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# Phase I Remedial Investigation Report of IR Program Site 16

## Volume I: Technical Report

## Naval Construction Battalion Center Davisville North Kingstown, Rhode Island

**Contract No. N62472-92-D-1296**
**Task Order No. 0097**

*Prepared for*

Department of the Navy
Engineering Field Activity Northeast
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop No. 82
Lester, Pennsylvania 19113-2090

*Prepared by*

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August 2004
Version: FINAL
EA Project No.: 29600.97.3592

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00745

# Phase I
# Remedial Investigation Report of
# IR Program Site 16

## Naval Construction Battalion Center Davisville
## North Kingstown, Rhode Island

Contract No. N62472-92-D-1296
Contract Task Order No. 0097

James A. Shultz, CPG
Project Manager

8-6-04
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6 Aug 2004
Date

August 2004
Version: FINAL
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## QUALITY REVIEW STATEMENT

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Final Phase I Remedial Investigation Report of IR Program Site 16, NCBC Davisville, North Kingstown, Rhode Island

EA CTO Manager: James A. Shultz, C.P.G.

In compliance with EA's Quality Procedures for review of deliverables outlined in the Quality Management Plan, this final deliverable has been reviewed for quality by the undersigned Senior Technical Reviewer(s). The information presented in this report/deliverable has been prepared in accordance with the approved Implementation Plan for the Contract Task Order (CTO) and reflects a proper presentation of the data and/or the conclusions drawn and/or the analyses or design completed during the conduct of the work. This statement is based upon the standards identified in the CTO and/or the standard of care existing at the time of preparation.

Senior Technical Reviewer

6 Aug 2004

Richard W. Waterman (Date)
Vice President

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AWQC | Ambient water quality criteria |
| BCT | BRAC Cleanup Team |
| bgs | Below ground surface |
| BRAC | Base Closure and Realignment |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CVOC | Chlorinated volatile organic carbon |
| DAF | Dilution/attenuation factor |
| DNAPL | Dense non-aqueous phase liquid |
| EA | EA Engineering, Science, and Technology |
| EBS | Environmental Baseline Survey |
| ECD | Electron capture detector |
| EFANE | Engineering Field Activity Northeast |
| EPA | U.S. Environmental Protection Agency |
| FFA | Federal facility agreement |
| FFTA | Fire Fighting Training Area |
| $ft^2$ | Square feet |
| FWENC | Foster Wheeler Environmental Corporation |
| GPR | Ground Penetrating Radar |
| GRO | Gasoline-range organics |
| HQs | Hazard quotients |
| HHRA | Human Health Risk Assessment |
| I/C DEC | Industrial/commercial direct exposure criteria |
| IR | Installation Restoration |
| LNAPL | Light non-aqueous phase liquid |
| LUCIP | Land use control implementation plan |
| MCL | Maximum Contaminant Level |
| mg/kg | Milligrams per kilogram |
| mg/L | Milligrams per liter |
| MGD | Million gallons per day |
| MIP | Membrane interface probe |
| mph | Miles per hour |
| MSL | Mean sea level |

| | |
|---|---|
| NAS | Naval Air Station |
| NBB | Narragansett Bay Basin |
| NCBC | Naval Construction Battalion Center |
| NFA | No Further Action |
| NPL | National Priorities List |
| NTU | Nephelometric Turbidity Unit |
| PAH | Polycyclic aromatic hydrocarbons |
| PCB | Polychlorinated biphenyls |
| PCDD | Polychlorinated dibenzo-p-dioxins |
| PCDF | Polychlorinated dibenzofurans |
| PID | Photoionization detector |
| ppm | Parts per million |
| ppth | Parts per thousand |
| pptr | Parts per trillion |
| PVC | Polyvinyl chloride |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| RBC | Risk-based concentration |
| RCRA | Resource Conservation and Recovery Act |
| RI | Remedial Investigation |
| RIDEM | Rhode Island Department of Environmental Management |
| RIEDC | Rhode Island Economic Development Corporation |
| RIPA | Rhode Island Port Authority |
| ROC | Receptor of Concern |
| RQD | Rock Quality Designation |
| SASE | Study Area Screening Evaluation |
| SHERP | Safety, Health, and Emergency Response Plan |
| SLERA | Screening Level Ecological Risk Assessment |
| SSL | Soil screening level |
| SVOC | Semivolatile organic compounds |
| TAG | Technical advisory group |
| TAL | Target Analytes List |
| TCE | Trichloroethene |
| TCL | Target Compound List |
| TDS | Total dissolved solids |
| TEF | Toxic equivalency factor |
| TEQ | Toxic equivalent concentration |
| TPH | Total petroleum hydrocarbon |

| | |
|---|---|
| µg/kg | Micrograms per kilogram |
| µg/L | Microgram per liter |
| USGS | U.S. Geological Survey |
| UST | Underground storage tanks |
| VOC | Volatile organic compounds |
| WHO | World Health Organization |

# 1. INTRODUCTION

This report has been prepared to present the results of the Phase I Remedial Investigation (RI) for Installation Restoration (IR) Program Site 16 (Site 16) at the former Naval Construction Battalion Center (NCBC) Davisville facility, North Kingstown, Rhode Island. This investigation was performed for the U.S. Navy, Engineering Field Activity Northeast (EFANE), under the Base Realignment and Closure Act (BRAC) Contract No. N62472-92-D-1296, Contract Task Order 0097.

Site 16 (formerly designated as Environmental Baseline Survey [EBS] Review Item 28, and then subsequently designated as Study Area 16) is located in the eastern portion of Zone 3 at NCBC Davisville as shown on Figures 1-1 and 1-2. The Phase I site investigation boundary is shown on Figure 1-2.

## 1.1 INVESTIGATION AREA DESCRIPTION, BACKGROUND, AND SCOPE

### 1.1.1 NCBC Description and History

The former NCBC Davisville facility is located in the Town of North Kingstown, Rhode Island, approximately 18 miles south of the state capital, Providence. NCBC Davisville (Figure 1-1) is composed of three areas: the Main Center (Zones 1 through 4), the West Davisville storage area, and Camp Fogarty – a training facility located approximately 4 miles west of the Main Center. Camp Fogarty was transferred to the U.S. Department of the Army in December 1993 and is assigned to the Rhode Island National Guard. Adjoining the southern boundary of the Main Center is the decommissioned Naval Air Station (NAS) Quonset Point, which was transferred by the Navy to the Rhode Island Port Authority (RIPA) (currently named the Rhode Island Economic Development Corporation [RIEDC]) and others between 1975 and 1980.

NCBC Davisville's mission was to provide mobilization support to the active Naval Construction Force; to act as a mobilization base for the rapid assembly outfitting and readying of Reserve Construction Battalions; to store, preserve, and ship advanced base and mobilization stocks; and to procure, receive, pack, and ship collateral equipment for Atlantic, European, and Caribbean military construction projects. NCBC Davisville was comprised primarily of warehouse space and freight yards, most of which are currently demolished, redeveloped, or empty.

In 1974, the NAS and a Naval Air Rework Facility at Quonset Point were decommissioned, and operations at the Base were greatly reduced pursuant to the Shore Establishment Realignment Act of 1973. In 1989, NCBC Davisville was placed on the U.S. Environmental Protection Agency's (EPA) National Priorities List (NPL). In 1991, the closure of NCBC Davisville was announced, and operations were phased down to minimum staffing levels for public works, maintenance, security, and personnel. NCBC Davisville was decommissioned on 25 March 1994 and closed on 1 April 1994 under the BRAC. A detailed description of the Base history can be

found in the Final Basewide EBS (EA 1995a). NCBC Davisville was transferred to Northern Division, Naval Facilities Engineering Command, currently designated as EFANE, which has caretaker status pending disposal.

### 1.1.2 Site Description and History

#### 1.1.2.1 Site Chronology and History

1951-53 – Rust removal (heated manganesed phosphoric acid), metal preservation (Cosmolene – particularly for Quonset Huts), and degreasing (chlorinated solvent, including a solvent recovery still) operations in former Building 41. Waste solvent and sludge from the solvent recovery still were transported in drums to the Allen Harbor Landfill for disposal.

- 1954 – The preservation and degreasing operations in former Building 41 were reportedly moved south to Building E-319.
- Late 1960s – Creosote dipping of wood pilings in the EBS 28 area.
- September 1984 – Completion of the Initial Site Assessment of the former NCBC Davisville facility (Hart 1984).
- February 1987 – Completion of the Verification Step - Confirmation Study of the former NCBC Davisville facility (TRC 1987).
- 1989 – EPA's Hazard Ranking Scoring Package for the former NCBC Davisville facility.

21 November 1989 – NCBC Davisville facility placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) NPL.

- March 1992 – Federal Facility Agreement (FFA) signed by the Navy, EPA, and the State of Rhode Island.
- 6 December 1994 – Tank 41-5 (apparently the phospholene [manganesed phosphoric acid] rust removal tank) removed from former Building 41 (HRP 1995a).
- 9 December 1994 – Tank 41-6 (vapor degreasing unit) removed from concrete vault in floor of former Building 41 and vault backfilled with common fill and asphalt patch at floor grade (HRP 1995b).
- 9 December 1994, 3 and 5 January 1995 – Tank 41-1 system (Cosmolene preservation tank) removed from floor of former Building 41 along with impacted soil, and excavation backfilled with common fill and asphalt patch at floor grade (HRP 1995c).

- EBS Program – Identified the various EBS Review Items within the Site 16 investigation area (EA 1995a, EA 1998a, and EA 1998b).

- 7 March 1997 – EBS Review Item 81 septic tanks (buried and interconnected pontoon tanks) cleaned. Tanks were backfilled with clean fill on 13 April 1998 (FWENC 1998a).

- 9 December 1997 – Two septic tanks (buried and interconnected pontoon tanks) excavated and removed along with the related total petroleum hydrocarbon (TPH)-impacted soil at EBS Review Item 60/28 (FWENC 1998a).

  March-April 1999 – EBS Review Item 28 designated as IR Program Study Area 16.

- Phase II RI is ongoing.

#### 1.1.2.2 Site Description

As stated previously, Site 16 was formerly designated EBS Review Item 28, and subsequently designated as Study Area 16. During the Phase II EBS Program, the Navy investigated 92 locations at NCBC Davisville to evaluate whether or not hazardous substances or petroleum products had been disposed or released to the environment. These locations, designated EBS Review Items, were investigated in accordance with the Phase II EBS Work Plan (EA 1995b). The related fieldwork was conducted during Spring/Summer 1996 and the results were reported in the Final Phase II EBS Report (EA 1998a). After the BRAC Cleanup Team (BCT)[1] reviewed preliminary data from the Phase II EBS investigation, they decided that Review Item 28 would be renamed Study Area 16, and that further investigation would be conducted under the CERCLA program, rather than the EBS Program. Four of the EBS Review Items (28, 60, 85, and 86) were located in the Study Area 16 vicinity. However, Review Item 28 (former Creosote Dip Tank Area and a suspected former Fire Fighting Training Area [FFTA]) comprised the largest portion of Study Area 16. Study Area 16 was located in the eastern portion of Zone 3 of NCBC Davisville. Then, as a result of chlorinated volatile organic compounds (CVOC) detected in deep ground-water samples, Study Area 16 was re-designated as IR Program Site 16. Like Study Area 16, Site 16 is located in the eastern portion of Zone 3 at the former NCBC Davisville facility and, through the Phase I RI field investigation, now extends south into a portion of Zone 4 (Figure 1-1). The Site 16 Phase I RI area boundary is shown on Figure 1-2. The Site 16 Phase I RI investigation area is generally defined as the area bounded by Elm Street and Nerone Street to the south, a north/south trending line approximately 250 ft west of Westcott Road to the west, a north/south trending line approximately 250 ft east of Allens Harbor Road to the east, and the Building E-107 area, former pump island area, and Allen Harbor to the north.

The northern portion of Site 16 (generally the former EBS Review Item 28 area) is primarily wooded with the exception of an asphalt-paved area in the center. This area is generally bounded by Westcott Road, Davisville Road, Allen Harbor Road, and the Allens Harbor southern

[1] Consisting of the Navy, the U.S. Environmental Protection Agency Region I, and the Rhode Island Department of Environmental Management.

shoreline (Figure 1-2). An unnamed asphalt-paved road circles the outer perimeter in this portion of the Site and was formerly used by the Navy for the purpose of training construction equipment operators. In the past, this area was extensively bulldozed and disrupted during training exercises, but now has a vegetative cover of shrubs and grasses. The Site topography slopes from a height of approximately 34 ft above mean sea level (MSL) in the southwest corner down to MSL along the Allen Harbor shoreline in the northeastern portion of the Site (Figure 1-3). The area immediately around Building E-107 is also paved for parking. The area west of Building E-107 (east of Westcott Road) is grass covered. Four EBS Review Items were located within this portion of the Site, two of which were determined to require No Further Action (NFA). The following provides a brief description of each one.

EBS Review Item 28 – Former Creosote Dip Tank Area, Suspected Former FFTA, and Two Suspected Underground Storage Tank (UST) Areas – Creosote dipping of wood pilings occurred during the late 1960s in the western portion of the area (Figure 1-2). The wood pilings were dipped into tanks containing creosote and staged in the area to dry before being loaded onto ships. In the early 1990s, an upended creosote dip tank was identified in the western portion of the Site adjacent to the paved road. The location where the tank was found is the "original" Creosote Dip Tank Area that was first addressed by Halliburton NUS in 1992 and was further investigated by EA Engineering, Science, and Technology during the Phase II EBS. However, based on additional information provided by a former Navy Seabee after the Phase II EBS field work was completed, the Navy learned that past creosote dipping operations had likely been conducted over a larger area than originally thought. That area comprised the land west of and adjacent to a wooden bermed structure that is still present at the Site (Figure 1-2). The Phase II EBS Follow-On and Addendum II work investigated the "expanded" Creosote Dip Tank Area. Based on the results of related EBS investigations (included in Section 1.2), study of the former creosote dip tank area continued into the Phase I RI.

It is reported that a suspected former FFTA had been located in an asphalt-paved area to the east of the former Creosote Dip Tank Area (Figure 1-2). Reportedly, structures were constructed, doused with flammable materials, set on fire, and extinguished as part of fire fighting training exercises during the late 1960s. Based on the results of related EBS investigations (included in Section 1.2), study of the former FFTA continued into the Phase I RI.

Also considered under this Review Item are four USTs that were reported to potentially have been located near Building E-107. Three of the potential USTs were reported to have been located west of Building E-107 in the vicinity of a former pump island, and one UST was reportedly located by the southeast corner of Building E-107. During the EBS investigations (included in Section 1.2), no remaining USTs were located in the vicinity of a former pump island. Therefore, NFA was recommended. During the EBS investigations, the reported UST near the southeast corner of Building E-107 was found to be two septic tanks (buried and interconnected pontoon tanks), which were excavated and removed along with the related TPH-impacted soil.

- EBS Review Item 60 - Building E-107 Septic Tanks – This Review Item includes locations both within and beyond the Phase I RI area. The septic tank location within the Phase I RI area was reportedly located at the southeast corner of Building E-107. A geophysical survey was conducted to locate that tank. However, excavation and removal of the tank (actually 2 buried pontoons) was addressed under Review Item 28.

- EBS Review Item 85 - Former UST Area – One UST was removed from along the western portion of the south side of Building E-107 and, based on related EBS investigations (included in Section 1.2), NFA was recommended.

- EBS Review Item 86 - Building E-107 Floor Drains – Six floor drains were identified in Building 107. Two of the floor drains were under floor tile and are not accessible. Four of the floor drains were visible and accessible and so were closed by Foster Wheeler Environmental Corporation (FWENC). Trenching activity was conducted by FWENC east of the building. However, no connecting piping was found between these floor drains and an outfall pipe located at the near shoreline of Allen Harbor. Some subsurface investigation outside the building continued into the Phase I RI.

**Phase I RI, Stage I Investigation Area**

The Stage I investigation area of the Phase I RI included the EBS Review Item 28 area (Former Creosote Dip Tank Area and Suspected Former FFTA) located within the area bounded by Westcott Road, Davisville Road, Allens Harbor Road, and the Allen Harbor southern shoreline. Based on the preliminary findings from fieldwork conducted during Stage I (seismic refraction profiling, advancement and evaluation of Membrane Interface Probe [MIP] screening of the subsurface, soil samples collected from soil borings, and installation of 14 monitoring wells), the source of much of the CVOC detected in deep ground water appeared to be located upgradient to the southwest; i.e., in the vicinity of former Building 41.

**Phase I RI, Stage II Investigation Area**

To assess the apparent upgradient CVOC source area, the Stage 1 Investigation Area was expanded west, south, and east (Figure 1-2). The area west of Westcott Road is the eastern portion of a former NCBC gravel borrow pit and is densely overgrown. The area south of Davisville road (old railroad spur area [undeveloped] and former Building 41 [EBS Review Item 29] area) slopes gently from a height of approximately 30 ft MSL down to MSL along Narragansett Bay shoreline toward the east and southeast. The layout of former Building 41, demolished during October 2002, is shown on Figure 1-4. The area around former Building 41 was repaved during October 2002 and is currently being used for the temporary storage of cars delivered by ship pending delivery to dealers. EBS Review Item 81 was a former septic tank system associated with former Building 41 and was located just north of the building. The surface of the old railroad spur area includes railroad tracks, weathered asphalt paving of the old roads, and grasses and shrubs. The portion of the investigation area east of Allens Harbor Road

is paved and includes a few buildings. This area is also used for the temporary storage of cars delivered by ship pending delivery to dealers. The surface of most of this area slopes gently from a height of 15 ft MSL west to the Allen Harbor shoreline. The eastern portion of this area slopes gently toward the northeast and east to the Narragansett Bay shoreline.

Two EBS Review Items were located within this expanded portion of the Site investigation area, both of which were determined to require NFA. The following provides a brief description of each one.

- EBS Review Item 29 - Former Building 41 – As stated in the Phase II EBS Report (EA 1998a), this building was a preservation and packing shop, and a construction equipment and automotive parts storage building that was demolished and the area repaved during October 2002.. Preservation and degreasing operations occurred at former Building 41. Based on past activities, it is likely that petroleum products and solvents were used and stored onsite. The preservation tanks were addressed under the UST program. Stained asphalt floors in former Building 41 were not considered to be of concern during the Phase II EBS, based on the limited extent of the staining, the sorptive ability of asphalt, and the lack of a direct pathway (e.g., spill runoff from the concrete to a foundation wall or soil). No floor drains are located in former Building 41. The floor staining was considered to be consistent with the previous use of the building as an equipment preservation and packing shop, and parts storage. Recommendations for NFA were made following review of available Phase II EBS information and site visits conducted by the BCT (i.e., the Navy, its contractors, the Rhode Island Department of Environmental Management [RIDEM], and EPA), the Town of North Kingstown, and RIEDC in September and October 1995. No field activities were conducted and no samples were collected for this Review Item based on the BCT recommendation for NFA.

  During the Phase I RI, discussions occurred during November 2000 with a Seabee veteran who worked in former Building 41 during 1951 to 1953 to improve our understanding of the historical use of the building during that time. Additionally, there was a visit to the building in February 2001 with the same Seabee veteran. According to the Seabee veteran, the rust removal (heated manganesed phosphoric acid), metal preservation (Cosmolene) (particularly Quonset Huts), and degreasing (chlorinated solvent, including a solvent recovery still) operations in former Building 41 seemed to have begun and ended during that time from 1951 to 1953. Waste solvent and sludge from the solvent recovery still were transported in drums to the Allen Harbor Landfill for disposal. After 1953, the preservation and degreasing operations were reportedly moved south to Building E-319.

  Former Building 41 is divided into three sections as shown on Figure 1-4. Figure 1-4 illustrates the current understanding of the historical use of the building during 1951 to 1953 based on the above discussions during the Phase I RI and from historical floor plan drawings obtained from RIEDC. The following summarizes the activities that reportedly occurred in the three sections of the building:

— The northeastern third (bay) of the building was reportedly used for packing and storage of parts for shipment. The area was observed in February 2001 to be a large room with a high ceiling and generally empty, except for piles of salted sand stored by RIEDC in part of the southwestern portion.

— The middle third of the building was used for preservation of Quonset Huts by dipping in a large, partially in-ground tank of Cosmolene (a grease used to prevent rusting of metallic surfaces). The tank reportedly comprised five pontoons welded together. This tank was removed apparently as part of the Navy's UST program. The pit was backfilled and completed with an asphalt surface at floor grade that is still visible. The area was observed in February 2001 to be a large room with a high ceiling and generally empty, except for the southwestern portion as stated below.

- The stripping of rust from metal parts occurred in two small aboveground tanks of phospholene (manganesed phosphoric acid). These tanks were reportedly above floor grade, but have been previously removed from the building. An area of etching of the concrete floor surface may be evidence of their former location.

- The southwest portion was insulated and has a lowered ceiling, apparently to retain heat for the workers in that area. This area was reportedly used for the packing of preserved small metal parts for vehicles.

