional protection of human health and the environment. Alternative 3 includes the implementation of LUCs in the form of a CEA to be extended to the PCE component of the Site 26 groundwater VOC plume to address potential future exposure scenarios.

2. Compliance with ARARs

All three of the OU 7 alternatives provide active treatment of the groundwater as already under implementation as part of OU 3. With the operation of the AS/SVE remediation system for OU 3 all three OU 7 alternatives will eventually achieve ARARs. OU 7 Alternatives 1 and 2 do not contain any proposed action that would provide additional ARAR compliance than is currently a result of the OU 3 remedy underway. OU 7 Alternative 3 provides for the extension of the CEA to include the PCE component of the groundwater VOC plume at Site 26 to provide the state official notice that the constituent standards would not be met for a specified duration, anticipated not to exceed 10 years and to ensure that consumption of the untreated groundwater is prohibited.

3. Long-Term Effectiveness and Permanence

OU 7 Alternative 1 does not provide any additional long-term effectiveness. Alternatives 2 and 3 require the Navy to monitor the quality of groundwater beneath and leaving the site, assess potential impacts to the adjacent lands and downgradient receptors and determine whether additional remedial actions are necessary through long-term groundwater monitoring and five-year review. By extending the CEA to include the PCE component of the Site 26 VOC plume under OU 7, Alternative 3 will be effective in minimizing the risks to downgradient receptors and the environment.

For OU 7 Alternative 1, no new controls would be used to manage the site; therefore, the evaluation of the adequacy and reliability of controls is not applicable. For OU 7 Alternatives 2 and 3 no difficulties or

uncertainties are anticipated in performing the long-term monitoring. Groundwater monitoring wells may require replacement if damage occurs, but wells would be readily replaceable.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

None of the three OU 7 alternatives contain any proposed action that would provide additional treatment than what is being provided through implementation of the OU 3 ROD currently in process. These alternatives would not further reduce the toxicity, mobility, or volume through treatment.

5. Short-Term Effectiveness

Since OU 7 Alternative 1 contains no response actions, implementation of this alternative would not pose additional short-term risks to station personnel or the local community. Implementation of OU 7 Alternatives 2 or 3 is not expected to pose any significant risks to station personnel or the local community. Workers who implement these alternatives would be adequately safeguarded by using appropriate engineering safeguards or personal protective equipment (PPE) to prevent exposure to contaminate media, contaminant-laden dusts and airborne VOCs. OSHA standards would be followed and proper engineering measures or PPE would be used to protect workers and the environment during all remediation activities under these alternatives.

No permanent adverse impacts to the environment are anticipated to result from implementing any of the three OU 7 alternatives.

6. Implementability

Since no response activities would occur under OU 7 Alternative 1, the alternative is readily implementable and no permits are required. The technical feasibility criteria, including constructability, operability and reliability, are not relevant to this alternative.

Both OU 7 Alternatives 2 and 3 are implementable. Long-term monitoring (sampling and analyses) requires readily available resources. Both alternatives allow for assessing contaminant presence, migration and changes in media quality that may indicate potential impacts to downgradient receptors. Permits would not be required for these alternatives. However, approval for implementation of the CEA would be needed from NJDEP. There is ample availability of companies with the trained personnel, equipment and materials to implement these alternatives. Regulatory personnel and environmental specialists are readily available to perform five-year reviews associated with these alternatives.

Since no treatment is proposed through any of the three OU 7 alternatives, the criterion of availability of treatment technologies, treatment and disposal (TSD) facilities and capacity is not applicable.

Under all three OU 7 alternatives, additional actions can be easily implemented in the future, if warranted.

7. Cost

There are no capital or maintenance costs for the no-action alternative (Alternate 1) since no activities would be performed under this alternative. Under OU 7 Alternatives 2 and 3, there would be no capital costs. Marginal costs for additional (or exchange of) monitoring wells to monitor state of the OU 3 and OU 7 plumes are minor and can be applied to the approved OU 3 remediation project underway for Site 26. Additionally, costs for preparing the proposed CEA under Alternative 3 are already budgeted under the OU 3 remediation underway for Site 26.