The Cosmolene dipping appears to have included a group of four tanks (Tanks 41-1 through 41-4). Based upon a related Tank Closure Assessment Report by HRP Associates, Inc. (HRP 1995c), the tanks were excavated in January 1995, cleaned, and disposed of as part of the Navy's UST program. A petroleum-based material was shoveled from the tanks before steam cleaning them. The metal tanks were reported to be in good condition (no rust or breaks) and there was no apparent leakage. It was reported that there was no petroleum odor or discernable staining in the excavation, and TPH was not detected (less than 21 milligrams per kilogram [mg/kg]) in the final soil samples collected from the base of the excavation (about 6 feet below ground surface [ft bgs]). Tank 41-1 was a 6,500-gal rectangular, open-top steel tank within which there were three 900-gal square, open-top steel tanks (41-2, 41-3, and 41-4). Based on the presence of an old steam pipe that entered near the base of the west end of Tank 41-1, this tank appeared to have been used to heat the other three tanks. The excavation was backfilled to grade using the excavated soil and a common borrow fill consisting of a sand and gravel mix, and completed with an asphalt surface at floor grade that was visible during the building walkover.

Based on the Tank Closure Assessment Report by HRP Associates, Inc. (HRP 1995a), Tank 41-5, apparently the phospholene [manganesed phosphoric acid] tank, was removed from the building in December 1994.

— The southwestern third of the building was used for degreasing activity that included a vapor degreasing unit and a solvent recovery still and for packing and shipping of parts. The vapor degreasing tank and associated equipment were located in a pit in the floor. The tank and equipment were removed apparently as part of the Navy's UST program. The pit was backfilled and completed with an asphalt surface at floor grade that is still visible. There was reportedly also a locked cage area where tools were stored in this portion of the building. The area was observed in February 2001 to be a large room with a high ceiling and generally empty, except for the northeastern portion where the old solvent recovery still equipment is still present.

Based upon a Tank Closure Assessment Report by HRP Associates, Inc. (HRP 1995b), Tank 41-6 (vapor degreasing unit) and equipment was removed in December 1994 as part of the Navy's UST program. According to the report, the tank "was dry and required no cleaning prior to removal." The concrete vault in the floor of the building "was 5 ft wide, 6 ft long, and 7 ft deep." Because the tank was removed from a concrete vault, there was no excavation. Following removal from the vault, it was reported that "the tank appeared to be in generally good condition with some staining along the upper edge, around plumbing fixtures, and under small holes in the tank walls. The tank piping was constructed of steel and appeared to be in moderate condition. Pipe joints were secure with no visible signs of leakage. The floor and sidewalls of the vault were stained, especially in the east corner." The pit was filled with common fill consisting of a sand and gravel mix, and then completed with an asphalt surface at floor grade that was visible during the building walkover.

- EBS Review Item 81 - Former Building 41 Septic Tanks – Three separate steel pontoon tanks connected by pipes are located on the northern side of the building. Available subsurface plans showed no leaching field connected to these structures. The tanks are rectangular shaped structures constructed of steel with holes cut into the bottom and sides. The tanks were adapted from steel pontoons to act as a cesspool. The sludge was removed, and the tanks were cleaned, backfilled, and capped by FWENC in April 1998. Based on related EBS investigations and closure of the tanks (included in Section 1.2), NFA was recommended.

## 1.2 SUMMARY OF PREVIOUS INVESTIGATIONS

This section summarizes the EBS Phase II investigation fieldwork performed within the Site 16 Phase I RI area. This work was completed prior to initiation of the Phase I RI.

### 1.2.1 Removal Action

In 1992, Halliburton NUS completed a soil removal action in a spill area around the upended creosote dip tank. The removal action included four phases and was intended to remove soil containing elevated concentrations of polycyclic aromatic hydrocarbons (PAHs). During the first three phases of the removal action, PAH were detected in soil down to approximately 4 ft bgs. The final Phase IV consisted of the excavation of a PAH "hot spot" in soil (not considered to be part of the release) located in the area of the upended tank. At that time, a "hot spot" was defined by Halliburton NUS as soil boring sample concentrations that exceeded job-specific Resource Conservation and Recovery Act (RCRA) Media Cleanup Standards, based on a residential usage scenario. The conclusion of the Halliburton NUS report was that, although some PAH remained, the associated human health risk under a residential usage scenario ($1.3 \times 10^{-5}$) was within EPA's acceptable target risk range of $10^{-4}$ to $10^{-6}$.

### 1.2.2 Phase II Environmental Baseline Survey

The following only summarizes pertinent data from the Phase II EBS report (EA 1998a). The Phase II EBS included five studies within the area now designated as Site 16: Review Item 28 (Creosote Dip Tank Area), Review Item 60 (Septic Tanks, Building E-107), Review Item 81 (a septic system associated with former Building 41), Review Item 85 (near the former UST south of E-107), and Review Item 86 (Floor Drains, Building E-107).

**Review Item 28 (Creosote Dip Tank Area)**

During the Phase II field investigation, Review Item 28 focused on the location of the previous excavation of the original creosote dip tank by Halliburton NUS. Using maps from the previous report and field observations, the former Phase IV excavation was located. On 24 April 1996, four soil borings were then drilled in the four corners of the former Phase IV excavation (northwestern portion of the Site). Split-barrel sampling was conducted at each location to a depth of 4 ft bgs. The samples were recollected and analyzed for PAH.

The evaluation of the resulting data during the Phase II EBS confirmed the presence of low concentrations of PAH in soil. In particular, the concentration of benzo(a)pyrene (1,400 J micrograms per kilogram [μg/kg]) in one of the surface soil samples exceeded the RIDEM Industrial/Commercial Direct Exposure Criteria (I/C DEC) (800 μg/kg).

**Review Item 60 (Septic Tanks, Building E-107)**

The locations of two septic tanks were identified by plan review and site inspection during the Review Item 60 investigation. The active tank is located northwest of Building E-107 beyond the Phase I RI area. However, a second septic tank was reportedly located at the southeast corner of the building within the Phase I RI area.

A geophysical survey used Ground-Penetrating Radar (GPR) to locate the second septic tank shown on plans to be in the southern portion of the eastern side of Building E-107. The GPR signal only penetrated 7 ft bgs because of the high water table and the proximity to Allen Harbor. The GPR survey identified subsurface utility lines and a structure at approximately 6 ft bgs. As a result, this tank (actually 2 buried pontoon tanks) was located. However, its excavation and removal was addressed under Review Item 28 by FWENC during the Phase II EBS Follow-On Investigation (Section 1.2.3).

**Review Item 81 (Septic Tanks, Former Building 41)**

This septic system was comprised of three separate steel pontoon tanks connected by pipes located on the northern side of former Building 41. The tanks were adapted from steel pontoons to act as a cesspool. The sludge was sampled in February 1996. Among other constituents detected, the combined TPH diesel and hydraulic range was detected at 3,500 J mg/kg. Additional investigation was performed during the Phase II Follow-On Investigation Addendum (Section 1.2.4). Volatile organic compounds (VOC) were not detected in the shallow ground-water sample. The detected concentration of bis(2-ethylhexyl)phthalate was below the RIDEM GB ground-water objectives. Although the concentration of bis(2-ethylhexyl)phthalate exceeded the federal drinking water Maximum Contaminant Level (MCL) and RIDEM GA ground-water objectives, the septic tank is located in an area where the ground water is classified GB by RIDEM. The sludge was removed, and the tanks cleaned and backfilled by FWENC in April 1998. NFA was recommended for this Review Item.

**Review Item 85 (near the former UST south of E-107)**

In 1992, Tank 68 (a 1,520-gal UST) was removed from the south side of Building E-107 by Franklin Environmental Services (Halliburton NUS 1994). This UST was reportedly used to store No. 2 fuel oil. In 1994, Halliburton NUS conducted a confirmatory sampling investigation by installing three borings in the vicinity of the former Tank 68. To collect a representative ground-water sample, one of these borings was completed as a monitoring well. Soil samples from these borings had low TPH concentration (65 parts per million [ppm]) but high jar headspace total VOC readings (>1,000 ppm). Although NFA was recommended under the UST program, the location was designated EBS Review Item 85. The focus of Review Item 85 was to evaluate VOC in soil.

For Phase II EBS Review Item 85, two soil borings were drilled and sampled in the approximate location of the former tank on the southwest side of Building E-107, where previously elevated total VOC readings had been recorded by NUS. The samples were analyzed for Target Compound List (TCL)-VOC. The detected concentrations of acetone (63 μg/kg) and toluene (36 μg/kg) were below the RIDEM I/C DEC and Residential Direct Exposure Criteria (RDEC). VOC concentrations were also below EPA and RIDEM soil leachability criteria. NFA was recommended for EBS Review Item 85.

**Review Item 86 (Floor Drains, Building E-107)**

Six floor drains identified in Building E-107 were examined as a portion of the investigation conducted at Review Item 86. The floor drains were added to the investigation because of the potential threat of eventual discharge to the harbor. Public Works Drawing #594584 depicts three drain lines exiting the building at the southeast corner and into Allen Harbor. The position of the floor drains with respect to these lines shown on the plan suggested they were connected. FWENC excavated test pits between the building and an outfall pipe located at the edge of the harbor. No piping connecting floor drains to the outfall pipe was found. The four visible floor drains were closed by the FWENC. The two drains under the floor tile in the sanitary facility were not closed; however, they are inaccessible under the floor tile. Some subsurface investigation outside the building continued into the Phase I RI.

### 1.2.3 Phase II Environmental Baseline Survey Follow-On Investigation

The following only summarizes pertinent data from the Phase II EBS Follow-On Investigation report (EA 1998b). Subsequent to the Phase II EBS investigation, the Navy interviewed a former Seabee who participated in fire fighting training activities in the area in the 1960s. The veteran reported that fire fighting training was conducted in the area now paved with asphalt in the center of Site 16. The veteran also reported that the creosote dipping operations covered a larger area of the property (i.e., not just where the upended dip tank was located). He also reported that he recalled three USTs associated with a pump island area that is still visible west of Building E-107, as well as one on the south east side of E-107. The Phase II EBS Follow-On Investigation evaluated the expanded Creosote Dip Tank Area, the reported former FFTA, and the reported UST area.

The Phase II EBS Follow-On Investigation included a review of low altitude oblique angle aerial photographs, installation of soil borings and test pits in the expanded Creosote Dip Tank Area and the alleged FFTA, a magnetometer survey to assess whether USTs were still present in the ground west of and adjacent to Building E-107, test pit excavations to investigate the magnetic anomalies, and ground-water sampling from the former FFTA.

**Creosote Dip Tank Area**

Between 17 and 24 June 1997, 11 soil borings were drilled and sampled in the area identified as the location of the former creosote dip tank. The soil samples were analyzed for TCL-semivolatile organic compounds (SVOC), TCL-VOC, and TPH (Method 418.1). Approximately 20 percent of the samples were also analyzed for purgeable [gasoline-range organics (GRO)] TPH by modified Method 8015. One surface soil sample was collected from a gray soil horizon encountered in the wooden cribbing of the bermed structure and was analyzed for TCL-SVOC, TCL-VOC, and TPH (Method 418.1).

Based on the sampling results, the Phase II EBS Follow-On Investigation recommended NFA for the original Creosote Dip Tank Area. However, the Navy planned to collect additional soil

samples from the test pit locations where debris, porcelain shards, and glass were encountered, as well as collecting shallow and deep ground-water samples. The additional sampling was planned and conducted as the Phase II EBS Follow-On Addendum II investigation (Section 1.2.4).

**Suspected Former Fire Fighting Training Area**

Between 17 and 24 June 1997, five soil borings were drilled and sampled in the suspected former FFTA. The soil samples were analyzed for TCL-SVOC, TCL-VOC, and TPH (Method 418.1). Approximately 20 percent of the samples were also analyzed for purgeable (GRO) TPH by modified Method 8015. Wood, porcelain, and glass debris were observed in soil samples collected from three of the borings. One shallow ground-water sample was collected using hydraulically driven, direct-push sampling equipment. The sample was analyzed for TCL-VOC and TCL-SVOC.

Based on the sampling results, the Phase II EBS Follow-On Investigation recommended NFA for soil at the former FFTA. However, the Navy planned to collect additional ground-water samples during the Phase II EBS Follow-On Addendum II Investigation (Section 1.2.4) to further investigate the ground-water quality at Site 16.

**Underground Storage Tank Investigation**

A magnetometer survey was conducted in two areas where the Navy veteran recalled that USTs were located. The areas were west of, and at the southeast corner of, Building E-107. Areas where magnetic anomalies were detected within the grids were subsequently investigated in July 1997 by FWENC with nine test pits in an attempt to identify the source of the anomalies. No tanks were discovered. Three soil samples were collected and analyzed for TPH (Methods 418.1 and 8015M), TCL-VOC, TCL-SVOC, pesticides, polychlorinated biphenyls (PCB), and RCRA 8 metals. In August 1997, EA, in collaboration with FWENC, expanded the test pits in the two grid areas in an attempt to more fully assess the reported magnetic anomalies. In addition, a small test pit was also excavated across the asphalt-paved road in the area of the pipe from the pontoon septic tank. The pipe was found to continue under the road and approximately 50 ft into the wooded area south of Building E-107, where it ended.

Overall, the extensive program of excavation in the areas of detected anomalies uncovered no evidence of remaining USTs. The Phase II EBS Follow-On Investigation recommended NFA for the UST area portion of Review Item 28.

**Septic Tanks Associated with Building E-107**

An inactive septic tank and a quantity of petroleum-impacted soil were found on the south side of the southeast corner of Building E-107. A search for this septic tank was conducted as part of the investigation for Review Item 60. During the soil excavation two tanks were encountered. Based on the analytical data from the three soil samples, it was recommended that additional soil be removed from one of these sample locations and that additional post-removal confirmatory

samples be collected and analyzed for TPH (Method 418.1), SVOC, and pesticides. The Navy directed FWENC to remove the septic tank and the associated petroleum-impacted soil in that area. On 9 December 1997, FWENC cleaned and removed the two steel pontoon tanks (approximately 7 ft × 5 ft × 5 ft each), plus 1 ft of soil beyond the gravel packing (FWENC 1998a). The inlet line to the septic tanks from Building E-107 was severed near the tank and sealed with grout. The excavation was extended to the south to remove TPH-impacted soil that was encountered during test pit operations. Confirmatory samples were collected. Excavation continued until the confirmatory samples were below RIDEM I/C DEC. A total of 274 tons of TPH-impacted soil was removed during excavation activities, and the two pontoon tanks were sent offsite for metal recycling.

#### 1.2.3.1 Summary of Phase II Environmental Baseline Survey Follow-On Investigation Sample Results

Analytes detected in samples collected during the Phase II EBS Follow-On Investigation from areas now within the Phase I RI area were compared to federal and state criteria and are summarized below.

**Groundwater**

- VOC were not detected in the ground-water sample collected from the suspected former FFTA. The concentration of bis(2-ethylhexyl)phthalate (the only SVOC detected) was below the federal MCL, as well as the RIDEM Class GB ground-water criterion.

**Surface Soil Samples (0–2 ft bgs)**

- Constituent concentrations in surface soil samples were below RIDEM's I/C DEC and the RIDEM Class GB Leachability Criteria.

- TPH concentrations in five surface soil samples exceeded the respective RIDEM RDEC.

**Subsurface Soil Samples (greater than 2 ft bgs)**

- No constituents exceeded the RIDEM I/C DEC.

### 1.2.4 Phase II Environmental Baseline Survey Follow-On Addendum Investigations – Review Item 81 and Study Area 16

#### 1.2.4.1 Review Item 81 (Septic Tanks, Former Building 41)

Based on the data from the Phase II EBS (EA 1998a), soil and ground-water samples were collected and analyzed in December 1997. The soil samples were collected from two locations adjacent to the downgradient (east) side of the tanks at a depth of 9–11 ft bgs. The soil samples were analyzed for TPH (Method 418.1 and Modified 8015, Gasoline Range), TCL-VOC,

TCL-SVOC, and RCRA 8 metals. Shallow ground-water samples were collected at the same two locations at a depth of 17–19 ft bgs and were analyzed for TCL-VOC, TCL-SVOC, and dissolved RCRA 8 metals. VOC were not detected in the shallow ground-water samples. The concentration of bis(2-ethylhexyl)phthalate (the only SVOC detected) was below the RIDEM GB ground-water objectives. Although the concentration of bis(2-ethylhexyl)phthalate exceeded the federal drinking water MCL and RIDEM GA ground-water objectives, the septic tank is located in an area where the ground water is classified GB by RIDEM. The sludge was removed, and the tanks cleaned and backfilled by FWENC in April 1998. NFA was recommended for this Review Item.

#### 1.2.4.2 Study Area 16

Based on the data from the Phase II EBS (EA 1998a) and the Phase II EBS Follow-On Investigation (EA 1998b), the BCT recommended further investigation and sampling at Study Area 16. This additional fieldwork at Study Area 16 was conducted during Fall/Winter 1998 in accordance with the Phase II Follow-On Investigation Work Plan Addendum II (EA 1998c). The objectives of the Study Area 16 portion of the investigation were:

- To further evaluate ground water beneath the former Creosote Dip Tank Area, the former FFTA, the septic tank formerly located at the southeast corner of Building E-107, and the earth ramp structure southeast of Building E-107
- To evaluate subsurface soil beneath debris layers observed in test pits in the Creosote Dip Tank Area during the Phase II EBS Follow-On Investigation
- To evaluate the quality of water discharging from a seep near Building E-107 into Allen Harbor.

These objectives were addressed by collecting 4 subsurface soil samples, 1 surface soil sample, 16 ground-water samples from 8 locations, and 1 sample of a seep on the shore of Allen Harbor in the area of Building E-107.

**Soil Sampling**

In October/November 1998, during the Phase II EBS Follow-On Addendum II Investigation, EA collected four subsurface soil samples from the 2-ft interval beneath the observed or reported layer of debris. The subsurface soil samples were analyzed for TPH (Method 418.1), TPH-GRO (Method 8015M), TCL-VOC, TCL-SVOC, pesticides, PCB (Method OLM03.2), and Target Analyte List (TAL)-Metals (ILM04.0). Additionally, one surface soil sample (selected by EPA) was collected at the northern end of a drain pipe near a swale located southeast of the concrete ramp and bermed structure.

Analytes detected in the soil samples collected at Study Area 16 during the Phase II EBS Follow-On Addendum II Investigation were compared to federal and state criteria and are summarized below.

**Surface Soil**

Various inorganics and SVOC were detected in the 1 surface soil sample. VOC, pesticides, and PCB were not detected in the surface soil sample.

- No analytes detected in the surface soil sample exceeded RIDEM I/C DEC.
- Only arsenic (2.2 mg/kg) slightly exceeded its RIDEM RDEC (1.7 mg/kg). The detected concentrations of SVOC did not exceed RIDEM RDEC.

**Subsurface Soil**

- Various inorganics (4 of 4 samples), VOC (1 of 4 samples), and TPH (1 of 4 samples) were detected in subsurface soil samples. SVOC, pesticides, and PCB were not detected in the subsurface soil samples. Of the VOC analyses, only a low concentration of acetone (20 μg/kg) was detected in 1 sample.
- No analytes detected in subsurface soil samples exceeded RIDEM I/C DEC.
- Arsenic (3 of 4 samples), beryllium (2 of 4 samples), and lead (1 of 4 samples) exceeded their respective RIDEM RDEC. The detected concentrations of VOC and TPH did not exceed RIDEM RDEC.

**Ground-Water Sampling**

In October/November 1998, 16 ground-water samples were collected at the following 8 locations using hydraulically driven sampling equipment:

- Original Creosote Dip Tank Area – Three sample locations were selected on a line perpendicular to the inferred ground-water flow direction and downgradient of the former creosote dip tank operations area and the location of the test pits excavated during the Phase II EBS Follow-On Investigation conducted in June 1997. At each sampling location, 1 ground-water sample was collected from the shallow interval (near the water table) and 1 sample was collected at the 2-ft interval above refusal.
- Former FFTA – Two ground-water sample locations were selected to further evaluate the former FFTA. At each sampling location, 1 ground-water sample was collected from the shallow interval and 1 sample was collected at the 2-ft interval above refusal.

- South of Building E-107 – One ground-water sample location was selected on the downgradient side of the trench that was excavated during the removal of the pipe that discharged from the septic tank at the southeast corner of Building E-107. At this location, 1 ground-water sample was collected from the shallow interval and 1 ground-water sample was collected at the 2-ft interval above refusal.

- Allen Harbor Shoreline – One ground-water sample location was selected between the seep observed at the shore of Allen Harbor and the septic tank found at the southeast corner of Building E-107. At this location, 1 ground-water sample was collected from the shallow interval and 1 ground-water sample was collected at the 2-ft interval above refusal.

- Earth Ramp Structure – One ground-water sample location was selected on the downgradient side of the earthen ramp structure southeast of Building E-107. At this location, one ground-water sample was collected from the shallow interval and one ground-water sample was collected at the 2-ft interval above refusal.

The ground-water samples were analyzed for TCL-VOC, TCL-SVOC, pesticides (Method-OLM03.2), and dissolved (filtered) TAL-metals (Method ILM04).

Analytes detected in the ground-water samples collected at Study Area 16 during the Phase II EBS Follow-On Addendum Investigation were compared to federal and state criteria and are summarized below.

- Various VOC (13 of 16 samples), SVOC (4 of 16 samples), pesticides (8 of 16 samples), and inorganics (16 of 16 samples) were detected in ground-water samples.

- The detected concentration of trichloroethene (TCE) (570 J μg/L) only slightly exceeded the RIDEM GB ground-water criteria (540 μg/L) in only 1 of 16 samples.

- TCE and vinyl chloride concentrations exceeded the MCL in 4 of 16 samples and 5 of 16 samples, respectively. TCE concentrations ranged from non-detect to 570 μg/L (as compared to an MCL of 5 μg/L). Vinyl chloride concentrations ranged from non-detect to 10 μg/L (as compared to an MCL of 2 μg/L).

**Seep Sampling**

On 15 October 1998, a sample was collected from the ground-water seep identified at the shore of Allen Harbor adjacent to the east side of Building E-107. The grab sample was collected at the time of the lowest tide. The seep sample was analyzed for TCL-VOC, TCL-SVOC, pesticides (Method OLM03.2) and dissolved (field-filtered) TAL-metals (Method ILM04.0). Analytes detected in the seep samples were compared to federal and state criteria and are summarized below:

- Various inorganics, SVOC, and pesticides were detected in the seep sample. VOC were not detected in the seep sample.

- Lead (29.3 μg/L), dieldrin (0.2 μg/L), endrin (0.0039 J μg/L), heptachlor epoxide (0.2 J μg/L), and phenanthrene (7 μg/L) exceeded the marine chronic Ambient Water Quality Criteria (AWQC).

### 1.2.5 Study Area 16 Comprehensive Report/Study Area Screening Evaluation

The Study Area 16 Comprehensive Report/Study Area Screening Evaluation (SASE) (EA 1999) summarized the findings of the related portions of four Navy investigations, including the 1992 Halliburton NUS removal action at an upended tank in an area where creosote dipping reportedly took place, and the Phase II EBS, Phase II EBS Follow-On, and Phase II EBS Follow-On Addendum II Investigations. Data were compared to risk-based and regulatory screening criteria to determine whether the property could be approved for unrestricted residential or commercial/industrial use.

#### 1.2.5.1 Conclusions

Figures 5-1 through 5-5 (in Appendix A) summarize the chemical constituents detected in soil, ground-water, and seep samples at concentrations that exceed the key screening criteria. The key screening criteria used to summarize the results are the RIDEM RDEC, the RIDEM I/C DEC, the RIDEM GB Leachability Criteria, and the federal MCL and AWQC because constituent concentrations above these criteria may drive regulatory actions. The EPA Region IX risk-based concentrations (RBC) and soil screening level (SSL) dilution/attenuation factor (DAF)-20 criteria were used if there was not a RIDEM criterion for a given analyte. Figures 5-1 through 5-5 (Appendix A) include data from the Phase II EBS, Phase II EBS Follow-On, and Phase II EBS Follow-On Addendum II Investigations.

**Soil**

As shown in Figure 5-1 (Appendix A), various SVOC (primarily PAH) and inorganic constituents (arsenic, lead, and beryllium) were detected in soil samples at concentrations exceeding the RIDEM RDEC or EPA Region IX Residential RBC. The PAH were detected in soil at the original Creosote Dip Tank Area. The inorganics were detected in four samples located throughout the Site.

- As shown in Figure 5-2 (Appendix A), only one constituent (benzo[a]pyrene – maximum concentration of 2,700 μg/kg) detected in soil samples exceeded the RIDEM I/C DEC or EPA Region IX Industrial RBC at Study Area 16. The elevated concentrations of benzo(a)pyrene were detected at two locations (28-SB-01A and 28-SB-01D) within the original Creosote Dip Tank Area.

- As shown in Figure 5-3 (Appendix A), three constituents detected in soil samples exceeded the RIDEM GB Leachability Criteria or SSL DAF-20 criteria at Study Area 16. This included benzo(a)anthracene (2,700 J µg/kg) in 28-SB-01D-2-4, acetone (75,000 J µg/kg) in 28-SB-06-8-10, and antimony (6.4 J mg/kg) in 28-SB-20-8-10.

- Results from soil samples collected at locations where solid waste-type debris had been noted in test pits or soil borings were comparable to other soil results in the study area. Significant impact to soil from this debris was not identified.

**Ground Water**

As shown in Figure 5-4 (Appendix A), only TCE detected in the deep ground-water sample from 28-GW-04 exceeded RIDEM's GB Ground-Water Objective.

- As shown in Figure 5-5 (Appendix A), five of the eight ground-water sampling locations included within the Phase II EBS Follow-On Addendum II Investigation contained TCE and/or vinyl chloride concentrations above federal MCL. Concentrations of both TCE and vinyl chloride were highest (570 J and 10 µg/L, respectively) within the paved area suspected to be the location of the former FFTA (at 28-GW-04). Given the variation in the elevation at which ground-water samples were collected, however, the shape or extent of the area impacted by CVOC cannot be determined from the available data.

**Seep**

- As shown in Figure 5-4 (Appendix A), lead, dieldrin, endrin, heptachlor epoxide, and phenanthrene were detected in the seep sample collected east of Building E-107 at concentrations above marine chronic AWQC. Except for phenanthrene, the concentrations were higher in the seep sample 28-SP-1 than in the sample from upgradient ground-water location 28-GW-07. Therefore, the constituents detected in 28-SP-01 may be from a source other than Study Area 16 ground water. Based on the Draft Final Marine Ecological Risk Assessment (EA 1996) for Allen Harbor, potential offsite sources may exist including the two marinas and storm water outfalls from nearby parking lots.

**Underground Storage Tank Area/Septic Tanks**

- In the former UST area west and south of Building E-107, an extensive program of excavation in the areas of detected magnetic anomalies uncovered no evidence of remaining USTs.

- The two steel pontoon tanks adjacent to Building E-107 were cleaned and removed. TPH-impacted soil surrounding the pontoon tanks was also removed. A total of 274 tons of soil was removed during excavation activities and the two pontoon tanks were sent

offsite for metal recycling. Final confirmatory samples in this area were below RIDEM I/C DEC. Closure reports have been finalized for the UST area and the pontoon tanks (FWENC 1998a, 1998b).

#### 1.2.5.2 Recommendations

Based on the findings of the SASE (EA 1999), EA recommended that an RI focused on ground water be conducted at Site 16 to address the following objectives:

- Characterize the hydrogeology (stratigraphy and ground-water flow conditions) at the Site
- Further evaluate the horizontal and vertical extent of the CVOC in ground water Identify the source of CVOC in ground water
- Evaluate risk to human health from site constituents.

Additional remedial action was not anticipated for soil, based on the low number and distribution of exceedances of residential or industrial/commercial screening criteria. However, the available soil data should be evaluated using a tiered, streamlined risk assessment approach to ensure protection of human health under the most likely exposure scenarios.

An additional recommendation from EPA and the Technical Advisory Group (TAG) included an evaluation of risk to the environment from Site constituents. An additional recommendation from the TAG was to include SVOC and metals to the analytical program for soil and ground-water samples. The EPA also recommended that at least the first round of soil and ground-water samples be analyzed for the full TCL/TAL constituents during the RI. An additional recommendation from RIDEM included further assessment of the Site soil in the RI.

## 1.3 OBJECTIVES OF THE PHASE I RI

Based on previous investigations, the main contamination of concern, which is a key subject of this Phase I RI, is a dissolved CVOC plume, consisting primarily of TCE, in the deep soil overburden and upper bedrock ground-water zones. Additionally, potential contamination by petroleum hydrocarbons was anticipated because of the former presence of USTs and septic tanks, and the former creosote dipping and suspected former fire fighting training activity areas with in the Phase I RI area.

The objectives of the Phase I RI of Site 16 are to provide:

- Site remedial investigation efforts necessary to accomplish an ecological and human health risk assessment:
    - The Screening Level Ecological Risk Assessment (SLERA) has been completed and included as Appendix Q

— The Human Health Risk Assessment (HHRA) has been completed and included as Appendix R

- Assessment of potential onsite source areas and the potential for offsite source areas impacting the Site
- Assessment of the nature and extent of ground-water contamination from the Site
- Assessment of the nature and extent of soil contamination from the Site.

To accomplish these objectives, the following two stages of fieldwork have been performed at Site 16 during the Phase I RI:

**Stage I**

The area investigated during Stage I included the northern portion of the Site bounded by Westcott Road to the west, Allens Harbor Road to the east, Davisville Road to the south, and Building E-107 and Allen Harbor to the north. The following activities were performed during Stage I:

- Surface geophysical survey using seismic refraction profiling
- Subsurface screening using an MIP at 28 locations, including 3 locations in the vicinity of Building E-107
- Collection of screening level ground-water samples from 15 MIP locations using push-probes and analyzed during the MIP screening
- Following the seismic refraction profiling and the MIP screening, assessment of the data with regard to the number, location, and screened intervals of 14 monitoring wells
- Installation and development of 14 monitoring wells (7 pairs of shallow and deep wells)
- Collection and analysis of soil samples from within the screened interval of each of the 14 monitoring wells
- Advancement of 8 soil borings to sample and analyze surface and subsurface soils.

**Stage II**

Based on findings from field work conducted during Stage I (seismic profiling, advancement and evaluation of MIP screening, collection of soil samples from soil borings, and installation of 14 monitoring wells), early data indicated the possibility of an upgradient source to the southwest (i.e., in the vicinity of former Building 41). The Work Plan (EA 2000a) was amended (EA 2000b) and the following activities were performed during Stage II:

- Surface geophysical survey using seismic refraction profiling
- MIP screening at 4 locations west of Westcott Road, 5 locations east of Allens Harbor Road, and 22 locations south of Davisville Road
- Following the seismic refraction profiling and the MIP screening, assessment of the data with regard to the number, location, and screened intervals of the monitoring wells
- Installation of 2 shallow (replacement of dry monitoring wells previously installed during Stage I), 22 deep, and 6 bedrock monitoring wells
- Collection of soil samples from the screened interval at 5 locations
- Advancement of 1 soil boring, and laboratory analysis of 2 soil samples
- Geophysical logging of the open borehole portion of the 6 rock wells
- Sampling and analysis of ground water from the Site 16 monitoring wells
- Collection and analysis of 2 seep and 2 sediment samples at Allen Harbor shoreline
- Collection and analysis of 1 aqueous and 1 sediment sample at drainage outfall pipe.

## 1.4 REPORT ORGANIZATION

This report describes the field program conducted for the RI of Site 16. Chapter 1 presented the objectives and scope, descriptions and histories of the sites, previous investigations, and organization of this report. Chapter 2 presents a description of the field and analytical activities performed during the Phase I RI. Chapter 3 presents the description of the physical characteristics of the Site. Chapter 4 presents the nature and extent of contamination reported in the soil and ground water. Chapter 5 presents the conclusions and recommendations. Supporting documentation is contained in the appendices, including the Navy's responses to regulatory agency comments to the Draft version of this document provided as Appendix S.

# 2. FIELD INVESTIGATION

## 2.1 INTRODUCTION

This chapter provides a summary of the Phase I RI field program conducted by EA in 2000 and 2001 to further characterize subsurface and ground-water conditions at Site 16. The fieldwork was performed in accordance with the Work Plan (March 2000) and Work Plan Addendum (November 2000). The Work Plan and Work Plan Addendum included Field Procedures (Chapter 4 of the Work Plan and Work Plan Addendum) and the Quality Assurance Project Plan (QAPP) (Appendix A of the Work Plan and Work Plan Addendum) and Site Safety, Health, and Emergency Response Addendum (SHERP) (Appendix B of the Work Plan and Work Plan Addendum), which established the procedures that were used to conduct the seismic refraction profiling, MIP screening/ground-water sampling, drilling and installation of monitoring wells, geophysical borehole logging, and ground-water sampling and analysis that are presented in this report. Figure 1-2 shows the Site 16 field investigation area.

## 2.2 FIELD PROGRAM

Based upon ongoing assessment of the data during the Phase I RI field program, the program was performed in two stages and is comprised of the elements presented below. The investigation began (Stage I) with fieldwork in the vicinity of EBS Review Item No. 28. The preliminary findings of Stage I indicated the presence of a CVOC plume in deep ground water that extended at least upgradient (south and southwest) beyond the Stage I area. Stage II expanded the investigation to the west, south, and east of the Stage I area.

In general, Stage I of the fieldwork consisted of seismic refraction, MIP, soil boring and monitoring well installation in the northern portion of the Site bounded by Westcott Road to the west, Davisville Road to the south, Allens Harbor Road to the east, and Building E-107 and Allen Harbor to the north (Figure 1-2). The locations of contamination as detected by the MIP screening during the execution of the Final Work Plan (March 2000) suggested that dissolved CVOC in ground water were also migrating to the Stage 1 area of Site 16 from an upgradient source, unrelated to the known or suspected former Site 16 (EBS Review Item 28) operations. This source appeared to be contributing to ground-water contamination detected in the Stage I portion of the Site. Stage II began with seismic refraction and MIP in the areas west of Westcott Road, east of Allens Harbor Road, and south of Davisville Road within the Phase I RI Site 16 boundary as shown on Figure 1-2. Additional soil borings and monitoring wells were installed in both the Stage I and Stage II areas. Then, all of the Stage I and Stage II monitoring wells were sampled.

**Stage I**

Stage I began in the area of EBS Review Item 28 (former Creosote Dip Tank Area and the suspected former FFTA). A summary of the previous EBS Review Item 28 investigation activities is provided in Chapter 1.

**The following summarizes the Phase I RI, Stage I field program:**

(1) **Seismic Refraction profiling**. Previous subsurface investigations at other NCBC Davisville sites have shown that the configuration of the upper surface of competent bedrock appears to have influenced the migration of CVOC plumes. In general, seismic refraction interpretive data was used to develop an understanding of the upper surface of competent bedrock at Site 16 and to provide data to aid in the refinement of the locations for monitoring wells.

In December 1999, Geophysics GPR International, Inc. conducted a seismic refraction survey in the Stage I area consisting of 3,480 linear ft of profiling. The profiling lines were oriented approximately north-south and east-west across the Site (Figure 2-1). The result of this seismic refraction survey is included in Figure 2-2 as the related portion of the interpretive top of competent (coreable) bedrock contour map. A copy of the geophysical report is included as Appendix B.

(2) **MIP Screening/Ground-Water Sampling**. This subtask included the probing at 28 of 30 planned MIP screening locations positioned on an approximately 4 (north-south) by 6 (east-west) grid pattern across the Stage I area (Figure 2-3, MIP16-01 through MIP16-30 (two locations were deleted [MIP16-04 and MIP16-18] because of very shallow probe refusal depth and access problems, respectively). Three of the MIP locations were advanced in the vicinity of Building E-107: one located between the southern portion on the east wall of Building E-107 and a seep at the nearby Allen Harbor shoreline (MIP16-30), and two locations south of the southern wall of Building E-107 (MIP16-20 and MIP16-29). MIP16-29 was positioned at the former location of the septic/pontoon tanks. The resultant screening level data was used to assess the relative presence of VOC in the soil beneath the Site. MIP logs from the Stage I field event are provided in Appendix C.

Results from the MIP screening were assessed after all 28 locations were advanced to equipment refusal. Planned probing depths were estimated for each location based on the interpreted depth to bedrock from the Stage I seismic refraction geophysical study results. However, gravelly soil at depth precluded achieving the planned probing depths at many locations. Although the planned depth was not achieved at most of the MIP locations, a considerable increase was gained in the understanding of the relative presence of VOC beneath the Stage I area of Site 16. To aid in the overall view of the data, a summary of the MIP detector response depth intervals is included in Table 2-1 for the electron

capture detector (ECD) and photoionization detector (PID) responses. In general, the ECD responses are indicative of CVOC, while the PID responses are indicative of petroleum hydrocarbon VOC. Although the specific depth interval(s) are provided in Table 2-1 for each detector (ECD and PID), they have been organized within three general depth intervals (shallow, mid, and deep) below grade to aid in illustrating the somewhat bigger picture of the vertical extent. Also provided on Table 2-1 is the relative strength (e.g., very low, low, increasing with depth) of the detector response.

ECD responses were recorded at approximately 85 percent of the MIP locations, with the largest response at depth (33–47 ft bgs) at MIP16-16. The next three largest ECD responses were at depths greater than 25 ft bgs at MIP16-22d, MIP16-26, and MIP16-27. As an additional aid to viewing both the lateral and vertical extent of the ECD responses, the ECD responses are illustrated on Figure 2-4. The ECD responses in the shallow interval (less than 15 ft bgs) were only trace to low, suggesting that locations of historical surface releases have been considerably weathered and/or diluted by infiltrating precipitation over the years. Three of the four largest ECD responses (MIP16-16, MIP16-26, and MIP16-27) were at depths greater than 25 ft bgs and are located in the east and southeast portions. These data, along with a northeast direction of ground-water flow, suggested at least a contribution of CVOC via migration at depth from a source(s) south or southwest of the Stage I area. The location and depth of these ECD responses could not all be readily related to the understood historical EBS Review Item 28 uses of the site in the western and central portions of the Stage I area.

As is also shown in Table 2-1, PID responses were recorded at only approximately 35 percent of the MIP locations and mostly at trace levels. The largest PID response was recorded at MIP16-07 (8–25.5 ft bgs), located southeast of the former location of the upended creosote dip tank, but within the expanded creosote dip tank activity study area (Figures 1-2 and 2-5). Additionally, a sheen was observed on the probe upon removal from MIP16-07. As an additional aid to viewing both the lateral and vertical extent of the PID responses, the PID data are illustrated on Figure 2-5.

Based upon the preliminary review of the MIP findings, 16 locations/depth intervals (more than presented in the Final Site 16 Work Plan, dated March 2000) were selected for probe-collected screening level ground-water samples for laboratory analysis of TCL-VOC, SVOC, PAH, and salinity. These locations are included on Table 2-1, illustrated on Figure 2-3, and explained below. The locations were selected to generally provide quantification for the various types and relative strengths of PID and ECD responses by the MIP. Because there were ECD responses at each of the three locations around Building E-107 (MIP16-28, -29, and -30), probe-collected ground-water sampling was recommended for only the MIP16-29 location at that time. A monitoring well pair (shallow and deep screened intervals) was recommended for the MIP16-28 location and six other MIP locations (Table 2-1). Due to probe refusal at locations MIP16-03 and -29, the planned ground-water depths of 42 and 46 ft bgs were

actually 39 and 33 ft bgs, respectively. The VOC aliquot containers for the 48-ft bgs sample from MIP16-12 were broken and could not be analyzed.

VOC were detected in 9 of 15 probe-collected ground-water samples from 12 MIP locations (Table 2-2A, Figure 2-6). Total CVOC concentrations ranged from 0.6 micrograms per liter (μg/L) (MIP16-07 at 15 ft bgs) to 5,386 μg/L (MIP16-24 at 47 ft bgs; southeast corner of the Stage I area). VOC were not detected at three MIP locations (MIP16-03, -06, and -29) in the northern and western portion of the Stage I area. Table 2-2A provides a summary of VOC detected in these ground-water samples and Figure 2-6 illustrates these data.

SVOC and PAH were detected in 6 of 15 ground-water samples from 12 MIP locations in the Stage I area. Several SVOC/PAH were detected (each at generally less than 2 μg/L) at two MIP locations (MIP16-07 at 15 ft bgs and MIP16-29 at 33 ft bgs), located in the western and northern portions of the Stage I area. SVOC/PAH were not detected at six locations throughout the Stage I area. At five MIP locations, bis(2-ethyl hexyl)phthalate was detected at concentrations ranging from 5 J μg/L in the eastern portion of the Stage I area (MIP16-26 at 58 ft bgs) to 13 μg/L in the southern portion of the Stage I area (MIP16-17 at 49 ft bgs). SVOC and PAH sample results are presented in Tables 2-2B and 2-2C, respectively, and on Figure 2-7.

Table 2-3 provides a comparison of probe-collected ground-water sample results with the related MIP responses, indicating that the MIP field technology was acceptable for screening large site areas for VOC but not for confirmation of the presence/absence of VOC.

(3) **Drilling/Installation of Monitoring Wells**. This subtask includes the installation of 14 monitoring wells, as seven pairs of shallow and deep wells (MW16-01S/D through MW16-07S/D, Figure 2-8). This work was performed to provide additional site-specific geological information and locations from which to measure the depth to ground water and to collect ground-water samples for chemical analysis. Table 2-4 provides a summary of monitoring well location rationale, and Table 2-5 provides a summary of well construction data.

The locations of these well pairs were modified from that shown in the Work Plan (EA 2000a). The locations in the Work Plan were based upon the reported EBS Review Item 21 uses of the Site and historical data from the Base-Wide Ground-Water Study that showed an interpreted ground-water flow direction toward the northeast (Allen Harbor) beneath the site (Stone & Webster 1996). Those locations were revised based on the Stage I seismic refraction profiling and MIP screening results. The wells were installed in accordance with the field procedures presented in Chapter 4 of the Final Work Plan (EA 2000a). Boring logs are provided in Appendix D, well diagrams are provided in Appendix E.

Seven pairs of monitoring wells (MW16-01S/D through MW16-07S/D) were installed during Stage I from 12 May to 23 June 2000 (Table 2-4). Soil samples were collected from the screened interval of each of these wells for chemical analysis. After monitoring well installation, eight soil borings were advanced from 23 to 27 June 2000 (Figure 2-8) to collect surface and subsurface soil samples as described in the March 2000 Work Plan (SB16-21 through SB16-28). Table 2-6 includes a summary of the analytical program for Site 16 soil samples. Monitoring wells were developed from 28 June to 5 July 2000. Well development forms are attached in Appendix F. Monitoring well MW16-04S could not be developed due to a blockage within the well pipe. On 18 August 2000, potable water from the RIEDC supply system was flushed down MW16-04S to clear the blockage. Monitoring well MW16-04S was subsequently developed during Stage II of the field program. A summary of the final field-measured analytical parameters recorded at the completion of the development of each well is included in Table 2-7.