8. Agency Acceptance

NJDEP has had the opportunity to review and comment on all the documents in the Administrative Record and has had the opportunity to comment on the draft ROD. Comments received from the NJDEP have been incorporated into the ROD.

9. Community Acceptance

The community has had the opportunity to review and comment on documents in the Administrative Record, to participate in regularly scheduled Restoration Advisory Board (RAB) meetings convened to encourage community involvement and attend a public meeting held to provide the community an opportunity to learn about the PRAP. The community has not indicated objections to the alternative selected in this ROD. Part III, Responsiveness Summary, of this ROD presents an overview of community involvement and input to the selected alternative.

X. THE SELECTED REMEDY

The Navy, with USEPA and NJDEP, has selected Alternative 3 as its preferred remedy for Site 26, OU 7. Alternative 3 utilizes LUCs to prevent the use of groundwater until the groundwater complies with MCLs and GWQS levels.

A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, the Navy shall prepare and submit to EPA for review and approval a LUC

remedial design that shall contain implementation and maintenance actions, including periodic inspections. LUCs will be maintained until the concentrations of hazardous substances in the groundwater are at such levels to allow for unrestricted use and exposure. Although the Navy may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Navy shall retain ultimate responsibility for remedy integrity. Because site groundwater does not meet MCLs or GWQS, a temporary exemption (CEA) pursuant to N.J.A.C 7:9-6 would be established to provide the state official notice that the constituent standards will not be met for a specified duration anticipated not to exceed 10 years and to ensure that use of groundwater in the affected area is suspended until standards are achieved. Additional downgradient wells would be installed to monitor plume status. Long-term periodic groundwater monitoring will be conducted to assess contaminant status and potential threats to human health and the environment. Since wastes will be left in place, site conditions and risks will be reviewed every five years. Figure 9 shows the boundaries of the land use controls.

XI. STATUTORY DETERMINATIONS

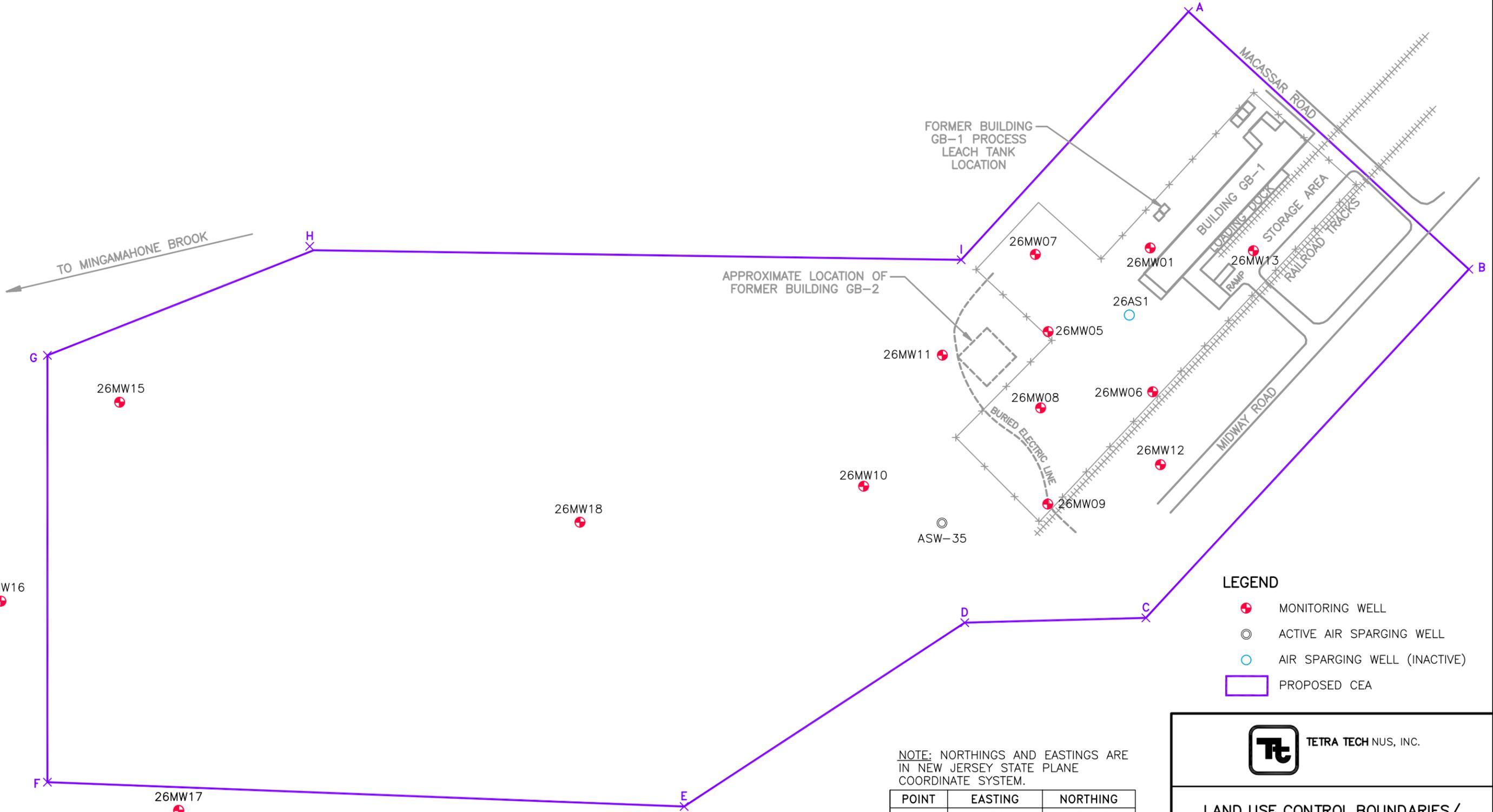
The remedy selected for OU 7 satisfies the remedy selection requirements of CERCLA and the NCP. The remedy is expected to be protective of human health and the environment, complies with ARARs and is cost effective. The following sections discuss how the selected remedial action addresses these statutory requirements.