Monitoring wells MW16-01S and MW16-05S could not be developed due to lack of water available within these wells. The screened interval for each of the onsite wells was selected based upon the depth of the apparent water table observed during drilling. Unfortunately, the water table was deeper than it appeared to be during drilling of MW16-01S and MW16-05S. These two wells were scheduled for replacement during installation of the new monitoring wells as part of the Work Plan Addendum (EA 2000b). Slug testing of six of the onsite monitoring wells was completed on 19 July 2000 prior to temporary stoppage of the fieldwork until Stage II of the field program could be scoped, approved, and begun. Slug test data are provided in Appendix G. For slug test data from which hydraulic conductivity could not be calculated (no water level rise or drawdown was measured), only graphs of the recorded water level data are provided in Appendix G.

**Sampling and Analysis.** At eight locations, one surface soil (from the 0- to 2-ft bgs interval) and one subsurface soil (from the 2-ft interval just above the apparent water table) sample were collected from soil borings SB16-21 through SB16-28 and submitted for laboratory analysis. The analytical program for these samples is included in Table 2-6. To further assess potential impact from the suspected former FFTA, dioxin (a potential product of incomplete combustion) was added to the analytical program for these 16 soil samples in the Work Plan Addendum (EA 2000b). These samples were included in the HHRA and SLERA. Four of these locations were selected to correspond with previous sample locations that produced the greatest exceedance of the screening level in the SASE at SB16-21 through SB16-24 as follows:

Former Creosote Dip Tank Area

1. 28-SB-01A
2. 28-SB-01D

Former Fire Fighting Training Area

3. 28-SB-08
4. 28-SB-09

As agreed upon by the BCT, the remaining four surface/subsurface soil sampling locations (SB16-25 through SB16-28) were selected at previous locations where dibenzofuran was detected in push probe-collected ground-water samples during the EBS program investigations of Review Item 28.

In addition, during drilling, a soil sample was collected from the screened interval from each monitoring well and submitted for laboratory analysis. The analytical program for these samples is included in Table 2-6. Grainsize distribution curves are attached in Appendix H. Grainsize analysis may not match boring log descriptions because aliquots for grainsize analysis were collected after the aliquots for analytical chemistry had been obtained, and therefore, represent what was left over at the end of the soil sample collection activity.

**Stage II**

Based upon findings from fieldwork conducted in the Stage I portion of the Site during the Spring of 2000 (seismic profiling, advancement and evaluation of MIP screening, soil samples collected from soil borings, and installation of monitoring wells), the available data indicated the probability of an upgradient source southwest of EBS Review Item 28 area; i.e., in the vicinity of former Building 41. A summary of the history and previous investigation conducted at former Building 41 (EBS Review Item 29) and associated EBS Review Item 81 (located just north of this building) is included in Section 1.2. Based on these data, the Stage II RI area extended west, south and east of the Stage I area; i.e., west of Westcott Road, south of Davisville Road, and east of Allens Harbor Road (Figure 2-1).

**Seismic Refraction Profiling**. During 7 to 25 September 2000, Geophysical Applications Inc. completed 7,410 ft of seismic refraction profiling in the Stage II area (Figure 2-1) to provide interpretive data regarding the configuration of the bedrock surface in the Stage II area. The interpretive results are included on Figure 2-2. A copy of the Geophysical Applications Report is attached in Appendix I.

**MIP Screening**. This subtask included the completion of 31 MIP screening locations located in the Stage II area. The locations for this MIP screening were selected after receipt and review of the seismic refraction geophysical profiling results (particularly, an apparent valley in the bedrock surface trending northeast from former Building 41 through the southeast portion of the Stage I area), and are included on Figure 2-3. Planned probing depths were estimated for each location based on the interpreted depth to bedrock from the Stage II seismic refraction geophysical study results. However, gravelly soil at depth precluded achieving the planned probing depths at many locations. Although the planned depth was not achieved at most of the MIP locations, a considerable increase was gained in the understanding of the relative presence

of VOC beneath the Stage II area of Site 16. To aid in the overall view of the data, a summary of the MIP detector response depth intervals is included in Table 2-8 for the ECD (there were no PID responses). The resultant MIP response screening data were used to assess the apparent extent of VOC in the subsurface. Most of the MIP locations with high- to low-level ECD responses correlated well with the interpreted low in the bedrock surface that trends generally northeast from former Building 41 through the southeastern portion of the Stage I area of Site 16. The Summary of Findings report of the MIP logging conducted in October 2000 is included as Appendix J. A summary of the ECD responses is included on Figure 2-4. Although there were no PID responses in the Stage II RI area, the related MIP locations are included in Figure 2-5.

**Drilling/Installation of Monitoring Wells**. This subtask includes the installation of 27 monitoring wells (21 deep wells, and 6 bedrock wells as shown on Figure 2-8) and 1 soil boring (SB16-29) for the collection of 2 soil samples where mid-level MIP ECD responses were recorded (MIP16-S21). This work was to provide additional geological information locations from which to measure the depth to ground water and to collect ground-water samples for chemical analysis. Additionally, 2 shallow monitoring wells were installed and developed onsite to replace MW16-05S and MW16-01S, which were dry. The Stage I area dry wells (MW16-05S and MW16-01S) were abandoned as described in Section 4.13 of Chapter 4 of the Work Plan Addendum (EA 2000a).

The planned locations of the Stage II monitoring wells were based upon the seismic refraction survey and MIP screening results. The locations and screened intervals were proposed based upon review of the initial field data and provided to the BCT via e-mail on 7 November 2000 and discussed during the 9 November 2000 BCT meeting for concurrence. Table 2-4 includes the rationale for the Stage II portion of the Site 16 monitoring well locations, and the locations are included on Figure 2-8. The 10-ft screened interval of the shallow wells is across the apparent ground-water table. The 10-ft screened interval of the deep wells is immediately above the upper surface of the competent bedrock (unless otherwise noted). The open borehole of the bedrock wells is in the upper 25 ft of competent bedrock. The shallow and deep wells were installed in accordance with the field procedures presented in Chapter 4 of the Work Plan (EA 2000a). Bedrock wells were installed in accordance with the procedures added in the Work Plan Addendum (EA 2000b).

Development of the Stage II monitoring wells occurred during 31 January through 8 February 2001. A summary of the final field-measured analytical parameters recorded at the completion of the development of each well is included in Table 2-7. The Well Development Forms are included in Appendix F. Slug testing of the Stage II area shallow and deep wells, plus six of the Stage I area wells, occurred during 13–20 February 2001. Slug test data are provided in Appendix G. For slug test data from which hydraulic conductivity could not be calculated (no water level rise or drawdown occurred), only graphs of the recorded water level data are provided in Appendix G.

During slug testing of the Stage II monitoring wells, water levels in selected monitoring wells were also monitored to assess the potential effect of the tides on the water level in the well. From 14 to 21 February 2001, a transducer was placed in each of the following monitoring wells for approximately 24 hours to determine if the water level changed with the tides: MW16-03S/D, MW16-04S/D, MW16-05S/D, MW16-06S/D, MW16-27D/R, MW16-28R, and MW16-29D. Tidal influence was observed only in the wells located closest to the Allen Harbor shoreline (MW16-03S/D, MW16-04S/D, MW16-05S/D, and MW16-28R). The results of the tidal testing are provided in Appendix K.

A dedicated polyvinyl chloride (PVC) bladder pump (Geolog Model 57500 bladder pumps, 1.66 in. × 36 in. long PVC/Teflon with Model 5907 twin bonded Teflon tubing) was installed in each monitoring well at Site 16 on 12 and 14 March 2001 for use during ground-water sampling. Bladder pump intake depths, as agreed upon by the BCT, are included in Table 2-5.

**Geophysical Borehole Logging**. Geophysical Applications Inc. performed geophysical logging of the open rock portions of the monitoring wells completed in the approximately upper 25 ft of competent bedrock (MW16-02R, MW16-15R, MW16-25R, MW16-27R, and MW16-28R) after completion of the drilling activity, but before installation of the dedicated sampling pumps. These wells were logged to aid in the assessment of bedrock fractures and areas of ground-water flow. The geophysical methods employed were caliper, single-point resistance, fluid temperature, heat-pulse flow meter, and acoustic televiewer logging in accordance with the Work Plan Addendum (EA 2000b), plus fluid conductivity, fluid resistivity, and gamma logging. The geophysical logging was performed in accordance with Attachment 3 of the Work Plan Addendum (EA 2000b). The geophysical logging report is provided in Appendix L.

**Sampling and Analysis**. Ground-water samples were collected during 21–29 March 2001 from all Site 16 monitoring wells and analyzed to aid in assessment of the quality of the shallow and deep soil ground-water zones, and the upper 25 ft of the bedrock ground-water zone. Prior to the sampling process, depth to water was measured in the wells. The ground-water samples were collected using the low-flow sampling technique in accordance with the field procedures presented in Chapter 4 of the Work Plan (EA 2000a). Table 2-9 provides a summary of the final field measured analytical parameters recorded just prior to collection of the sample from each monitoring well. Chemical analysis of these water samples was performed by Ceimic Corporation laboratory. The analytical program for these samples is included in Table 2-6. The related Field Sampling Forms are provided in Appendix M.

As described in the Work Plan (EA 2000a), one seep and one sediment sample were collected from each of the two seep locations identified and flagged during the 7 October 1999 site visit (Figure 2-8). Additionally, during that site visit, a drainage outfall pipe was observed discharging to Allen Harbor near the northeast corner of the Site. This pipe discharges from the asphalt parking lot located east of Allens Harbor Road. Although not directly related to Site 16, one water and one sediment sample were collected from beneath this drainage outfall pipe. The seep, sediment, and outfall pipe samples were analyzed for the full TCL and TAL, PAH, plus

salinity (Table 2-6). The analytical program for these samples is included in Table 2-6. The related Field Sampling Forms are provided in Appendix M.

# 3. PHYSICAL CHARACTERISTICS

## 3.1 INTRODUCTION

This chapter describes the local and regional physical characteristics of Site 16. Descriptions of subsurface physical features are based upon the current field investigation, which included drilling of 9 soil borings and installation of 42 monitoring wells. Supporting data used in the preparation of this chapter includes data from the EBS investigations at the Site (EA 1995a, 1998a, 1998b, 1999). A description of the regional geologic and hydrogeologic setting is presented below, along with specific characteristics pertaining to the Site.

This chapter describes the local and regional physical characteristics of Site 16. Descriptions of subsurface physical features at Site 16 are based upon the field investigations, including soil borings and MIP advancements. A description of the regional geologic and hydrogeologic setting is provided, along with specific characteristics pertaining to Site 16.

## 3.2 PHYSIOGRAPHY

NCBC Davisville is located on the Seaboard Lowland coastal belt of the New England physiographic province (Fenneman 1938), and within the Narragansett Basin of metamorphosed sedimentary rocks of Pennsylvanian age. The surface topography near NCBC Davisville (from Quonset Point to a point approximately 5 miles west of Quonset Point) exhibits over 150 ft of relief in a series of north-south trending valleys and ridges. These valleys were developed by river and stream erosion and deepened by glacial activity. Surface drainage is not well developed, and swamps and marshes are extensive. Streams are small and, in most places, bordered by swamps.

Nearly all the surficial deposits are of glacial origin deposited during the Wisconsin Glacial Stage. The glacial deposits record a single invasion of the ice sheet and are only slightly modified by post-glacial weathering and erosion (Schafer 1961). Portions of the land surface at NCBC Davisville have undergone significant modification; e.g., hills were leveled and depressions filled in, as part of the original construction of the Base, as well as during military training operations.

The Site 16 Phase I RI area is generally defined as the area bounded by Elm Street and Nerone Street to the south, a north/south trending line approximately 250 ft west of Westcott Road to the west, a north/south trending line approximately 250 ft east of Allens Harbor Road to the east, and the Building E-107 area, former pump island area, and Allen Harbor to the north.

North of Davisville Road from the intersection of Westcott Road and Davisville Road (Figure 1-3), the topography of the Site 16 investigation area slopes downward from approximately 34 ft above MSL in two directions: west into an old overgrown gravel pit (approximately 17 ft above MSL at MW16-26D) and northeast (across an area that historically

was extensively bulldozed, but now has a thick vegetative cover of bushes and small trees) down to MSL along the Allen Harbor shoreline in the northeastern portion of the site investigation area. South of Davisville Road, the topography of the Site 16 investigation area has a gradual downward slope from approximately 30 ft above MSL in the former Building 41 area (demolished and the surrounding area repaved in October 2002), east across a grass-covered area of old railroad spurs and partially paved access roads (20 ft above MSL at MW16-19D) toward the Narragansett Bay shoreline. Narragansett Bay is located approximately 2,200 ft east of former Building 41.

There are four relatively large paved areas: the area around former Building 41, the area between Davisville Road and the northern railroad track (east of former Building 41, the area east of Allens Harbor Road), and the area adjacent to Building E-107. The first three of these four large paved areas are currently used for the temporary storage of cars delivered by ship pending delivery to dealers. At least a portion of the paved area east of Allens Harbor Road is drained via a storm drain that discharges near the southeast corner (shoreline) of Allen Harbor. North of Davisville Road, a paved access road encircles the former EBS Review Item 28 portion of the investigation area. This road was reportedly used by the Navy for the purpose of training construction equipment operators. Within that road-encircled area are two small, paved areas, a wooden-bermed structure, and an earthen ramp structure apparently from the former EBS Review Item 28 activities (Figure 1-2). No wetlands were identified at Site 16 during a 7 October 1999 site visit.

## 3.3 METEOROLOGY

Given the coastal proximity of NCBC Davisville, weather patterns are continuously modified by the dynamic effects of the Narragansett Bay and the Atlantic Ocean. Both winters and summers are influenced by the moderating effect of the Atlantic Ocean. The ocean effect is apparent by the higher winter temperatures and the lower summer temperatures, as compared to inland areas. The average annual wind speed over the area is 10.6 miles per hour (mph), with a prevailing southwesterly direction. In the winter, the average temperature is 30°F and average daily minimum temperature is 20°F. In the summer, the average temperature is 70°F and average daily maximum is 80°F.

The average annual precipitation for the area is 45.32 in., as measured for the period of 1951 through 1980. Historically, June has been the driest month with an average of 2.79 in. of precipitation, whereas December, averaging 4.47 in., has been the wettest.

Meteorological data were obtained from the National Weather Service Station, located at T.F. Green Airport, Warwick, Rhode Island, and the National Climatic Center, Asheville, North Carolina. The airport is located approximately 6.5 miles north of NCBC Davisville.

## 3.4 SURFACE WATER HYDROLOGY

There are no streams located within the investigation area. However, a portion of the northern boundary is adjacent to Allen Harbor. Overland runoff from the area south of Davisville Road would flow generally eastward toward Narragansett Bay. Overland runoff from the area north of Davisville Road and west of the intersection with Westcott Road would be west to northwest into an old overgrown gravel pit. Overland runoff from the area north of Davisville Road and east of the intersection with Westcott Road would be northeast to Allen Harbor. Allen Harbor is tidally influenced and is connected with Narragansett Bay approximately 1,800 ft north of the Site.

## 3.5 SOIL

Soil development generally refers to the first 5 ft of material underlying the ground surface. The soil surface of Site 16 is classified as Urban Land. By definition, this unit consists of areas of paved roads, buildings and paved parking lots, with slopes generally 0–5 percent. The northwestern portion of the Site along the western boundary is mapped as gravel pits, which are described as areas that have been excavated for sand or gravel. These areas are typically on outwash plains and terraces, with vegetation that is sparse and drought resistant. Permeability of this unit is rapid to very rapid due to a high sand and gravel content (USDA 1981).

## 3.6 GEOLOGY

### 3.6.1 Regional Geology

The investigation area is located within the Narragansett Basin, a complex structural syncline approximately 12 miles wide and up to 12,000 ft deep. The Narragansett Basin's western limit is approximately 4 miles west of Site 16, and its eastern edge is close to Fall River, Massachusetts. Based upon the bedrock geological maps for the Wickford Quadrangle (Williams 1964) and the East Greenwich Quadrangle (Quinn 1952), there are no mapped faults in the vicinity of the investigation area. However, the bedrock is typically obscured from view by thick and extensive overburden deposits.

According to Williams (1964) and Quinn (1952), the principal bedrock unit in the vicinity of the investigation area is the Pennsylvanian age undifferentiated Rhode Island Formation. The original sedimentary rocks were fine- to coarse-grained sandstone and shale. Throughout the Rhode Island Formation, these sedimentary rocks have been metamorphosed into various types of meta-sandstone (quartzite), phyllite, gneiss, and schist. The amount of metamorphism increases from north to south across the formation. The color of the rock varies from light to dark gray, and greenish. The Rhode Island Formation is further characterized by cross-bedding and irregular, discontinuous beds. In the investigation area, the depth to competent bedrock ranges from approximately 38 ft bgs (MW16-07) to 66.8 ft bgs (MW16-02) (Table 2-5).

The unconsolidated Quaternary sediment overlying bedrock was deposited by glacial activity during the Pleistocene Epoch. The final deposition of glacial material occurred during the

Wisconsin glacial stage 10,000–12,000 years ago. As the glacier front melted and receded, unconsolidated glacial till, glacio-fluvial and glacio-lacustrine sediments were deposited. Till, a dense, non-stratified, heterogeneous mixture of sand, silt, clay, and gravel, was emplaced on top of bedrock as the advancing glaciers scraped, ground, crushed, and then deposited the material passively on bedrock as ablation till.

As streams of melt water flowed from the retreating glaciers, sediment from the melting ice was entrained, transported downstream, and deposited as well-sorted sand or gravel (glacio-fluvial deposits). Fine-grained silt and clay were transported by the streams into glacial lakes, where they were settled on the lake bottom (glacio-lacustrine deposits). The thickness of the glacial deposits is quite variable, although generally thin. Within the region, they range from less than 10 ft in thickness at the higher elevations (nonexistent where bedrock is exposed) to more than 100 ft in thickness in portions of the bedrock valleys (Rosenshein et al. 1968).

### 3.6.2 Site Geology

The results of the Site field investigations show that unconsolidated fine-grained sedimentary deposits characterize the shallow subsurface geology.

The results of the current field investigation and previous investigations show that the subsurface geology at the Site is characterized by Quaternary glacial deposits mantling the quartzitic and phyllitic bedrock (weathered and competent zones) of the Rhode Island Formation. In general, based upon logs of borings, the unconsolidated sedimentary (glacial) deposits consist of the following units presented in order from the ground surface downward:

1. Reworked soil and fill material
2. Recent Harbor and adjacent deposits
3. Glacio-fluvial deposits
4. Glacio-lacustrine deposits
5. Lower sand deposits
6. Sandy silty gravel to gravelly sand to sandy gravelly silt (possibly till).

In light of some of the data being received from the ongoing Site 16 Phase II investigation, the extent of some of the geological units for some of the boring logs have been re-interpreted. The revised boring logs have been incorporated in Appendix D. Figure 3-1 shows the location of six geologic cross sections. The interpreted geology shown on these cross sections is based on data from the 42 new monitoring wells installed as part of this Phase I RI. Figures 3-2 through 3-8 are Geologic Cross Sections A-A' through G-G', respectively, which present the interpreted generalized distribution and thickness of the geological units from selected borings. These cross sections have been prepared to illustrate the geology beneath the Site. Three of the cross sections (A-A', B-B', and C-C') trend approximately east-west across the investigation area. Cross Section D-D' is oriented northeast along an apparent structural feature (possible fracture zone) in the bedrock. Cross Section E-E' is located along the eastern boundary of the investigation area. Cross Section F-F' is oriented northwest across the apparent structural feature in the bedrock.

Cross Section G-G' is oriented approximately north-south through the center of the investigation area.

The reworked soil and/or fill material is generally a mix of silt, sand, and gravel with cobbles reworked from historical construction and Seabee training activities; a mix of mostly sand, silty sand, and gravelly sand used to fill in the southern end of Allen Harbor and a related historical eastern waterway present prior to 1940 (Figure 5-8 in Appendix A); boulders that comprise the rip-rap along the Allen Harbor shoreline (MW16-04); and fragments of wood, glass, metal, and charcoal. Reworked soil and/or fill material appeared to have been encountered at all monitoring well locations except MW16-10D/R and MW16-09D (southwestern extent). This material is generally less than 1–2 ft in thickness, but was encountered at a thickness up to 16 ft at MW16-07D.

Relatively recent material apparently deposited naturally near the floor and former southern edge of Allen Harbor and an eastern extension (prior to 1940) was encountered at 2 borings. The pre-1940 approximate extent of Allen Harbor is shown in Figure 5-8 of Appendix A. These deposits include silt and/or sand with organic material. This deposit is generally overlain by reworked soil and/fill apparently from Navy activities, particularly dredged material from the construction of the nearby two large piers into the Bay that was in part placed in the former southern edge of Allen Harbor and an eastern extension. These deposits are discontinuous, and thickness was recorded as 1 ft at both locations (MW16-23D and MW16-27D). In general, the elevation of the top of these layers is 6.2 ft MSL and 12.5 ft MSL. East of MW16-05 is an area that, based on the old maps (Figure 5-8 in Appendix A), was a former eastern extension of the Harbor (MW16-27D and MW16-28D).

The glacio-fluvial deposits are typically sand with varying amounts of silt and/or gravel. These deposits range in thickness from not encountered at MW16-05D, MW16-07D, and MW16-27D to approximately 38 ft at MW16-14D. Due to the nature of these deposits, individual beds or "layers" often pinch out and/or crossbed within a short distance.

Glacio-lacustrine deposits underlie the glacio-fluvial deposits and are typically dark gray silt, sandy silt, very fine sand and silt, and clayey silt that are present as discontinuous layers beneath the site (Figures 3-2 through 3-8). This unit was not encountered at only three locations (MW16-04D, MW16-14D, and MW16-18D) (Figure 3-9). MW16-14D is located along the south side of former Building 41 near a potential CVOC use area. Where present, these silt deposits are comprised of 1–6 lenses typically separated by sand to silty sand ranging from 1 lens approximately 0.5 ft in thickness (MW16-11D) to approximately 35 ft in thickness (MW16-19D) up to 6 separated lenses totaling approximately 16 ft in thickness (MW16-05D) (Figure 3-9). Most of lenses of this deposit are present between elevation 0 ft MSL and -30 ft MSL.

The lower sand deposits are typically sand with varying amounts of silt located between the deepest overlying silt lens and the underlying sandy silty gravel deposits. The lateral extent of the lower sand is limited to the south central (MW16-01D, -08D, -15D, -21D, -22D, and -23D)

and northeastern (MW16-05D, -28D, and -29D) portions of the investigation area, plus one location along the western edge of this area (MW16-26D).

The sandy silty gravel to gravelly sand to sandy gravelly silt (possibly till) appears to have been deposited as a discontinuous layer beneath the Site investigation area. The unit underlies the glacio-fluvial and glacio-lacustrine deposits and overlies the bedrock. These deposits were encountered at all but four locations (MW16-03D, MW16-18D, MW16-19D, and MW16-23D) and range from approximately 2.5 ft in thickness (MW16-26) to 28.5 ft in thickness (MW16-11D), but are between 4 and 10 ft in thickness at 14 of the 29 locations.

Weathered bedrock separates the underlying competent (coreable) bedrock from the overlying unconsolidated glacial deposits at 6 locations in the southeastern portion of the Site, east of former Building 41 (MW16-16D, MW16-19D, MW16-20D, MW16-23D, MW16-24D, and MW16-25D), at one location west of former Building 41 (MW16-10D), and at 4 locations in the northern portion of the site (MW16-03D, MW16-04D, MW16-05D, and MW16-07D). Where present, weathered bedrock thickness ranges from approximately 0.3 ft at MW16-25D to 11 ft at MW16-03D. The weathered bedrock is generally dark gray, platey, blocky, and highly fractured. Interbedded clay, silt, and sand layers are often present within this zone and between fractured sections. Rock fragments obtained from samples in the weathered zone range from approximately 1 to 3 in. and break in planar blocky sections (typically phyllite) or angular fragments (typically quartzite).

Competent (coreable) bedrock was encountered in the monitoring well borings at depths ranging from approximately 38 ft bgs (MW16-07D) to 66.8 ft bgs (MW16-13D). Based on the results of the seismic refraction survey and the monitoring well borings, the competent (coreable) bedrock surface has an irregular shape. Within the investigation area, the bedrock surface ranges from the highest interpreted elevation of approximately -5 ft MSL (west of Building E-107, near Westcott Road, in the northwestern portion of the investigation area) to the lowest elevation of -60 ft MSL (northeastern portion of the area) (Figure 2-2). In general, the northwestern and southeastern portions of the investigation area are areas of relatively higher elevations in the bedrock surface. The area from the northeast to the southwest portion of the Site is an area of relatively lower elevations (less than -30 ft MSL) in the bedrock surface. This 'valley' in the bedrock surface may be due to a northeast trending structural feature, such as a fracture zone, that resulted in preferential erosion there more than other areas by glaciers. Former Building 41 is located above the southwestern portion of this 'valley' feature in an area where the 'floor' of this 'valley' slopes from this location gently downward toward the northeast. In the southwestern portion of the area, there are also four isolated areas of relatively higher elevations (greater than -20 ft MSL) in the bedrock surface.

The bedrock underlying the investigation area is typically alternating layers of quartzite and phyllite, which can vary considerably over short horizontal distances. The boring logs appear to show either horizontal facies changes between quartzite and phyllite over relatively short distances, localized faulting, and/or the layers of this rock are sloping (tilted, not horizontal) and/or folded. This results in encountering the layers at different depths between wells with no

lateral connection apparent. The quartzite bedrock typically includes quartz veins, with near vertical to horizontal orientations, and near vertical and horizontal fractures. Where encountered, the quartzite is generally massive and the color ranges from light to dark gray with occasional banding and mottling. Fractures were often observed to be filled with quartz. The phyllite is typically dark gray to black metamorphosed shale with fractures. Although these fractures are typically not 'healed' (filled) with mineralization, they are typically filled with silt.

Bedrock core recoveries were generally greater than 90 percent within the upper 5–10 ft of competent bedrock cored for each deep ('D') well. This coring (a 5-ft interval) was performed to confirm the presence and type of competent (coreable) bedrock for each deep ('D') well. Rock Quality Designation (RQD) (the percentage of the length of a core that is 4 in. or more in length) ranged from 0 to 95 percent, with most RQD values falling between 50 and 100 percent (Figure 3-10). Although originated for geotechnical use to aid in assessment of rock quality for construction, RQD provides an indication of how solid or massive versus broken, bedded, or fractured the rock core interval is. Ground-water flow through the rock types beneath the site is along interconnected natural openings in the rock, such as along bedding, fracture, or jointing planes. RQD provides a general idea of whether the rock core interval (typically 5 ft in length) is solid (high RQD) with little potential for ground-water flow through versus fractured/bedded (low RQD) with more potential for ground-water flow through. However, a low RQD only indicates the relatively higher potential for ground-water flow through, but not whether the openings are interconnected or are filled with silt or clay which could substantially decrease the volume and rate of the actual ground-water flow through. RQDs greater than 76 percent were recorded for half of the bedrock cores obtained during the Phase I RI (15 of 29 cores) from locations across the investigation area. In general, cores with lower RQDs were limited to locations in a northeast trending area located northeast and east of former Building 41 (Figure 3-10). This is the same area as the interpreted 'valley' in the bedrock surface (Figure 2-2) and provides support for the presence of a fracture zone in this portion of the 'valley.' Further northeast and southwest from this area in the interpreted 'valley,' the RQD values are typically greater than 85 percent, suggesting the presence of less fracturing in those areas of the 'valley.'

Geophysical logging of the six wells completed in the upper 25–30 ft of competent bedrock provides the following additional support for the interpreted fracture zone ('valley' in the bedrock surface). A copy of the related report is provided as Appendix L. Wells MW16-02R and -25R, located within this zone, have several interpreted northeast trending 'open' fractures through which ground water flows. Well MW16-27R has similar findings; however, the interpreted three 'open' fractures are north trending, rather than northeast trending. Well MW16-15R, although within the zone, has only a few interpreted 'open' fractures. These fractures are oriented in several directions (northwest, north, and northeast) and have very little ground-water flow through them. Only a few north trending 'open' fractures were interpreted in wells MW16-10R and MW16-28R

## 3.7 HYDROGEOLOGY

### 3.7.1 Regional Hydrogeology

The State of Rhode Island is divided into five drainage basins: the Narragansett Bay Basin (NBB), the Pawtucket River Basin, the Rhode Island Coastal Basin, the Thames River Basin, and the Massachusetts Coastal Basin. The Site lies within the NBB, the largest and most hydrogeologically significant basin in the state. The NBB covers approximately two-thirds of the state and includes a system of waterways that discharges into the Atlantic Ocean between Point Judith and Sakonnet Point. The NBB includes Narragansett Bay and its entire shoreline, the drainage system of three major rivers (Taunton, Blackstone, and Pawtuxet), and a number of small rivers and streams that drain into Narragansett Bay (USDA 1981). Within each drainage basin, smaller sub-basins may be defined based on significant streams, tributaries, and reservoirs.

Rhode Island's abundant precipitation, numerous perennial streams, lakes, and reservoirs provide a significant surface supply of fresh water for the state's industry and domestic consumption. Additionally, three primary aquifers provide fresh ground water for the state. In 1985, the total freshwater withdrawals in Rhode Island were 147 million gallons per day (MGD). Of this, approximately 69 percent was for domestic and commercial use, 27 percent was for industrial and mining use, and 4 percent was for agricultural use. Eighty-one and a half percent of the fresh water was obtained from surface water sources and the remaining 18.5 was from ground water. The Scituate Reservoir in Providence County accounts for more than 80 percent of the reservoir storage capacity in Rhode Island. Approximately 76 percent of the state's population receives its drinking water from the Rhode Island reservoir system. Approximately 24 percent obtain potable water from public supply wells (USGS 1989). There are also an unknown number of private residential water supply wells.

### 3.7.2 Regional Surface Water Quality

Annual precipitation in the State of Rhode Island ranges from approximately 42 to 48 inches. Approximately one-half of the annual precipitation runs off to streams and lakes of the State. Approximately 81.5 percent of the fresh water used in Rhode Island is drawn from surface water sources. The quality of Rhode Island's surface water is affected primarily by land use and commercial factors such as urban runoff, point-source discharge, and municipal/industrial wastewater discharge (USGS 1993).

In sparsely populated areas, stream water quality is affected mainly by impurities in precipitation and by constituents released from the soil and rock. Because the bedrock, glacial deposits, and soil in Rhode Island are composed largely of insoluble silica minerals, concentrations of dissolved inorganic constituents are low. Surface water in Rhode Island is soft (hardness less than 60 milligrams per liter [mg/L] of calcium carbonate) and slightly acidic (pH values less than 7).

No fresh surface water bodies are included in the Site. The nearest surface water bodies are Davol Pond, located approximately 3,000 ft southwest, Narragansett Bay, located approximately 2,000 ft west, and Allen Harbor, located along the northern perimeter of Site 16. A wetland area is located adjacent to the Site west of Westcott Road.

### 3.7.3 Regional Ground-Water Quality

Ground water in Rhode Island is present in two types of aquifers: unconsolidated Pleistocene glacial deposits and consolidated Paleozoic bedrock. The ground water within the glacial deposits is divided into two hydrologic units: the fill and stratified drift unit (glacio-fluvial deposits), and the till unit. The stratified drift unit consists of interbedded lenses of gravel, sand, and silt. The till unit consists of boulders, gravel, sand, silt, and clay. Both aquifers constitute important water resources for the state. Most domestic wells in Rhode Island obtain water from the bedrock aquifer (USGS 1988).

The quality of ground water in most of Rhode Island is suitable for human consumption with little or no treatment. Typically, the ground water has total dissolved solids (TDS) concentrations of less than 200 mg/L, is soft (hardness less than 60 mg/L of calcium carbonate), is slightly acidic (pH 5.5–7.0), and is relatively cold (10–12° Celsius). The percentage of the state's land with non-potable ground water is relatively small. Although many areas have measurable degradation of water quality, the amount of degradation has not impaired the water quality for human consumption and other major uses. Because the ground water occurs mostly under unconfined conditions with a depth to water of less than 20 ft bgs, the ground water in Rhode Island is often vulnerable to contamination and quality degradation (USGS 1988).

In localized situations, specific effects from waste disposal, agricultural use, and urbanization have caused significant water quality degradation. The principal sources for ground-water contamination are waste disposal sites, fuel USTs, surface impoundments of liquid waste, solid waste landfills, septic systems and cesspools, storage areas for highway de-icing salts, and oil and chemical spills. The principal ground-water contaminants derived from these sources are VOC, pesticides, metals, nitrate, sodium, and chloride (USGS 1988).

### 3.7.4 Regional Aquifer Characteristics

U.S. Geological Survey (USGS) Water Supply Paper 1779 (Rosenshein 1968) describes the aquifer characteristics of the Potowomut-Wickford area of south central Rhode Island. That study area comprises approximately 60 square miles from East Greenwich to the southern tip of North Kingstown and west into parts of West Greenwich, Rhode Island. Site 16 is located in the east-central part of that study area. The Potowomut-Wickford area comprises parts of five river basins; however, only three basins display major hydrogeological significance. The three primary basins include; the Potowomut River Basin, the Annaquatucket River Basin, and the Pettaquamscutt River Basin. All three basins are situated west and/or southwest of Site 16.

The primary aquifer of the Potowomut-Wickford area is the Potowomut-Wickford Aquifer, producing water primarily from stratified drift unit. That area of ground-water supply production is located generally within a northeast trending valley in the bedrock surface located about 2 miles northwest of Site 16.

The transmissivity of the Potowomut-Wickford aquifer ranges from 0 to >40,107 square feet ($ft^2$) per day. The areas of highest transmissivity are concentrated around the three primary river basins. The transmissivity decreases outward from each river basin toward till and bedrock boundaries.

Recharge to the Potowomut-Wickford Aquifer occurs primarily from October through April. Under natural conditions, recharge is effectively equal to the discharge plus the change in subsurface storage. Natural discharge from the aquifer occurs as flow to surface water and movement away from source areas. Most of the discharge occurs as a component of stream flow; however, some discharge occurs as subsurface underflow and discharges into Greenwich Bay and the west passage of Narragansett Bay.

### 3.7.5 Site Hydrogeology

RIDEM has classified the ground water at this location as GB (assumed to require treatment prior to drinking).

#### 3.7.5.1 Hydrogeologic Zones

The previously described geologic units underlying the site have been divided into the following three hydrogeological zones (beginning with the uppermost zone):

1. Shallow overburden ground-water zone ('S' wells) -- consists of fill and/or glacio-fluvial sand unit overlying the glacio-lacustrine silt and very fine sand unit or directly overlying the silty gravelly sand to sandy gravelly silt (possibly till) where the glacio-lacustrine deposits are not present. This zone occurs under unconfined conditions.

2. Deep overburden ground-water zone ('D' wells) -- consists of the silty gravelly sand to sandy gravelly silt (possibly till) unit and the weathered bedrock zone. These two units are considered as a single ground-water zone for the following reasons: No apparently continuous layer of lower permeability material (e.g., a clay layer) was encountered through this zone that could subdivide this zone. The weathered phyllite bedrock forms a thin zone (2–3 ft in thickness) that is hydrogeologically similar because of the apparent horizontal and vertical variation observed which would allow for horizontal and vertical flow (hydraulic communication) through it. In other words, ground water could flow more readily through the softer, fractured phyllite, but less could flow through the more very weathered phyllite with fractures filled by silt and clay. The deep overburden ground-water zone occurs primarily under partially confined conditions.

3. Competent upper bedrock ground-water zone ('R' wells) -- includes the upper approximately 25–30 ft of competent bedrock ('R' wells) which was investigated, but may extend deeper. This zone is in direct hydraulic connection with the overlying deep overburden ground-water zone. Available data indicates this unit occurs under partially confined conditions.

### 3.7.5.2 Interpreted Ground-Water Flow Direction

Depth to ground water was measured in Site 16 and abutting study area wells in May 2001 and are summarized in Table 3-1. The related interpretive ground-water contour maps for the shallow (S), deep (D), and rock (R) ground-water zones are presented in Figures 3-11, 3-12 and 3-13, respectively.

**Shallow Overburden Ground-Water Zone**

As shown on Figure 3-11, the shallow ground water is interpreted to flow approximately southwest to northeast across the Site from the intersection of Davisville Road and Westcott Road toward Allen Harbor. The shallow ground water in the area around and east of former Building 41 is anticipated to flow east toward Narragansett Bay.

**Deep Overburden Ground-Water Zone**

Based upon Figure 3-12, the interpreted ground-water flow direction in the deep zone is from the southwest toward the northeast beneath most of the investigation area, except beneath the central and western portion of former Building 41, where the flow is interpreted to be toward the east-southeast, and beneath a large portion of the old railroad spur area, where flow is interpreted to flow toward the east. The area west to Building 224 has been included to show the relationship of ground-water flow from the Sites 02 and 03 area to the Site 16 area. As shown on Figure 3-12, deep zone ground water from the Building 224 area is interpreted to flow northeast, and not east toward Site 16.

**Upper Bedrock Ground-Water Zone**

Based upon the May 2001 water level data, ground-water flow in the upper bedrock (R) zone is interpreted to be from the southwestern portion of the Site toward the northeast from beneath former Building 41 (Figure 3-13). However, it is noted that this interpretation is biased by the locations of the data; i.e., the monitoring wells completed in this zone are generally located along a line oriented northeast-southwest. The area west to Building 224 has been included to show the relationship of ground-water flow from the Sites 02 and 03 area to the Site 16 area. As shown on Figure 3-13, a portion of the ground-water flow in the shallow bedrock zone from the Building 224 area appears to be toward Site 16.

### 3.7.5.3 Vertical Gradients

A summary of the vertical hydraulic gradients is provided in Table 3-2 for the various well clusters in the Site 16 investigation area. The following summarizes the vertical gradients calculated for the shallow (S) and deep (D) overburden ground-water zones.

- An upward gradient was calculated at well cluster MW16-01S/D and MW16-06S/D. A downward gradient was calculated at well clusters MW16-02S/D, MW16-03S/D, MW16-04S/D, and MW16-05S/D. A vertical gradient of zero was calculated at well MW16-01S/D during one water level measuring event. The calculated vertical gradients for MW16-07S/D were both positive and negative (Table 3-2).

The following summarizes the vertical gradients calculated for the deep (D) overburden and shallow bedrock (R) zones.

- Generally, an upward gradient was calculated at well clusters MW16-27D/R and MW16-15D/R. A downward gradient was calculated at well clusters MW16-02D/R, MW16-10D/R, MW16-25D/R, and MW16-28D/R.

### 3.7.5.4 Hydraulic Testing

Slug tests were performed in 3 of the shallow (S) monitoring wells and in the 29 deep (D) monitoring wells screened in various soil units. The data were used to calculate estimated hydraulic conductivity for the material screened by each well. After submittal of the draft version of this RI report, an error was found in the spreadsheet previously used to calculate estimated hydraulic conductivity. For consistency with calculations being done with the Phase II investigation data, the AQTESOLV software was used to recalculate the Phase I RI slug test data. Table 3-3 summarizes the revised estimated hydraulic conductivity results along with the geologic unit(s) screened by each well. The estimated hydraulic conductivity for the shallow (S) monitoring wells ranged from approximately 10.9 to 38.3 ft/day. The estimated hydraulic conductivity for deep (D) monitoring wells screened in the till and weathered rock zone ranged from approximately 0.87 to 96.4 ft/day, except a single value of 319 ft/day for MW16-06D. The revised slug test data are provided in Appendix G.

Because of the wide range in these results for the monitoring wells completed in the shallow (S) and deep (D) overburden zones, an attempt was made to organized the data to correlate the estimated hydraulic conductivities with general soil types. The results for each monitoring well were placed in the soil category that appeared to be the most representative of the majority of its screened interval. However, no readily apparent correlation was found, probably because of the variability of the soil types within any one well screen interval.

### 3.7.5.5 Tidal Impacts on Water Level in Selected Monitoring Wells

A preliminary tidal study was performed on monitoring wells that are located in close proximity to the Allen Harbor shoreline to determine if the water level in these monitoring wells is effected by the tides (Figure 2-8). Water levels were recorded in the following 15 monitoring wells tested from 14 to 21 February 2001: MW16-03S/D, MW16-04S/D, MW16-05S/D, MW16-06S/D, MW16-07S/D, MW16-27D/R, MW16-28D/R, and MW16-29D. The water levels were recorded using *in situ* transducers and loggers. Graphs of the water levels recorded during an approximately 24-hr period for each of these wells are provided in Appendix K. Since the submittal of the draft version of this Phase I RI report, the vertical scale of these water level graphs was enlarged to show potential water level fluctuations down to approximately 0.01 ft. The revised graphs have been incorporated in Appendix K, replacing those provided with the draft report. Of the monitoring wells tested, only 7 of the wells located closest to the harbor shoreline were found to be influenced the most by the tides (MW16-03S/D, MW16-04S/D, MW16-05S/D and MW16-28R). In addition, MW16-06S/D and MW16-07S/D, located approximately 500 ft and 430 ft, respectively, from the shoreline, appeared to show a slight tidal influence. The recorded cyclic fluctuation in the ground-water levels ranged from 0.01 ft in MW16-07S to 1.37 ft in MW16-04D. The following summarizes the related results for each well:

| Well Designation | Approximate Distance from Harbor Shoreline (ft) | Maximum Recorded Ground-Water Level Fluctuation (ft) |
|---|---|---|
| MW16-04S | 50 | 0.76 |
| MW16-04D | 50 | 1.37 |
| MW16-28D | 90 | 0.00 |
| MW16-28R | 90 | 0.60 |
| MW16-05S | 105 | 0.30 |
| MW16-05D | 105 | 0.82 |
| MW16-03S | 140 | 0.26 |
| MW16-03D | 140 | 0.73 |
| MW16-27D | 200 | 0.00 |
| MW16-27R | 200 | 0.00 |
| MW16-29D | 310 | 0.00 |
| MW16-07S | 430 | 0.01 |
| MW16-07D | 430 | 0.03 |
| MW16-06S | 500 | 0.04 |
| MW16-06D | 500 | 0.02 |

The above data show the nearly inverse relationship between the distance of the well from the shoreline and the maximum water level fluctuation observed. The data suggest that the extent of main tidal influence on the ground water appears to be generally between 150 and 200 ft inland from the shoreline.