A. Protection of Human Health and the Environment

The selected remedy will be protective of human health and the environment. The human health risk assessment concluded that site groundwater poses carcinogenic and non-carcinogenic risks exceeding USEPA's guideline risk limits under exposure to groundwater scenarios. Establishment of the site as a groundwater CEA will provide interim protection by prohibiting use of the aquifer until MCLs and GWQS are achieved.

The long-term periodic monitoring program will allow the responsible agencies to monitor the quality of groundwater leaving the site, assess potential impacts to downgradient receptors and determine whether additional remedial actions are necessary.

A LUC Remedial Design will be prepared as the land use component of the Remedial Design. Within 90 days of ROD signature, the Navy shall prepare and submit to EPA for review and approval a LUC remedial design that shall contain implementation and maintenance actions, including periodic inspections. Although the Navy retains ultimate responsibility for the performance of these obligations, the

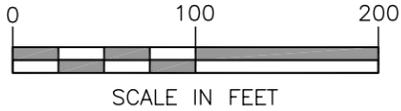


LEGEND

- + MONITORING WELL
- ⊙ ACTIVE AIR SPARGING WELL
- AIR SPARGING WELL (INACTIVE)
- ▭ PROPOSED CEA

NOTE: NORTHINGS AND EASTINGS ARE IN NEW JERSEY STATE PLANE COORDINATE SYSTEM.

POINT	EASTING	NORTHING
A	590129.335	517033.908
B	590412.783	516773.883
C	590086.283	516422.023
D	589903.077	516417.154
E	589619.345	516231.642
F	588975.543	516256.164
G	588975.543	516686.989
H	589240.821	516797.009
I	589899.511	516783.381



TETRA TECHNUS, INC.