## 3.8 LAND AND RESOURCE USE

The historic land use of the site area has included the training of Naval Seabee (construction battalions) staff in the use of heavy construction from approximately the early 1940s to the mid-1970s, former warehouses, and some preservation activities.

Currently, the site ranges from undeveloped property with forest and grass cover to redeveloped buildings (for commercial use) to large paved areas used for parking new cars until they are delivered to dealers.

The RIDEM ground-water classification for the property is GB. GB designates ground water that is presumed to require treatment before it is consumed. Future environmental covenants for this parcel will provide a ground-water use restriction to prevent the installation of water supply wells within the property.

The Navy's Land-Use Control Implementation Plan (LUCIP) (EA 2002) describes the program that the Navy is utilizing to ensure and document compliance with the land-use controls and/or Deed Covenants placed by the Navy on transferred or planned-to-be-transferred Navy property, which includes Parcel 7 (planned to be transferred), within which the northern portion of Site 16 is located. In accordance with the LUCIP (EA 2002), Parcel 7 includes the following interim environmental land-use restrictions:

- No construction of buildings for residential use

  Water supply wells shall not be installed, nor shall ground water be utilized except for sampling or other remedial purposes.

Currently, LUCIP inspections of Parcel 7 are performed in conjunction with each Site 03 Interim Ground-Water Sampling Event, but no less frequently than annually, to document that there has been no variance from the environmental land-use restrictions stated above. Site 03 is located within the western portion Parcel 7. It is currently anticipated that after completion of the Records of Decision for the sites within Parcel 7, the LUCIP inspections of Parcel 7 would continue in accordance with the related Records of Decision.

The purpose of the interim environmental land-use restrictions is to ensure:

- That the entire parcel shall not be used for residential purposes as required for property under a Maritime Administration transfer

- That ground water for the entire parcel shall not be withdrawn or utilized except for sampling or other remedial purposes.

The initial annual LUCIP (Institutional Control) inspection of Parcel 7, which includes Site 16, occurred on 20 November 2001, followed by a second inspection on 13 December 2002 and a

third inspection on 9 February 2004. Based on these Institutional Control Inspections, there has been compliance with the interim institutional controls stated in the LUCIP (EA 2002) considered for this parcel. However, between the first and second inspection events, the Town of North Kingstown excavated and installed a forced main sewer line through the northern edge of Site 16 without prior notification to RIEDC. During a 14 March 2002 BCT meeting, the EPA representative notified the Navy that they had observed this excavation that day. The Navy then notified the RIEDC of the excavation activity by telephone and a letter requesting a meeting to discuss better coordination of any work being conducted at this parcel. The excavation was adjacent to two of the Navy's monitoring wells. However, these wells did not appear to be damaged and there were no apparent site-related health or safety concerns to the excavation workers. The meeting resulted in better communications between the related parties to preclude re-occurrence of such a situation.

# 4. NATURE AND EXTENT

## 4.1 INTRODUCTION

This chapter presents the analytical results of soil, sediment, seep, and ground-water samples collected during the May 2000 to March 2001 Phase I RI field activities. Section 4.2 provides information on potential source(s) for contamination at the site. Section 4.3 provides the results of a previous ground-water background study by the Navy. Information on the water source used during the field activities is provided in Section 4.4. Section 4.5 presents a summary of the quality control (QC) results. The analytical results of soil and sediment samples are presented in Section 4.6. The analytical results of the ground-water samples are presented in Section 4.7. Seep sample results are presented in Section 4.8. Section 4.9 provides a comparison of the soil and ground-water paired sample results and comparison of the seep and shallow ground-water sample results. The laboratory reports would have been provided as Appendix N; however, because of their size (numerous boxes), copies of these reports will be provided only as necessary under separate cover.

## 4.2 POTENTIAL SOURCE AREAS

As stated previously in Section 1.1.2, the Site 16 Phase I RI area includes the 6 EBS Review Items shown on Figure 1-2 and summarized below. In addition, based on the Phase I RI, there appears to have been a CVOC release(s) in the old railroad spur area located east and east-southeast from the former Building 41.

EBS Review Item 28 – formerly used by the Navy for the purpose of training construction equipment operators. Historically, the following two primary uses occurred at this site:

1. Creosote Dip Tank Area – Wood pilings were dipped into tanks containing creosote and staged in the area to dry before being loaded onto ships.

2. FFTA – Reportedly, structures were constructed, doused with flammable materials, set on fire, and extinguished as part of fire fighting training exercises during the late 1960s.

EBS Review Item 29 - Former Building 41 – This building was a preservation and packing shop, and a construction equipment and automotive parts storage building that was demolished and the area repaved during October 2002. Preservation and degreasing operations occurred at former Building 41. Based on past activities, it is likely that petroleum products and solvents were used and stored onsite. During the EBS, NFA was determined for this review item.

EBS Review Item 60 - Building E-107 Septic Tanks – This Review Item included a septic tank location within the Phase I RI area that was reportedly located at the southeast corner of Building E-107. A geophysical survey was conducted to locate that tank. However, excavation

and removal of the tank (actually two buried pontoons) was addressed under Review Item 28 and NFA was determined for this portion of Review Item 60.

EBS Review Item 81 - Former Building 41 Septic Tanks – Three separate steel pontoon tanks connected by pipes were located on the northern side of the former building. The tanks were adapted to act as a cesspool. The sludge was removed, and the tanks cleaned, backfilled, and capped by FWENC in April 1998. During the EBS, NFA was determined for this review item.

EBS Review Item 85 - Former UST Area – One UST was removed from along the western portion of the south side of Building E-107. During the EBS, NFA was determined for this review item.

EBS Review Item 86 - Building E-107 Floor Drains – Six floor drains were identified in Building 107. Two of the floor drains were under floor tile and are not accessible. Four of the floor drains were visible and accessible, and so were closed by FWENC. Trenching activity was conducted by FWENC east of the building. However, no connecting piping was found between these floor drains and an outfall pipe located at the near shoreline of Allen Harbor. Some subsurface investigation outside the building continued into the Phase I RI.

## 4.3 NCBC DAVISVILLE BACKGROUND FOR INORGANICS IN GROUND WATER

Background concentrations for inorganic analytes in ground water at the former NCBC Davisville property have been established by the Navy as a result of their Basewide Ground Water Inorganics Study (Stone and Webster 1996). The established inorganics background concentration values are provided in Table 4-1.

## 4.4 WATER SOURCE

RIEDC provides water to the former NCBC Davisville property from the Town of North Kingstown potable water supply system. During the May to June 2000 drilling activities, the water for drilling fluid and part of the decontamination process of drilling and reusable sampling equipment was obtained from a hydrant located in the parking lot at the end of Davisville Road, within approximately 300 ft northeast of its intersection with Allens Harbor Road. A sample of this water was collected on 14 June 2000 and analyzed for TCL VOC, TCL SVOC, pesticides, PCB, and PAH. Only a trace concentration of bromoform was detected (estimated 0.8 μg/L) with a detection limit of 5 μg/L. This detected trace concentration of VOC is not expected to have had adverse impact on soil and ground-water samples collected for chemical analyses.

During the December to January 2001 drilling activities, water was obtained from a hydrant located along Marine Road, within approximately 700 ft north of its intersection with Davisville Road. A sample of this water was collected on 10 January 2001 and analyzed for TCL VOC, TCL SVOC, pesticides, PCB, and PAH. None of these parameters were detected in the sample.

## 4.5 QUALITY CONTROL SUMMARY

The soil, sediment, seep, and low-flow method collected ground-water samples were validated in accordance with the Work Plan; i.e., EPA Region I Functional Guidelines. The resultant qualifiers were then added to the data as necessary. None of the data were rejected through the data validation process, and they are useable for this RI. Because of their size, the data validation reports will provided only as necessary and under separate cover as Appendix O.

Duplicate field samples were collected to assess field precision. Five soil samples were collected in duplicate during the monitoring well installation. The duplicate samples were collected from MW16-03D (46.5–48.5 ft bgs), MW16-07S (5–7 ft bgs), MW16-22D (59–61 ft bgs), SB16-21 (8–10 ft bgs), and SB16-27 (2–4 ft bgs). Acceptable field precision of less than 50 percent difference was observed for all the soil samples collected except for acetone in SB16-27 (2–4 ft bgs) with 25 µg/kg versus 7J µg/kg DUP detected, and acenaphthene in MW16-07S (5–7 ft bgs) with 310 J µg/kg versus non detect in the duplicate. The minor amount of unacceptable precision results are likely reflective of soil heterogeneity, because the samples collected for VOC analysis were not mixed prior to placing in individual sample containers, and even the mixing of the material for the SVOC aliquot was not sufficient to overcome the heterogeneity. This is not anticipated to negatively impact the overall usability of the data for this RI.

Five ground-water samples were collected in duplicate and analyzed as part of the March 2001 sampling event. The duplicate samples were collected from MW16-05D, MW16-07S, MW16-10D, MW16-15D, and MW16-25R. Acceptable field precision of less than 30 percent difference was observed for all these samples with the exception of MW16-07S and MW16-25R. Analytes with precision of more than 30 percent difference are shown below:

| Analyte | MW16-07S | Percent Difference | MW16-25R | Percent Difference |
|---|---|---|---|---|
| Trichloroethylene | 0.6/1 DUP | 40% | NA | NA |
| Bis(2-ethylhexyl)phthalate | <10 UJ/18 J DUP | 28%* | NA | NA |
| Phenanthrene | NA | NA | 5/9 DUP | 45% |
| Fluoranthene | 0.5 J/1 J DUP | 50% | 5/2 DUP | 60% |
| Lead | NA | NA | 3 J/99.5 J DUP | 302% |
| Zinc | NA | NA | 13.6 J/59.1 J DUP | 77% |

NOTE: NA = Not applicable.
* = Non-detects are defined as one half the reporting limit for percentage measurements.
J = Estimated.
UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

This is not anticipated to negatively impact the overall usability of the data for this RI.

One sediment sample and one seep sample were collected in duplicate and analyzed as part of the April 2001 monitoring event. The duplicate sediment sample collected from SED16-01 shows acceptable field precision of less than 50 percent difference for all samples with the exception of acetone (84 J µg/kg versus 30 J µg/kg DUP), carbon disulfide (5 J µg/kg versus 50 J µg/kg

DUP), bis(2-chloroethylhexyl)phthalate (430 µg/kg versus 210 µg/kg DUP), anthracene (450 µg/kg versus 210 µg/kg DUP), benzo(a)anthracene (960 µg/kg versus 120 J µg/kg L DUP), benzo(a)pyrene (370 µg/kg versus 66 µg/kg DUP), benzo(k)fluoranthene (310 µg/kg versus 42 µg/L DUP), benzo [g,h,I]perylene (230 µg/kg versus 56 µg/kg DUP), chrysene (2,000 J µg/kg versus 170 J µg/kg DUP), fluoranthene (9,800 J µg/kg versus 1,900 J µg/kg DUP), and indeno(1,2,3-cd)pyrene (270 µg/kg versus 51 µg/kg DUP). The duplicate seep sample collected from SEEP16-01 shows acceptable field precision of less than 30 percent difference with the exception of naphthalene (6J µg/L versus 2 µg/L DUP). It is believed that this variability in the results and sample variability are due to the relatively small areas sampled and the time limit for sample collection in this tidally influenced portion of the harbor shoreline.

Additional QC samples included two field rinsate blank and two trip blanks. There were no detectable VOC reported in the trip blanks. The rinsate blanks from the January 2001 soil sampling activity were analyzed for the same analytical program as for the soil samples; none of the parameters were detected. This indicated that there were no apparent adverse impacts during the sample shipment or from the reused soil sampling equipment.

With regard for completeness, ground-water samples were collected from all of the Phase I RI monitoring wells and analyzed as planned (except the VOC aliquot from MW16-24D), and all planned soil and sediment samples were collected and analyzed as planned for a greater than 99.9 percent completeness rating. The VOC aliquot from MW16-24D was overlooked; however, the lack of these results does not significantly impact assessment of the VOC nature and extent because Phase I RI VOC results are available for samples from 4 wells located within a radius of approximate 200 ft. The 2 seep and 1 outfall pipe water samples were collected and analyzed as planned, except that the SEEP16-02 sample volume was of insufficient volume to include the TCL SVOC portion of the analytical program. This was due to 2 physical limitations of nature at SEEP16-02: (1) the low flow rate of the seep; and (2) the sampling time limitation due to incoming tide at this harbor shoreline location. This results in a completeness rating of 92 percent versus a plan of 100 percent for the 2 seeps. There is sufficient data to assess the seeps, but the lack of SVOC results for SEEP16-02 will be noted in the related section of Chapter 4. It should be noted that the SEEP16-02 sample was analyzed for PAH (a subset of SVOC) which helps to limit the loss from the lack of the related SVOC data. Because samples were collected from all of the planned ground-water, soil, sediment, and seep sample locations, the planned level of representativeness of the data for the RI has been achieved, except for previously stated lack of VOC results for MW16-24D and SVOC results for SEEP16-02.

## 4.6 SOIL AND SEDIMENT RESULTS

### 4.6.1 Soil

During the Phase I RI drilling activity, 42 soil samples (including 5 duplicates) were collected from soil borings and submitted to CEIMIC Corporation for TCL VOC, TCL SVOC, PAH, pesticides/PCB, and TAL metals analysis, plus 18 (including 2 duplicates) of these samples were

analyzed for dioxin. For samples collected from monitoring well locations, the sampled intervals were from within the selected interval for placement of a well screen. Dioxin was added to the analytical program for 8 pairs of soil samples to specifically assess the potential presence of dioxin in the soil that may have resulted from the suspected historical use of part of the EBS Review Item 28 portion of the Site for fire fighting training. Section 1.1.2 includes a summary of this suspected activity, and the reported area of the activity is shown on Figure 1-2. The 16 soil samples were collected from soil borings SB16-21 through SB16-28 at the following 2 depth intervals: (1) 0–2 ft bgs; and (2) the 2-ft interval located just above the apparent ground-water table.

#### 4.6.1.1 Volatile Organic Compounds

Validated results for VOC detected in the soil samples are summarized in Table 4-2 and are shown in Figure 4-1. The related RIDEM RDEC and I/C DEC are also listed in Table 4-2. The RIDEM RDEC are the more stringent of the two. VOC detected above analytical detection limits included:

| Analyte | Range of Detected Concentrations (in µg/kg) | Number of Samples Analyte Detected | Number of Samples Analyte Not Detected |
|---|---|---|---|
| Acetone | 5 J (MW16-22D, 59–61 ft bgs) to 56 J (SB16-21, 0–2 ft bgs) | 20 | 22 |
| Trichloroethylene | 6 (MW16-01D, 48–50 ft and MW16-02S, 10–12 ft bgs) to 5,400 (MW16-14D, 57.5–59.5 ft bgs) | 12 | 30 |
| 2-Butanone | 7 J(MW16-04S, 3–5 ft bgs) to 12 (SB 16-27, 0–2 and 2–4 ft bgs) | 6 | 36 |
| Benzene | 8 J (SB16-23, 3–5 ft bgs) and 34 J (SB16-28, 4–6 ft bgs) | 2 | 40 |
| Methylene chloride | 3 J(SB16-26, 2–4 ft bgs and SB16-29, 20–22 ft bgs) to 230 J (MW16-07S, 5-7 ft bgs) | 9 | 33 |
| Carbon disulfide | 4 (SB16-25, 7–9 ft bgs) and 11 (SB16-24, 7–9 ft bgs) | 2 | 40 |
| Ethylbenzene | 350 (SB16-28, 4–6 ft bgs) | 1 | 41 |
| m,p-Xylenes | 620 (SB16-28, 4–6 ft bgs) | 1 | 41 |
| o-Xylene | 290 (SB16-28, 4–6 ft bgs) | | |
| Toluene | 170 (SB16-28, 4–6 ft bgs) | | |

NOTE: bgs = Below ground surface.
µg/kg = Micrograms per kilogram.

Acetone was detected in nearly all of these samples. Because acetone is highly soluble in water, it would be expected to be detected in ground-water samples when collected from the same interval. However, acetone was only detected in one co-located ground-water sample (MW16-07D at only 0.8 J µg/L). The detected acetone in soil samples is believed to be from one or both of the following sources: (1) the laboratory, because it was detected in some method blanks; and/or (2) as a breakdown product of isopropanol that was used in part of the decontamination process for the soil sampling device.

Except for 2 samples (MW16-02S, 6 µg/kg at 10–12 ft bgs; and SB16 29, 55 µg/kg at 20–22 ft bgs), TCE was detected only in samples collected from at least 48 ft bgs; i.e., the deep groundwater zone. Petroleum-type hydrocarbons were detected in the samples collected from SB16-28, located adjacent to the MW16-07S/D, and where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07) at this general location. Based on these Phase I RI data, VOC was not detected above the related RIDEM RDEC (Figure 4-2).

#### 4.6.1.2 Semivolatile Organic Compounds

Validated results for SVOC are summarized in Table 4-3 and are shown in Figure 4-3. The related RIDEM RDEC and I/C DEC are also listed in Table 4-3. The RIDEM RDEC are the more stringent of the two. SVOC detected above analytical detection limits included:

| Analyte | Range of Detected Concentrations (in µg/kg) | Number of Samples Analyte Detected | Number of Samples Analyte Not Detected |
|---|---|---|---|
| 2-Methylnapthalene | 5,700 (MW16-07S, 5–7 ft bgs) to 8,100 (MW16-07S DUP, 5–7 ft bgs) | 2 | 40 |
| bis(2-Ethylhexyl) phthalate | 560 (MW16-07S) | 1 | 41 |
| Carbozole | 260 J (SB16-21 DUP, 0–2 ft bgs) to 560 (SB16-21, 0–2 ft bgs) | 2 | 40 |

NOTE: bgs = Below ground surface.
µg/kg = Micrograms per kilogram.
J = Estimated.

The SVOC were detected in only the following 2 locations: (1) MW16-07S/D, where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07) at this general location; and (2) SB16-21, located near the location of a former creosote dip tank. Based on these Phase I RI data, there were no detected concentrations of SVOC that exceeded the related RIDEM RDEC as shown on Figure 4-4.

#### 4.6.1.3 Polycyclic Aromatic Hydrocarbons

Validated results for SVOC are summarized in Table 4-4 and are shown in Figure 4-5. The related RIDEM RDEC and I/C DEC are also listed in Table 4-5. The RIDEM RDEC are the more stringent of the two. PAH detected above analytical detection limits included:

| Analyte | Range of Detected Concentrations (in µg/kg) | Number of Samples Analyte Detected | Number of Samples Analyte Not Detected |
|---|---|---|---|
| Acenapthene | 14 (SB16-28, 0–2 ft bgs) to 5,300 (SB16-28, 4–6 ft bgs) | 5 | 37 |
| Acenapthylene | 12 (SB16-26, 0–2 ft bgs) to 440 (SB16-21, 0–2 ft bgs) | 5 | 37 |

| Analyte | Range of Detected Concentrations (in µg/kg) | Number of Samples Analyte Detected | Number of Samples Analyte Not Detected |
|---|---|---|---|
| Anthracene | 6 (SB16-26, 0–2 ft bgs) to 1,300 (MW16-07S, 5–7 ft bgs) | 11 | 31 |
| Benzo(a)anthracene | 25 (SB16-22, 0–2 ft bgs) to 4,800 (SB16-21, 0–2 ft bgs) | 18 | 24 |
| Benzo(a)pyrene | 19 (SB16-25, 7–9 ft bgs) to 2,700 (SB16-21 DUP, 8–10 ft bgs) | 18 | 24 |
| Benzo(b)fluoranthene | 5 J (SB16-29, 20–22 ft bgs) to 7,400 (SB16-21, 0–2, 8–10 DUP ft bgs) | 19 | 23 |
| Benzo(k)fluoranthene | 14 (SB16-24, 0–2 ft bgs) to 2,300 (SB16-21 DUP, 8–10 ft bgs) | 14 | 28 |
| Benzo[g,h,i]perylene | 13 (SB16-21, 8–10 ft bgs, SB16-22, 0-2 ft bgs) to 1,200 (SB16-21 DUP, 8–10 ft bgs) | 17 | 25 |
| Chrysene | 6 J (SB16-29, 20–22 ft bgs) to 5,300 (SB16-22 DUP, 8–10 ft bgs) | 19 | 23 |
| Dibenzo(a,h)anthracene | 10 (MW16-04S, 3–5 ft bgs) to 400 (SB16-21, 0–2 ft bgs) | 8 | 34 |
| Fluoranthene | 4 (SB16-29, 32–34 ft bgs) to 7,900 (SB16-21 DUP, 8–10 ft bgs) | 20 | 22 |
| Fluorene | 7 (SB16-26, 2–4 ft bgs) to 710 J (MW16-07S DUP, 5–7 ft bgs) | 6 | 36 |
| Indeno(1,2,3-cd)pyrene | 22 (SB16-22, 0–2 ft bgs, SB16-25(J), 7–9 ft bgs) to 2,100 (SB16-21, 0–2 ft bgs) | 18 | 24 |
| Naphthalene | 6 (SB16-26, 2–4 ft bgs) to 12,000 (SB16-28, 4–6 ft bgs) | 7 | 35 |
| Phenanthrene | 6 (SB16-29, 32–34 ft bgs) to 13,000 J (SB16-28, 4–6 ft bgs) | 17 | 25 |
| Pyrene | 5 J (SB16-29, 20–22 ft bgs) to 6,600 (SB16-21 DUP, 8–10 ft bgs) | 19 | 23 |

NOTE: bgs = Below ground surface.
ND = Not detected.
µg/kg = Micrograms per kilogram.

Numerous PAH were detected in samples down to 10 ft bgs from the expected general area of the former creosote dip tank area, FFTA, and northeast toward the harbor (Figure 4-5). Traces of 6 PAH were also detected in the 20- to 22-ft bgs sample from SB16-29, located in an area of old railroad spurs. Detected concentrations of PAH in the Phase I RI samples that exceeded the related RIDEM RDEC and I/C DEC are shown on Figures 4-6 and 4-7. The detected exceedance of the RDEC occurs at 3 locations (SB16-21, -26, and -28) in the north central portion of the site, which includes the former creosote dip tank area (SB16-21) and the area (SB16-28) where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07).

#### 4.6.1.4 Pesticides and Polychlorinated Biphenyls

Validated results for pesticides and PCBs are summarized in Table 4-5. The related RIDEM RDEC and I/C DEC are also listed in Table 4-5. The RIDEM RDEC are the more stringent of the two. The results for pesticides are shown in Figures 4-8. Based on these Phase I RI data, there were no detected concentrations of pesticides that exceeded the related RIDEM RDEC as shown on Figure 4-9. The results for PCB are shown on Figure 4-10. Based on these Phase I RI

data, there were no detected concentrations of PCB that exceeded the related RIDEM RDEC as shown on Figure 4-11. Pesticides and PCB detected above analytical detection limits included:

| Analyte | Range of Detected Concentrations (in µg/kg) | Number of Samples Analyte Detected | Number of Samples Analyte Not Detected |
|---|---|---|---|
| 4,4'-DDD | 4.1 J (SB16-27 DUP, 2–4 ft bgs, but ND in SB16-27, 2–4 ft bgs) | 1 | 41 |
| 4,4'-DDT | 3.7 (SB16-26, 0–2 ft bgs, 2–4 ft bgs) | 2 | 40 |
| Alpha BHC | 2.4 J (SB16-28, 0–2 ft bgs) | 1 | 41 |
| Endrin aldehyde | 4.7 (SB16-23, 3–5 ft bgs) | 1 | 41 |
| *Gamma*-chlordane | 2.9 J (SB16-21, 0–2 ft bgs, but ND in duplicate sample) to 8.9 J (SB16-28, 4–6 ft bgs) | 2 | 40 |
| PCB-1260 | 19 (SB16-21 DUP, 0–2 ft bgs) | 1 | 41 |

NOTE: bgs = Below ground surface.
ND = Not detected.
J = Estimated.
µg/kg = Micrograms per kilogram.

### 4.6.1.5 Metals

Validated results for TAL inorganics are summarized in Table 4-6. Various metals were detected in all of these samples. Detected concentrations of metals in the Phase I RI samples that exceeded the related RIDEM RDEC and I/C DEC are shown on Figures 4-12 and 4-13, respectively. Only lead was detected above industrial/commercial action level of 500 mg/kg. Lead was detected at a concentration of 2,650 mg/kg in sample SB16-28-4-6, located in the area where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07). Inorganics were detected above residential action levels in a number of samples as follows:

| Analyte | Range of Detected Concentrations At or Above RIDEM Residential Action Levels (mg/kg) | Number of Samples Analyte Detected in Exceedance | Number of Samples Analyte Not Detected in Exceedance |
|---|---|---|---|
| Arsenic | 1.7 (MW16-07 DUP, 5–7 ft bgs) to 10.6 (SB16-28, 4–6 ft bgs) | 25 | 17 |
| Beryllium | 0.4 (SB16-25, 0–2 ft bgs) to 0.71 (SB16-22, 6–8 ft bgs and MW16-06D, 40–42 ft bgs) | 30 | 41 |
| Lead | 288 (SB16-23, 3–5 ft bgs) to 2,650 (SB16-28, 4–6 ft bgs) | 2 | 40 |
| Manganese | 587 J (SB16-28, 4–6 ft bgs) | 1 | 41 |

NOTE: bgs = Below ground surface.
mg/kg = Milligrams per kilogram.
J = Estimated.

### 4.6.1.6 Dioxin

Dioxin was added to the analytical program for 8 pairs of soil samples to specifically assess the potential presence of dioxin in the soil that may have resulted from the reported historical use of

the EBS Review Item 28 portion of the site for fire fighting training. Section 1.1.2 includes a summary of this suspected activity, and the reported area of the activity is shown on Figure 1-2. The 16 soil samples were collected from soil borings SB16-21 through SB16-28 at 2 depth intervals: (1) 0–2 ft bgs; and (2) the 2-ft interval located just above the apparent ground-water table. Validated results for dioxin are summarized in Table 4-7.

As a brief introduction for dioxin, the term dioxin refers to a series of chemically similar compounds called polychlorinated dibenzo-p-dioxins (PCDD) and dibenzofurans (PCDF). There are two main sources for PCDD and PCDF in the environment. First, dioxin is formed and released during incomplete combustion, such as during former fire fighting training that is suspected to have occurred at the site, as stated previously. The second main source of dioxin in many geographical areas involves the production and use of chlorophenols, either purposefully or inadvertently, for example in the production of the herbicides 2,4-D and 2,4,5-T.

The dioxin exposure concentration was approximated for all PCDD and PCDF isomers using toxic equivalency factors (TEFs) defined by the World Health Organization (WHO). The TEF is used to modify the relative potency of a PCDD and PCDF isomer to the equivalent for 2,3,7,8-TCDD to calculate the toxic equivalent concentration (TEQ). The TEQ is what was used as the exposure estimate. The TEQ is defined by:

$$TEQ = ([PCDD_i \times TEF_i]_n) + ([PCDF_i \times TEF_i]_n)$$

WHO TEF values for the isomers are:

| Dioxin Isomer | TEF |
|---|---|
| 2,3,7,8-TCDD | 1.0 |
| 1,2,3,7,8-PeCDD | 1.0 |
| 1,2,3,4,7,8-HxCDD | 0.1 |
| 1,2,3,6,7,8-HxCDD | 0.1 |
| 1,2,3,7,8,9-HxCDD | 0.1 |
| 1,2,3,4,6,7,8-HpCDD | 0.01 |
| 1,2,3,4,6,7,8,9-OCDD | 0.0001 |
| 1,2,3,7,8-PeCDF | 0.05 |
| 2,3,4,7,8-PeCDF | 0.5 |
| 1,2,3,4,7,8-HxCDF | 0.1 |
| 1,2,3,6,7,8-HxCDF | 0.1 |
| 2,3,4,6,7,8-HxCDF | 0.1 |
| 1,2,3,7,8,9-HxCDF | 0.1 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 |
| 1,2,3,4,7,8,9-HpCDF | 0.01 |
| 1,2,3,4,6,7,8,9-OCDF | 0.0001 |

Traces of dioxin were detected in each of the 18 soil samples (Table 4-7). The dioxin TEQ are shown in Figure 4-14 in parts per trillion (pptr). The highest TEQ were for the samples SB16-23 (3-5 ft bgs) at 302.55 pptr and SB16-28 (4-6 ft bgs) at 496.88 pptr. These samples were collected

from the FFTA and the area where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07). The TEQs for the remainder of these samples were less than 46 pptr.

### 4.6.2 Sediment

During the March 2001 sampling event, 4 sediment samples (including 1 duplicate) were collected from the 2 seep locations (SED16-01 and SED16-02) and from beneath an outfall pipe (OPSED16-01) located near the southeast corner of the Allen Harbor shoreline. The outfall pipe is the discharge point of a storm drainage system that drains a portion of a non-Navy paved parking lot located just east of Allens Harbor Road (Figure 2-8). These samples were submitted to Ceimic Corporation for TCL VOC, TCL SVOC, PAH, Pesticides/PCB, and TAL metals analysis. The validated results are summarized in Tables 4-8 through 4-13.

During the comment and review period for the draft version of this document, it was agreed that RIDEM GA Leachability Criteria would be used for evaluation of sediment. The Navy's responses to EPA's and RIDEM's comments to the draft document are provided in Appendix S.

#### 4.6.2.1 Volatile Organic Compounds

Validated results for VOC are summarized in Table 4-8 and shown in Figure 4-15. Acetone and carbon disulfide were the only VOC detected, and the detected concentrations did not exceed the related RIDEM GA Leachability Criteria.

#### 4.6.2.2 Semivolatile Organic Compounds

Validated results for SVOC are summarized in Table 4-9 and shown in Figure 4-16. Bis(2-ethylhexyl) phthalate, di-n-octylphthalate, and dibenzofuran were the only SVOC detected in these 4 sediment samples, and the detected concentrations did not exceed the related RIDEM GA Leachability Criteria. Bis(2-ethylhexyl) phthalate was detected in each of these samples, di-n-octylphthalate was detected in one sample (OPSED16-01), and dibenzofuran was detected in the SED16-01 sample and the duplicate. Bis(2-ethylhexyl) phthalate was detected in only one of the 42 soil samples (MW16-07S, 5–7 ft bgs, located over 400 ft southwest of the harbor shoreline) and was not detected in the ground-water samples collected from the nearest monitoring wells (MW16-03S/D, -04S/D, -05S/D, and -29D; Section 4.7.2). Dibenzofuran was not detected in the Phase I RI soil or ground-water samples, but was detected during a previous EBS study in ground-water samples collected via push probes.

#### 4.6.2.3 Polycyclic Aromatic Hydrocarbons

Validated results for PAH are summarized in Table 4-10 and shown in Figure 4-17. Several PAH were detected in each of these samples (Figure 4-17). However, none of the detected PAH in sediment samples exceeded the PAL.

#### 4.6.2.4 Pesticides

Validated results for pesticides are summarized in Table 4-11 and shown in Figure 4-18. Although several pesticides were detected in the 4 sediment samples, none were detected at concentrations that exceeded the related RIDEM GA Leachability Criteria.

#### 4.6.2.5 Polychlorinated Biphenyls

Validated results for PCB are summarized in Table 4-12 and shown in Figure 4-18. PCB-1260 was the only PCB aroclor detected (SED16-01 and SED16-01 DUP), at a concentration of 36 µg/kg, which is below the related RIDEM GA Leachability Criteria of 10,000 µg/kg.

#### 4.6.2.6 TAL Metals

Validated results for TAL metals are summarized in Table 4-13. Several metals were detected in each of the 4 sediment samples as shown in Table 4-13. RIDEM GA Leachability Criteria only applies to Toxicity Characteristic Leaching Procedure (TCLP)/Synthetic Precipitation Leachate Procedure (SPLP) metals analysis. The agreement to use RIDEM GA Leachability Criteria was established in January 2002, long after sediment samples had been collected and analyzed. For assessment of ground water in the vicinity of these sediment samples, see ground-water results in Section 4.7.

## 4.7 GROUND-WATER RESULTS

This section presents the results of the ground-water samples collected in March 2001 from the 42 Phase I RI monitoring wells (shallow [S], deep [D], and rock [R] zones) and analyzed for TCL VOC, SVOC, PAH, and pesticides, and TAL metals. The samples were collected in accordance with the Work Plan (EA 2000a) using the low-flow method with dedicated in-well bladder-type sampling pumps. The following sections present the findings for each of the 3 ground-water zones within each of these analytical categories. As stated previously, ground water beneath Site 16 has been classified by RIDEM as GB. However, because one of the conservative hypothetical HHRA exposure pathways is residential ingestion of ground water (Appendix R), the more stringent RIDEM GA ground-water standard is used for comparison of the Phase I RI ground-water sample results. Therefore, the related RIDEM GA ground-water standards are also included in the tables that summarize the ground-water sample results.

### 4.7.1 Volatile Organic Compounds

This section presents the results of ground-water samples collected for TCL VOC analysis. No light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL) layer was measured in the monitoring wells during the Phase I RI fieldwork. Additionally, based on the Phase I RI data, none of the detected VOC concentrations approach or exceed 1 percent of their solubility concentration, indicating that residual LNAPL or DNAPL as a coating on soil particles or as ganglia between soil particles or in bedrock fractures is not present. A summary of the

validated results of the VOC detected in the ground-water samples collected in March 2001 are included in Table 4-14.

#### 4.7.1.1 Shallow (S) Overburden Ground-Water Zone

The validated TCL VOC and total CVOC results for the Phase I RI shallow overburden ground-water zone samples are shown on Figures 4-19 and 4-20, respectively. The vertical distribution of TCE and total CVOC are illustrated in Figures 4-21 through 4-27. The lateral distribution of the main CVOC detected (TCE) is shown in Figure 4-28. Several TCL VOC were detected in the samples collected from 5 of the 7 shallow wells, but each only at concentrations of 6 µg/L or less, and none exceeded the related RIDEM GA ground-water standards (Figure 4-29). (Exceedance of related RIDEM GA ground-water standards for VOC identified for the shallow [none identified], deep, and upper bedrock ground-water zones have all been included on Figure 4-29). As shown in Figure 4-19, traces of petroleum VOC were detected only in the samples collected from MW16-07S and MW16-04S, representing the area where a fuel oil-like odor was noted during the MIP screening activity (MIP16-07) and the area downgradient of the suspected FFTA, respectively. Detected CVOC concentrations range from approximately 1 to 2 µg/L (Figure 4-20), all below the related RIDEM GA ground-water standards. No near surface CVOC 'hot spot' (high concentration) was detected in these ground-water samples, suggesting that locations of historical surface releases have been considerably weathered and/or diluted by infiltrating precipitation over the years, making it difficult to identify specific release locations at ground surface.

#### 4.7.1.2 Deep (D) Overburden Ground-Water Zone

The validated TCL VOC and total CVOC results for the Phase I RI deep overburden ground-water zone samples are summarized in Table 4-14 and shown on Figures 4-30 and 4-31, respectively. The vertical distribution TCE and total CVOC are illustrated in Figures 4-21 through 4-27. The lateral distribution of the main CVOC detected (TCE) is shown in Figure 4-32. The VOC aliquot of the sample collected from MW16-24D was inadvertently not analyzed. Therefore, there are VOC results for only 28 of the 29 monitoring wells screened in the deep ground-water zone. Several TCL VOC were detected in the samples collected from 25 of 28 deep wells. However, based on the detected concentrations of the individual VOC, TCE is the predominant compound. VOC, all TCE, exceeding the related RIDEM GA ground-water standard (5 µg/L) are shown on Figure 4-29.

In general, Figures 4-31, 4-32, and 2-6 show that the highest total CVOC and TCE concentrations were detected in the samples collected from MW16-14D and MW16-15D, both located near the northeast corner of former Building 41, and at MIP16-24, located in the southeast corner of the Stage I area. West and south from these general locations, the detected concentrations decrease substantially to 21 µg/L total CVOC (MW16-12D), 0.4 µg/L total CVOC (MW16-11D), 0.3 µg/L total CVOC (MW16-13D), and 'not detected' (MW16-17D). As shown on Figures 4-31 and 4-32, the data indicate that the main detected total CVOC

(predominantly TCE) plume (greater than 500 µg/L) extends from beneath the northeast end of former Building 41 northeast to at least MW16-05D. The total CVOC and TCE concentrations detected in the sample from MW16-05D have decreased to only about 35 percent of that detected in the samples from MW16-15D. The distribution of this plume area coincides well with the interpreted valley in the bedrock surface that extends northeast from former Building 41 (developed from the seismic refraction profiling, shown in Figure 2-2) and with the MIP ECD screening responses (Figure 2-4), indicating the value of these two preliminary site assessment (screening) field methods. Additionally, this plume coincides well with a multiple-release-event source area beneath some portion of former Building 41, plus release(s) from the central portion of the Stage I area, that has migrated downward into the gravelly sand deposits above competent bedrock, and then laterally through those deposits with the direction of ground-water flow interpreted from Figure 3-11. Figures 4-21 through 4-27 illustrate well in cross sectional view the currently understood extent of this plume.

Table 4-15 provides a summary of the detected concentrations of TCE and total CVOC detected in each sample, plus the percentage of the TCE comprising the total CVOC concentration. This table shows that TCE comprises over 98 percent of the total CVOC detected in each related sample, and that this percentage does not show a decreasing trend with distance along the deep CVOC plume northeast from beneath former Building 41, but rather remains relatively similar; i.e., the concentration of degradation compounds is not increasing. Assuming that the TCE release occurred during the 1951-53 degreasing activity in former Building 41 (Section 1.1.2, beginning on Page 4 of Chapter 1) (i.e., nearly 50 years ago), this data indicates that natural biodegradation of the TCE has not been occurring at a useful rate for remediation.

The Phase I RI data illustrated on Figures 4-31 and 4-32 indicate that the western and northwestern (MW16-01D, -03D, -06D, and -26D), southwestern (MW16-09D, -10D, -11D, and -13D), southern (MW16-17D and MW16-18D), and part of the eastern (MW16-20D) extent of the monitoring well network appear to be at or beyond the fringe of the CVOC plume in the deep ground water. Total CVOC concentrations greater than 100 µg/L were detected in ground-water samples collected from monitoring wells MW16-27D and MW16-28D (northeastern edge of the Phase I RI area), MW16-05D and MW16-04D (northern edge of the Phase I RI area), and MW16-19D (part of the eastern edge of the Phase I RI area). These deep ground-water samples indicate that the edge of the plume extends beyond these wells.

#### 4.7.1.3 Upper Bedrock (R) Ground-Water Zone

The validated TCL VOC and total CVOC results for the Phase I RI upper bedrock ground-water zone samples are summarized in Table 4-14 and shown on Figures 4-33 and 4-34, respectively. These 6 wells were completed within the upper 25–30 ft of competent bedrock. The vertical distribution TCE and total CVOC are illustrated in Figures 4-21 through 4-27. The lateral distribution of the main CVOC detected (TCE) is shown in Figure 4-35. VOC were detected in the samples collected from all of these 6 wells (Figure 4-33). CVOC were detected in the samples collected from 5 of these 6 wells (Figure 4-34). However, based on the detected concentrations of the individual VOC, TCE is the predominant compound. VOC (TCE and

*cis*-1,2-dichloroethene) exceeding the related RIDEM GA ground-water standard (5 µg/L and 70 µg/L, respectively) are shown on Figure 4-29.

In general, Figures 4-34 and 4-35 show that the highest total CVOC and TCE concentrations were detected in the sample collected from MW16-15R (northeast end of former Building 41), followed by the sample collected from MW16-02R. These 2 samples are constructed deeper than the related deep (D) wells, MW16-15D and MW16-02D, and are located directly beneath the CVOC (predominantly TCE) plume described for the overlying deep ground-water zone (Section 4.7.1.2). These results indicate that the plume has migrated vertically downward from the deep ground-water zone through fractures into at least the upper 25–30 ft of competent bedrock and is at concentrations similar to that detected in the overlying deep zone (Figure 4-25).

Southeast and west from MW16-15R, the total CVOC concentrations decrease to less than 1 µg/L (MW16-10R and MW16-25R). To the northeast beyond MW16-02R, detected total CVOC concentrations decrease substantially to 2 µg/L (MW16-27R) and 0.9 µg/L (MW16-28R). However, these 2 wells may be located east of a northeast trending fracture zone along which there may be preferential migration of the CVOC, perhaps beneath MW16-05D. The western and northern extent of this plume in the upper bedrock zone are not known. However, they are probably very similar to the overlying portion of the plume in the deep ground-water zone, extending northeast from a source area beneath former Building 41 through fractures with the general northeast direction of ground-water flow (Figure 3-13).

### 4.7.2 Semivolatile Organic Compounds

The EBS Review Item 28 portion of Site 16 (Figure 1-2) was historically used for creosote dipping of wood for preservation and included a suspected former use for fire fighting training. No LNAPL was measured in the monitoring wells sampled during Phase I RI fieldwork. The following section presents the results of ground-water samples collected for TCL SVOC analysis. The validated results are summarized in Table 4-16. Overall, as stated in the following subsections, bis(2-ethylhexyl) phthalate was the only TCL SVOC detected at concentrations exceeding the related RIDEM GA ground-water standard, and only in samples from 3 wells.

#### 4.7.2.1 Shallow (S) Overburden Ground-Water Zone

The validated TCL SVOC results for the Phase I RI shallow overburden ground-water zone samples are shown on Figure 4-36. A trace concentration of only the SVOC, bis(2-ethylhexyl) phthalate, was detected in the sample from only 1 of 7 shallow monitoring wells sampled in March 2001 (18 J µg/L in MW16-07S DUP). As shown on Figure 4-37, the detected concentration of 18 J µg/L exceeded the RIDEM GA ground-water standard of 5 µg/L for bis(2-ethylhexyl) phthalate.