**LAND USE CONTROL BOUNDARIES/
LIMIT OF CLASSIFICATION EXCEPTION AREA
SITE 26 (OU 3 AND OU 7)
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY**

FILE
112G00012CP01-3.DWG

SCALE
AS NOTED

FIGURE NUMBER
FIGURE 9

REV DATE
0 11/27/06

Navy may arrange, by contract or otherwise, for another party(ies) to carry them out. Should any LUC remedy fail, the Navy will ensure that appropriate actions are taken to reestablish the remedy's protectiveness and may initiate legal action to either compel action by a third party(ies) and/or to recover the Navy's costs for remedying any discovered LUC violation(s).

B. Compliance With and Attainment of ARARs

Working in conjunction with the in place OU 3 remedy, the selected remedy for OU 7 will comply with all applicable or relevant and appropriate chemical-specific, location-specific and action-specific ARARs. Tables 4 through 9 summarize ARARs and TBCs applicable to OU 7.

1. Chemical-Specific ARARs

Federal and state chemical-specific ARARs are listed in Tables 4 and 5, respectively.

Implementation of OU 7 Alternative 3 in conjunction with the OU 3 remedy in place will eventually comply with all ARARs identified in Tables 4 and 5. Because Alternative 3 does not include active treatment of groundwater, initially the groundwater beneath Site 26 will not meet the constituent concentrations specified in the GWQS [N.J.A.C. 7:9-6].

However, while the OU 3 remedy in place treats the Site 26 groundwater contamination, the long-term monitoring associated with OU 7 Alternative 3 will provide information regarding the effectiveness of the OU 3 remedy on PCE in Site 26 groundwater. OU 7 Alternative 3 includes a provision to seek a temporary exemption (CEA) from the PRG until the GWQS and MCLs are achieved. The CEA will provide the state official notice that the constituent standards will not be met for a specified duration, anticipated not to exceed 10 years and to ensure that consumption of the untreated groundwater is prohibited.

2. Location-Specific ARARs

Federal and state location-specific ARARs are listed in Tables 6 and 7, respectively.

Currently the groundwater contamination plume associated with Site 26 is not affecting wetlands, floodplains, water bodies, endangered species, or other sensitive receptors. Implementation of OU 7 Alternative 3 is not expected to disturb wetlands, floodplains, water bodies, endangered species, or other sensitive receptors. Implementation of this alternative will ensure that these potential receptors are protected from the groundwater associated with Site 26. All necessary measures will be taken to comply with the location-

TABLE 4
FEDERAL CHEMICAL-SPECIFIC ARARs AND TBCs
OU 7 RECORD OF DECISION
NAVAL WEAPON STATION EARLE, COLTS NECK, NEW JERSEY

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION IN THE ROD
Safe Drinking Water Act (SDWA) - Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16)	Applicable	MCLs have been promulgated for a number of common organic and inorganic contaminants to regulate the concentration of contaminants in public drinking water supply systems. MCLs may be relevant and appropriate for groundwater because the aquifer beneath the site is a potential drinking water supply.	MCLs may be used to establish clean-up levels for the portion of the aquifer underlying the OU 7 site.

**TABLE 5
STATE CHEMICAL-SPECIFIC ARARs AND TBCs
OU 7 RECORD OF DECISION
NAVAL WEAPON STATION EARLE, COLTS NECK, NEW JERSEY**

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION IN THE ROD
New Jersey GWQS (N.J.A.C. 7:9-6)	Applicable	This regulation establishes the rules to protect ambient groundwater quality through establishing groundwater protection and clean-up standards and setting numerical criteria limits for discharges to groundwater. The GWQS are the maximum allowable pollutant concentrations in groundwater that are protective of human health. This regulation also prohibits the discharges to groundwater that subsequently discharges to surface water that do not comply with the Surface Water Quality Standards.	Because contaminated groundwater is present underneath Site 26 in excess of GWQS, these regulations were considered in determining groundwater action levels. Application for CEA will be required during the term of proposed remediation. The CEA procedure ensures that designated groundwater uses at remediation sites are suspended for the term of the CEA.

TABLE 6
FEDERAL LOCATION-SPECIFIC ARARs AND TBCs
OU 7 RECORD OF DECISION
NAVAL WEAPON STATION EARLE, COLTS NECK, NEW JERSEY

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION IN THE ROD
Endangered Species Act of 1973 (16 USC 1531 et seq.); (50 CFR Part 200)	Applicable, if present	Actions shall be taken to conserve endangered or threatened species or to protect critical habitats. Consultation with the Department of the Interior is required.	The RI determined that there were no sensitive habitats at the OU 7 site, but this could become applicable.

TABLE 7
STATE LOCATION-SPECIFIC ARARs AND TBCs
OU 7 RECORD OF DECISION
NAVAL WEAPON STATION EARLE, COLTS NECK, NEW JERSEY

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION IN THE ROD
New Jersey Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A)	Applicable	Regulate activities that result in the disturbance in and around freshwater wetland areas including removing or dredging wetland soils, disturbing the water level or water table, driving piles, placing obstructions, destroying plant life and discharging dredged or fill materials into open water.	Remedial alternatives have been developed to avoid activities that would be detrimental to the wetlands located 300 yards northwest of Site 26.

TABLE 8
FEDERAL ACTION-SPECIFIC ARARs AND TBCs
OU 7 RECORD OF DECISION
NAVAL WEAPON STATION EARLE, COLTS NECK, NEW JERSEY

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	CONSIDERATION IN THE ROD
Resource Conservation and Recovery Act (RCRA) - Hazardous Waste Generator and Transporter Requirements (40 CFR parts 262 and 263)	Applicable	These regulations establish the responsibilities of generators and transporters of hazardous waste in the handling, transportation and management of waste. The regulations specify the packaging, labeling, recordkeeping and manifest requirements.	Activities performed in connection with off-site transport of hazardous wastes will comply with the requirements of these regulations.

TABLE 9
STATE ACTION-SPECIFIC ARARs AND TBCs
OU 7 RECORD OF DECISION
NAVAL WEAPON STATION EARLE, COLTS NECK, NEW JERSEY

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	COMMENTS
New Jersey Labeling, Records and Transportation Requirements (N.J.A.C. 7:26-7)	Applicable	These regulations establish the responsibilities of generators and transporters of hazardous waste in the handling, transportation and management of waste. The regulations specify the packaging, labeling, recordkeeping and manifest requirements.	Activities performed in connection with off-site transport of hazardous wastes will comply with the requirements of these regulations.

specific Federal and state ARARs identified in Tables 6 and 7. It is expected that Alternative 3 will easily comply with these ARARs.

3. Action-Specific ARARs

Federal and state action-specific ARARs are listed in Tables 8 and 9, respectively.

The long-term monitoring plan proposed under OU 7 Alternative 3 will comply with Federal, state and municipal regulations regarding the transportation, storage, labeling and disposal/treatment of generated waste (liquid and solid). Because this alternative does not include active treatments of the contaminated groundwater, it is anticipated that generated waste will include purge water and PPE.

4. To Be Considered (TBC) Standards

Federal and state water quality standards, groundwater protection strategies and cleanup criteria were considered during the development of remedial alternatives for OU 7.

C. Cost-Effectiveness

The Navy and USEPA have determined that the selected remedy for OU 7 is cost effective. There is no additional cost anticipated to implement OU 7 Alternative 3. Estimated costs to establish the CEA, install monitoring wells and perform long-term monitoring are included in the funded remediation project for OU 3.

D. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The Navy and USEPA have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner at OU 7.

E. Preference for Treatment as a Principal Element

The Navy and USEPA have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner at OU 7.

XII. DOCUMENTATION OF SIGNIFICANT CHANGES

No significant changes from the PRAP appear in this ROD.

**RECORD OF DECISION
NAVAL WEAPONS STATION EARLE
OPERABLE UNIT 7**

PART III - RESPONSIVENESS SUMMARY

The purpose of this Responsiveness Summary is to review public response to the PRAP for OU 7. It also documents the consideration of comments during the decision-making process and provides answers to any comments raised during the public comment period.

The Responsiveness Summary for OU 7 is divided into the following sections:

- **Overview** - This section briefly describes the remedial alternative recommended in the PRAP and any impacts on the PRAP due to public comment.
- **Background on Community Involvement** - This section describes community relations activities conducted with respect to the area of concern.
- **Summary of Major Questions and Comments** - This section summarizes verbal and written comments received during the public meeting and the public comment period.

I. OVERVIEW

This Responsiveness Summary addresses public response to the PRAP for OU 7, long-term monitoring and implementation of LUCs (including a NJDEP CEA). The PRAP and other supporting information are maintained for public review in the Administrative Record file for OU 7, which is maintained at the Monmouth County Library-Eastern Branch, Route 35, Shrewsbury, New Jersey.

II. BACKGROUND ON COMMUNITY INVOLVEMENT

This section provides a brief history of community participation in the investigation and interim remedial planning activities conducted for OU 7. Throughout the investigation period, USEPA and NJDEP reviewed work plans and reports and provided comments and recommendations which were incorporated into appropriate documents. A Technical Review Committee (TRC), consisting of representatives from the Navy, USEPA, the NJDEP, the Monmouth County Health Department and other agencies and local groups surrounding NWS Earle, was formed. The TRC later was transformed into the RAB to include community

members, as well as the original officials from the TRC. The RAB has been holding periodic meetings to maintain open lines of communication with the community and to inform all parties of current activities.

On September 29 and 30, 2004 and on October 1, 2004, a newspaper notification inviting public comment on the PRAP appeared in the Asbury Park Press. The public notice summarized the PRAP and the preferred alternative. The announcement also identified the time and location of the public meeting and specified a public comment period as well as the address to which written comments could be sent. Public comments were accepted from October 1, 2004 to October 30, 2004. The newspaper notification identified the Monmouth County Library - Eastern Branch, Route 35, Shrewsbury, New Jersey as the location of the Administrative Record.

The public meeting was held on October 5, 2004 at 7:00 PM at the Colts Neck Public Library, 1 Winthrop Drive, Colts Neck, New Jersey. At this meeting, representatives from the Navy, USEPA and NJDEP were available to answer questions concerning OU 7 and the preferred alternative. The attendance lists from the October 5, 2004 public meeting is included in Appendix C.

III. SUMMARY OF MAJOR QUESTIONS AND COMMENTS

A. Written Comments

During the public comment period from October 1, 2004 to October 30, 2004, no written comments were received from the public pertaining to OU 7. No new comments were received from NJDEP or USEPA.

B. Public Meeting Comments

Questions or comments concerning OU 7 received from the public during the October 5, 2004 public meeting are presented with the government responsiveness summary in Appendix D.

APPENDIX A

NJDEP CONCURRENCE LETTER



State of New Jersey

Department of Environmental Protection
PO Box 402
Trenton, NJ 08625-0402

Bradley M. Campbell
Commissioner
Tel. # (609) 292-2885
Fax # (609) 292-7695

Richard J. Codey
Acting Governor

September 12, 2005

Ms. Michele DiGeambeardino
Remedial Project Manager
Naval Facilities Engineering Command
10 Industrial Highway
Code 1821, Mail Stop 82
Lester, PA 19113-2090

Dear Ms. DiGeambeardino:

Re: Draft Record of Decision (ROD) for Operable Unit #7
Site 26 PCE Plume
Naval Weapons Station Earle
Colts Neck Twp., Monmouth Co.

The New Jersey Department of Environmental Protection (Department) has reviewed the December 2004 draft ROD prepared by Tetra Tech NUS, Inc. on behalf of Naval Weapons Earle for Operable Unit #7 (Site 26 PCE Plume).

The ROD has chosen Natural Attenuation, Institutional Controls and Long Term Monitoring as the remedial alternative for this site. This includes establishing a Classification Exception Area (CEA) to provide official notice that ground water constituent standards will not be met for a specified duration and that the use of groundwater in the affected area will be prohibited until such time that the groundwater constituent standards are met. A notification will be placed in the Base Master Plan noting the PCE exceedances found in the groundwater.

This particular Operable Unit was originally part of Operable Unit #3 in which an Air Sparging/Soil Vapor Extraction Unit (AS/SVE) was installed to address a TCE and DCE plume. As the AS/SVE unit was operating, a PCE plume was found that is partially commingled with the TCE/DCE plume. The PCE was found to come from a different source (on the same site) than the TCE plume. The PCE plume originates from Building GB-2. The TCE/DCE plume originates from Building GB-1.

The AS/SVE system was installed in January 2001 and has succeeded in removing the bulk of both plumes. Downgradient sentry wells have been installed to verify the plume has not migrated. To date, VOCs have not been detected in the sentry wells. Quarterly groundwater monitoring and annual evaluation of the AS/SVE system is ongoing.

The NJDEP concurs with the chosen remedial alternative for Operable Unit #7. We appreciate the opportunity to participate in the remedial decision making process.

If you have any questions, please do not hesitate to call Bob Marcolina, of my staff at (609)-633-7237.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. M. Campbell', written in a cursive style.

Bradley M. Campbell
Commissioner

c: Jessica Mollin, EPA
Larry Burg, NWS Earle
Lester Jargowsky, Monmouth Co. Health Dept.
Bob Marcolina, BCM

APPENDIX B

TERMS USED IN THE RECORD OF DECISION

TERMS USED IN THE RECORD OF DECISION

1,2-Dichloroethene (1,2-DCE): Common volatile organic solvent formerly used for cleaning, degreasing, or other uses in commerce and industry.

Applicable or Relevant and Appropriate Requirements (ARARs): The Federal and state requirements with which a selected remedy must comply. These requirements may vary among sites and remedial activities.

Administrative Record: An official compilation of site-related documents, data, reports and other information that are considered important to the status of and decisions made relative to a Superfund site. The public has access to this material.

Carcinogenic: A type of risk resulting from exposure to chemicals that may cause cancer in one or more organs.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The Act created a trust fund, known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous substance facilities.

Feasibility Study (FS): Report identifying and evaluating alternatives for addressing the contamination present at a site or group of sites.

USEPA Quality Standards: New-Jersey-promulgated groundwater quality requirements, N.J.A.C. 7:9-6.

Hazard Index (HI): The sum of chemical-specific Hazard Quotients. A Hazard Index of greater than one is associated with an increased level of concern about adverse non-cancer health effects.

Hazard Quotient: A comparison of the level of exposure to a substance in contact with the body per unit time to a chemical-specific Reference Dose to evaluate potential non-cancer health effects. Exceedance of a Hazard Quotient of one is associated with an increased level of concern about adverse non-cancer health effects.

Initial Assessment Study (IAS): Preliminary investigation usually consisting of review of available data and information on a site, interviews and a non-sampling site visit to observe areas of potential waste disposal and migration pathways.

Noncarcinogenic: A type of risk resulting from the exposure to chemicals that may cause systemic human health effects.

National Contingency Plan (NCP): The basis for the nationwide environmental restoration program known as Superfund; administered by USEPA under the direction of the U.S. Congress.

National Priorities List (NPL): USEPA's list of the nation's top-priority hazardous substance disposal facilities that may be eligible to receive Federal money for response under CERCLA.

Perchloroethylene (PCE): Common volatile organic solvent formerly used for cleaning, degreasing, or other uses in commerce and industry.

Preliminary Remediation Goal (PRG): Established remedial levels for contaminants to determine when remediation at a site is complete. These remediation goals are based on GWQS and findings of the human health and ecological risks assessments.

Record of Decision (ROD): A legal document that describes the remedy selected for a Superfund facility, why the remedial actions were chosen and others not, how much they are expected to cost and how the public responded.

Reference Dose: An estimate with an uncertainty spanning an order of magnitude or greater of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a portion of a lifetime.

Remedial Action Objective (RAO): An objective selected in the FS against which all potential remedial actions are judged.

Remedial Investigation (RI): Study that determines the nature and extent of contamination at a site.

Site Inspection (SI): Sampling investigation with the goal of identifying potential sources of contamination, types of contaminants and potential migration of contaminants. The SI generally is conducted prior to the RI.

Trichloroethene (TCE): Common volatile organic solvent formerly used for cleaning, degreasing, or other uses in commerce and industry.

Volatile Organic Compounds (VOCs): Organic liquids [e.g., vinyl chloride or trichloroethene (TCE)] that readily evaporate under atmospheric conditions.

APPENDIX C

ATTENDANCE LIST FOR OCTOBER 5, 2004 PUBLIC MEETING

**NWS Earle Public Meeting
Colts Neck Public Library Meeting Room
Tuesday, October 5, 2004
7:00 PM**

NAME	ADDRESS	PHONE/E-MAIL
Russ Turner	TtNUS	610-491-9688
Bob Marcolina	NJDEP	609-633-7237
Alicia Hartmann	NWS Earle	732-866-2060
Gus Hermanni	NWS Earle	732-866-2624
John Mayerski	Colt Neck	732-462-9608
Mary Lanko	Howell	732-462-2199
Raymond Walton	Wall	732-932-5682
Donald Olson	Colts Neck	732-431-0930
Hinitner Kastkon	Colts Neck	hsKwave@aol.com
Jessica Mollin	USEPA	
Michele DiGeambeardino	EFANE	

APPENDIX D

**RESPONSE TO QUESTIONS AND COMMENTS RECEIVED DURING THE
PUBLIC MEETING HELD ON OCTOBER 5, 2004**

RESPONSIVENESS SUMMARY
OU 7 ROD (Site 26 PCE Plume)
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY
(October 5, 2004 Public Meeting)

Reply to Comments on the OU 7 PRAP

1. A RAB Member referred to a previous presentation slide and asked about groundwater. Did the Navy look at just shallow groundwater or also at the deeper (say 60, 100 or 300 feet deep) groundwater quality? Has the Navy checked groundwater quality to the south? Residents have private wells south of the site.

Mr. Turner replied that the Navy has considered deeper groundwater. Partially because of the other OU (3) at the site that has been under a remediation program for several years, the Navy has performed extensive investigations into the groundwater and local geology. A 15-foot-thick impervious clay layer at a depth of about 35 to 50 feet below the ground surface effectively limits contaminant migration to deeper depths. The Navy sampled groundwater from beneath the clay layer as well from all locations (north, south, east and west) in the upper zone (above the clay layer) to define the extent of the plume. Mr. Marcolina pointed out that the monitoring wells installed outside (including south) of the colored plume on the presentation slide indicate monitoring wells that were sampled but were found to be contaminant free.

2. A RAB Member mentioned a concern that the head of Shark River is right in the area of this site.

Mr. Turner replied that the groundwater plume and surface water migrate toward a tributary of the Mingamahone creek southwest of the site. The Navy has sampled upstream and down stream from the site and found that there is no contribution of solvents from the site groundwater to surface water. Also, The Navy installed and sampled a monitoring well on the far side of the stream to be sure that contamination is not passing under the stream bed and migrating further south.

3. A member of the public said that he was mainly concerned about how deep the monitoring went at the Site 26 (OU 7 and OU 3) area. How thick is the clay layer and is it impervious? Where could someone (there are two geologists in the family with Master's degrees) review details about the investigation?

Mr. Turner mentioned that the Navy has looked into this issue carefully. Geologists have analyzed results from numerous studies above, within and below the clay layer. The chlorinated solvents have not entered or penetrated the clay layer. The clay layer is a typical coastal plain deposit between 15 and 25 feet thick deposited over geologic time and is continuous in the area beneath the OU 7 (and OU 3) contamination plume. Bob Marcolina added that if someone wants to review the geology in detail, the Remedial Investigation Report for this site is available at the County Library in Shrewsbury. That document gives the geology information for each site.

4. A member of the public asked what is the title of the document and how can it be viewed?

Ms. DiGeambeardino explained that the document is called the Remedial Investigation Report for Naval Weapons Station Earle (July 1996) (also see Remedial Investigation Addendum Report, January 1998). These documents are part of the Administrative Record maintained at the County Library in Shrewsbury. Mr. Turner suggested speaking with Mary Jane Kehoe at the library to ask for the "Administrative Record for Naval Weapons Station Earle."