#### 4.7.2.2 Deep (D) Overburden Ground-Water Zone

The validated TCL SVOC results for the Phase I RI deep overburden ground-water zone samples are shown on Figure 4-38. Trace concentrations of only 3 SVOC (bis[2-ethylhexyl]phthalate, di-n-butyl phthalate, and 1,4-dichlorobenzene) were detected in the samples from only 6 of the 29 deep ground-water zone monitoring wells sampled in March 2001. These 6 wells are located across Site 16 and the source for these detected traces of SVOC is not apparent. Only the detected concentrations of bis(2-ethylhexyl) phthalate at 7 µg/L (MW16-06D) and 10 µg/L (MW16-26D) exceeded the related RIDEM GA ground-water standard of 5 µg/L as shown on Figure 4-37. Both of these wells are located in the western portion of the Phase I RI area.

#### 4.7.2.3 Upper Bedrock (R) Ground-Water Zone

TCL SVOC were not detected in the 7 samples collected from the 6 bedrock monitoring wells locations sampled during the March 2001 event (Table 4-16 and Figure 4-39).

### 4.7.3 Polycyclic Aromatic Hydrocarbons

The EBS Review Item 28 portion of Site 16 (Figure 1-2) was historically used for creosote dipping of wood for preservation and included a suspected former use for fire fighting training. No LNAPL was measured in the monitoring wells sampled during Phase I RI fieldwork. The following section presents the results of ground-water samples collected for TCL PAH analysis. The validated results are summarized in Table 4-17.

#### 4.7.3.1 Shallow (S) Overburden Ground-Water Zone

The validated PAH results for the Phase I RI shallow overburden ground-water zone samples are shown on Figure 4-40. Trace concentrations of PAH were detected in the samples from only 2 of 7 shallow monitoring wells sampled in March 2001 (MW16-04S and MW16-07S). As shown in Figure 4-40, 5 PAH were detected at concentrations between 0.1 µg/L and 1.0 µg/L. None of the detected concentrations of these PAH exceeded the related RIDEM GA ground-water standard.

#### 4.7.3.2 Deep (D) Overburden Ground-Water Zone

The validated PAH results for the Phase I RI deep overburden ground-water zone samples are shown on Figure 4-41. Traces of only one PAH (naphthalene) were detected in only 2 of the 32 samples collected from the deep ground-water zone at concentrations of 0.2 J µg/L (MW16-09D) and 0.1 µg/L (MW16-11D). These wells are located approximately 15–80 ft north and west (upgradient) of former Building 41. These detected concentrations do not exceed the related RIDEM GA ground-water standard of 20 µg/L.

#### 4.7.3.3 Upper Bedrock (R) Ground-Water Zone

The validated PAH results for the Phase I RI upper bedrock ground-water zone samples are shown on Figure 4-42. Traces of only one PAH (phenanthrene) were detected in only 1 of the 7 samples collected from the upper bedrock ground-water zone at a concentration of 0.6 µg/L (MW16-10R). There is no RIDEM GA ground-water standard for phenanthrene.

### 4.7.4 Pesticides

Validated results for pesticides are summarized in Table 4-18 and shown on Figure 4-43. Of the 42 Phase I RI monitoring wells sampled, pesticides were detected in only 2 of the samples. Pesticides were not detected in the samples collected from the shallow ground-water zone. Beta BHC was the only pesticide detected in the deep overburden ground-water zone samples (MW16-07D at a concentration of 0.011 µg/L). *Gamma*-chlordane was the only pesticide detected in the upper bedrock ground-water zone samples (MW16-02R at a concentration of 0.004 µg/L). There is no RIDEM GA ground-water standard for either of these compounds.

### 4.7.5 TAL Metals

Validated results for TAL metals are summarized in Table 4-19. Although several TAL metals were detected in the Phase I RI samples collected from all 3 ground-water zones, lead was the only TAL metal that exceeded the related RIDEM GA ground-water standard (15 µg/L), as shown in Figure 4-44 (MW16-25R DUP at 99.5 µg/L).

The turbidity measured just prior to collection of the ground-water samples from 29 of the 42 monitoring wells was above the goal of 5 nephelometric turbidity units (NTU) ranging from 6.6 NTU (MW16-25D) to 180 NTU (MW16-17D) (Table 2-9), although the other field measured parameters had achieved stabilization in accordance with the Work Plan. To assess the potential impact of elevated turbidity on the detected metals concentrations, the final turbidity measured and the detected concentration was plotted for all samples for each TAL metal. Non-detects were treated as zeros. Copies of the resulting graphs are provided in Appendix P. Though the graphs for 9 of the metals show some correlation (increased detected concentration of a metal corresponding to an elevated turbidity measurement), the correlation is neither consistent nor predictable. The 9 metals for which some correlation is apparent are aluminum, barium, cobalt, chromium, lead, manganese, nickel, vanadium, and zinc. No correlation was apparent for antimony, arsenic, beryllium, cadmium, copper, iron, selenium, silver, and thallium. Overall, it is apparent that there is some impact from elevated turbidity in collected samples to at least some of the metal analytes, and it is important to mitigate the turbidity (though not always possible), particularly when the formation screened by a monitoring well is very fine grained. The field-measured pH of the ground water just prior to sample collection ranged from 5.54 to 7.34, with 2 exceptions (8.20 at MW16-23D and 8.78 at MW16-10R).

### 4.7.6 Salinity

Salinity was detected in 24 of the 42 samples collected. The average salinity detected in samples from the shallow, deep, and bedrock wells was 0.164, 0.052, and 1.686 parts per thousand (ppth), respectively. The highest salinity concentration was detected in the sample from well MW16-28R (7.4 J ppth). Figures 4-44, 4-45, and 4-46 illustrate the distribution of validated salinity concentrations detected in the ground-water samples collected from the shallow, deep, and bedrock monitoring wells, respectively. Salinity concentrations equal to or less than 0.5 ppth are categorized as fresh. Salinity concentrations that are greater than 0.5 ppth, and up to and including 10 ppth, are categorized as brackish. Salinity concentrations greater than 10 ppth are categorized as saline, indicating the presence of a denser-than-fresh-water salt-wedge.

Based on the detected salinity concentrations: (1) the shallow ground-water zone is categorized as fresh, (2) the deep ground-water zone is categorized as fresh (except MW16-27D, 0.55 ppth [barely brackish]), and (3) the upper bedrock ground-water zone is categorized as fresh (except MW16-27R at 4.4 ppth salinity and MW16-28R at 7.4 ppth salinity [both brackish]). These data indicate that a denser-than-fresh-water salt-wedge is not present under the Phase I RI area.

Additionally, the detected salinity concentration for SEEP16-01 (0.086 J ppth) and SEEP16-02 (0.62 J) suggest that there is little to no mixing of the saline Allen Harbor water with the shallow ground water located adjacent to the shoreline.

## 4.8 SEEP AND OUTFALL PIPE SAMPLES

Two seeps (SEEP16-01 and SEEP16-02) and one outfall pipe (OPW16-01) were sampled during the March 2001 monitoring event (Figure 2-8). The seep sampling locations are located along the southern shore of Allen Harbor and include a duplicate sample (SEEP16-01 DUP). The outfall pipe extends beneath Allens Harbor Road from the paved parking lot and discharges to the southeastern corner of Allen Harbor. This location was sampled to assess the potential impact to part of the northern edge of the site from an adjacent non-Navy area.

### 4.8.1 Volatile Organic Compounds

Validated results are summarized in Table 4-14 and are shown in Figure 4-19. Trace concentrations of vinyl chloride, *cis*-1,2-dichloroethene, TCE, and acetone were detected in one or more of these 4 samples (Figure 4-19). However, none of these compounds was detected at a concentration exceeding the standard.

### 4.8.2 Semivolatile Organic Compounds

Validated results for SVOC are summarized in Table 4-16 and are shown in Figure 4-36. The SEEP16-02 sample was not analyzed for SVOC because there was insufficient sample volume due to the very low rate of seep flow and the very limited time period for sample collection in this tidally influenced shoreline area. Only dibenzofuran was detected in the SEEP16-01

(11 μg/L) and SEEP16-01 DUP (12 μg/L) samples (no criteria). Only bis(2-ethylhexly) phthalate (39 μg/L) and di-n-octylphthalate (1 μg/L) were detected in the OPW16-01 sample (run-off from the non-Navy parking lot located east of Allens Harbor Road). Only the bis(2-ethylhexyl) phthalate was detected at a concentration exceeding standard (Figure 4-37).

### 4.8.3 Polycyclic Aromatic Hydrocarbons

Validated results are summarized in Table 4-17 and are shown in Figure 4-40. Although several PAH were detected in the samples collected from SEEP16-01 and OPW16-01, none were detected at a concentration exceeding the standard. PAH were not detected in the sample from SEEP16-02.

### 4.8.4 Pesticides

Validated results for pesticides are included in Table 4-18 and are shown in Figure 4-43. Alpha BHC was the only pesticide detected and it was only detected in the SEEP16-01 (0.030 J μg/L) and SEEP16-01 DUP (0.035 μg/L) samples.

### 4.8.5 Polychlorinated Biphenyls

Validated results for PCB are summarized in Table 4-20. PCB were not detected in either of the seep samples or the outfall pipe sample.

### 4.8.6 TAL Metals

Validated results for TAL metals are included in Table 4-19. Lead was the only metal detected at a concentration exceeding the standard (outfall pipe sample ([OPW16-01] runoff from the non-Navy parking lot located east of Allens Harbor Road).

### 4.8.7 Comparison of Water Sample Results from Seeps and Adjacent Shallow Monitoring Wells

The water sample results from the 2 seeps and adjacent shallow monitoring wells were compared to assess the potential for the shallow ground water from Site 16 to impact the quality of the seep water. Based on the interpretive ground-water contour map (Figure 3-11), it appears that MW16-03S is located upgradient from SEEP16-01 and MW16-05S is the closest well to SEEP16-02, but may not be upgradient from the seep. The locations of these wells and the seeps are shown on Figure 2-8. Based on the Phase I RI data (summarized below for the 3 nearest wells and the 2 seeps), there is no apparent definitive correlation in this single sample set between the type and concentrations of the compounds detected in the ground-water versus the seeps. Common compounds were detected in only 1 of the 3 ground-water samples (MW16-04S), which does not appear to be directly upgradient of either seep.

| Analyte | MW16-03S (µg/L) | MW16-04S (µg/L) | MW16-05S (µg/L) | SEEP16-01 (µg/L) | SEEP16-01 DUP (µg/L) | SEEP16-02 (µg/L) |
|---|---|---|---|---|---|---|
| Acenapthene | ND | 0.1 | ND | 34 | 37 | ND |
| Fluoranthene | ND | 0.1 | ND | 2 J | 3 J | ND |
| Napthalene | ND | 0.1 | ND | 6 J | 2 | ND |
| Phenanthrene | ND | 0.1 | ND | 9 | 5 J | ND |
| Vinyl chloride | ND | 0.9 | ND | 0.5 J | 0.4 | ND |

NOTE: ND = Not detected.
µg/L = Micrograms per liter.
J = Estimated.

## 4.9 SITE CONCEPTUAL MODEL

The following Site Conceptual Model has been developed from the findings of the Phase I RI, including the Site hydrogeological findings (Chapter 3) and the soil and ground-water sample results (earlier sections of Chapter 4).

### 4.9.1 Background

- Site 16 was formerly designated EBS Review Item 28, then designated as IR Program Study Area 16, and subsequently designated as IR Program Site 16.

- Site 16 is located in the eastern portion of Zone 3 at the former NCBC Davisville facility, and through the Phase I RI field investigation now extends south into a portion of Zone 4 (Figure 1-1). A portion of the northern boundary of the Phase I RI area borders on Allen Harbor (Figure 1-2).

- The Site 16 Phase I RI area includes the 6 EBS Review Items (potential sources for contamination) shown on Figure 1-2 and summarized below. Each of these sites had been assessed during the EBS program, and some removal actions had occurred, as summarized previously in Sections 1.1.2 and 1.2.

  EBS Review Item 28 – formerly used by the Navy for the purpose of training construction equipment operators. Historically, the following two primary uses occurred at this site:

  1. Creosote Dip Tank Area – Wood pilings were dipped into tanks containing creosote and staged in the area to dry before being loaded onto ships.

  2. Former Fire Fighting Training Area (FFTA) – Reportedly, structures were constructed, doused with flammable materials, set on fire, and extinguished as part of fire fighting training exercises during the late 1960s.

Based on the Phase I RI data, this historical site use activity appears to be a source for the localized PAH contamination in soil and appears to be a source for the detected petroleum and chlorinated VOC, SVOC, and PAH in ground water.

EBS Review Item 29 - Former Building 41 – This building was a preservation and packing shop, and a construction equipment and automotive parts storage building that was demolished and the area repaved during October 2002. Preservation and degreasing operations occurred at former Building 41 during 1951-53. Based on past activities, it is apparent that petroleum products and solvents were used and stored onsite. During the EBS, NFA was determined for this review item.

Based on the Phase I RI and prior to October 2002, an old solvent recovery still was one of the few pieces of the old operations that was still present in an otherwise empty building (Figure 1-4). Additionally, somewhere beneath the former building appears to be the location of a key contributing source area for the CVOC plume area detected in the deep overburden ground-water zone and the upper bedrock ground-water zone that underlies an area between this former building and northeast to at least MW16-05 (Figures 4-31 and 4-34). However, the actual specific surface or subsurface CVOC release locations have not yet been identified.

EBS Review Item 60 - Building E-107 Septic Tanks – This Review Item included a septic tank within the Phase I RI area that was reportedly located at the southeast corner of Building E-107. A geophysical survey was conducted to locate that tank. However, excavation and removal of the tank (actually two buried pontoons) was addressed under Review Item 28. Therefore, NFA is appropriate for this portion of Review Item 60 under the Site 16 Phase I RI.

EBS Review Item 81 - Former Building 41 Septic Tanks – Three separate steel pontoon tanks connected by pipes are located on the northern side of the building. The tanks were adapted to act as a cesspool. The sludge was removed, and the tanks cleaned, backfilled, and capped by FWENC in April 1998. During the EBS, NFA was determined for this review item.

The Phase I RI data, particularly the 0.4 μg/L Total CVOC detected in the sample collected from MW16-11D located just downgradient from this Review Item (Figures 1-2 and 4-31), confirms the NFA decision.

EBS Review Item 85 - Former UST Area – One UST was removed from along the western portion of the south side of Building E-107. During the EBS, NFA was determined for this review item.

The Phase I RI data, particularly the 'not detected' VOC results for the samples collected from MW16-03S/D located just downgradient from this Review Item (Figures 1-2, 4-19, and 4-30), confirms the NFA decision.

EBS Review Item 86 - Building E-107 Floor Drains – Six floor drains were identified in Building 107. Two of the floor drains were under floor tile and are not accessible. Four of the floor drains were visible and accessible, and so were closed by FWENC. Trenching activity was conducted by FWENC east of the building; however, no connecting piping was found between these floor drains and an outfall pipe located at the near shoreline of Allen Harbor.

During the Phase I RI, MIP screening was performed at MIP16-30, located between Building E-107 and the harbor shoreline (Figure 2-4), but was not adequate to confirm the presence or absence of VOC at low concentrations in the subsurface.

- The objectives of the Phase I RI of Site 16 are to provide:

  — Site remedial investigation efforts necessary to accomplish an ecological and human health risk assessment:

    - The SLERA is included as Appendix Q
    - The HHRA is included as Appendix R

  — Assessment of potential onsite source areas and the potential for offsite source areas impacting the Site

  — Assessment of the nature and extent of ground-water contamination from the Site

  — Assessment of the nature and extent of soil contamination from the Site.

### 4.9.2 Hydrogeological Framework

- There are six main soil units overlying quartzite and phyllite bedrock. Figure 3-5 (Geologic Cross Section D-D') provides a good example cross section of the subsurface from southwest of former Building 41, northeast to MW16-05 and MW16-28 (Figure 3-1).

  1. Reworked soil and fill material—generally a reworked mix of silt, sand, and gravel with cobbles from historical construction and Seabee training activities.

  2. Glacio-fluvial deposits—typically sand with varying amounts of silt and/or gravel.

  3. Recent harbor and adjacent deposits—typically discontinuous silt and/or sand layers with organic material that was encountered at only 2 borings (MW16-23D and MW16-27D) and at a thickness of 1 ft at both locations.

  4. Glacio-lacustrine deposits—typically dark gray silt, sandy silt, very fine sand and silt, and clayey silt that are present as discontinuous layers. This unit was not encountered

at only three locations (MW16- 04D, -14D, and -18D) (Figure 2-8). MW16-14D is located along the south side of former Building 41 near a potential CVOC use area. Where present, these silt deposits are comprised of 1 to 6 lenses, typically separated by sand to silty sand.

5. Lower sand deposits—typically sand with varying amounts of silt that is limited to the south central and northeastern portions of the investigation area.

6. Sandy silty gravel to gravelly sand to sandy gravelly silt (possibly till).

- Ground-water flow is generally toward the northeast in the shallow and deep overburden ground-water zones and in the upper competent bedrock ground-water zone.

- Based on the results of salinity analyses, ground water beneath the Phase I RI area is categorized as fresh, except for a small area in the northeast corner at MW16-27D that is near the lower boundary of brackish, and MW16-27R and MW16-28R, which are categorized as brackish.

### 4.9.3 CVOC Release And Migration

- The CVOC releases appear to have occurred in three general areas:

  — Somewhere through the floor of former Building 41, perhaps in the vicinity of the former vapor degreasing unit (Figure 1-4).

  — The Stage I area—Although individual VOC were typically detected at up to only 1 µg/L in the Phase I RI ground-water samples from the shallow monitoring wells (Figure 4-19), 16 of the MIP locations across the Stage I area had "trace" to "low" ECD responses within the interval of 2–10 ft bgs (Figure 2-4). Because there were no "mid" to "high" ECD responses within this interval, these data suggest that potential locations of historical surface releases have been considerably weathered and/or diluted by infiltrating precipitation over the years. Total 1,2-dichloroethene was detected in direct push-probe-collected shallow ground-water samples at 3 of the MIP locations in the central portion of the Stage I area (255 µg/L at 17 ft bgs from MIP16-12, 230 µg/L at 17 ft bgs from MIP16-15, and 15 µg/L at 12 ft bgs from MIP16-17). Additionally, 6 of the MIP locations in the central and northern portion of the Stage I area had "trace" to "mid" PID responses within the interval of 2-10 ft bgs (Figure 2-5).

  — The old railroad spur area—1 of the MIP locations across the Stage I area had a "very low" ECD response at 10 ft bgs (MIP16-S22 on Figure 2-4). There were no significant PID responses from MIP locations in this area (Figure 2-5).

- The CVOC detected in the ground-water samples is almost entirely TCE (Table 4-15). The other detected CVOC may have been impurities in TCE used for degreasing and/or they may be trace amounts of degradation products.

- No LNAPL or DNAPL has been measured (observed as a separate phase liquid) in the Phase I RI monitoring wells. The CVOC concentrations detected in subsurface soil and ground-water samples do not suggest the current presence of residual DNAPL.

- The TCE releases from the 3 apparent release areas (as stated in the first bullet above), being denser than ground water, migrated directly downward to the gravelly sand deposits in the deep overburden where the silt layers are not present, or along less direct vertical paths where the discontinuous silt layers are present. Dissolved TCE may have then migrated between the areas of release within the deep overburden in the interpreted valley in the bedrock surface (Figure 2-2) and in the generally northeast direction of ground-water flow (Figure 3-12) resulting in a deep CVOC plume area that has been detected between the area beneath the former Building 41 and MW16-05 to the northeast. As the migration of the plume area occurred in the deep overburden zone, some of the CVOC also continued to migrate downward into the upper portion of bedrock through fracture and jointing zones. Based on the RQD values calculated for the 29, 5-ft length cores of bedrock at each deep (D) monitoring well, the area of the interpreted valley in the bedrock surface correlates with the location of many of the lower RQD values (Figure 3-10), indicative of more fractured bedrock which may be of higher permeability, and thus, preferential zones for ground water and plume movement.

# 5. CONCLUSIONS AND RECOMMENDATIONS

This Phase I RI of Site 16 has been performed in accordance with the Final Work Plan (EA 2000a) and Work Plan Addendum (EA 2000b). The objectives of the Phase I RI of Site 16 are to provide:

- Assessment of potential contaminant source areas impacting the Site
- Assessment of the nature and extent of soil contamination from the Site
- Assessment of the nature and extent of ground-water contamination from the Site
- Site remedial investigation efforts necessary to accomplish an ecological and human health risk assessment:
  - — The SLERA is included as Appendix Q.
  - — The HHRA is included as Appendix R.

## 5.1 POTENTIAL CONTAMINANT SOURCE AREAS

The Site 16 Phase I RI area includes the 6 EBS Review Items (potential source areas for contamination) shown on Figure 1-2 and summarized below. Each of these sites had been assessed during the EBS program and some removal actions had occurred as summarized previously in Sections 1.1.2 and 1.2.

EBS Review Item 28 – formerly used by the Navy for the purpose of training construction equipment operators. Historically, the following two primary uses occurred at this site:

1. Creosote Dip Tank Area – Wood pilings were dipped into tanks containing creosote and staged in the area to dry before being loaded onto ships.
2. FFTA – Reportedly, structures were constructed, doused with flammable materials, set on fire, and extinguished as part of fire fighting training exercises during the late 1960s.

Based on the Phase I RI data, this historical site use activity appears to be a source for the localized PAH contamination in soil and appears to be a source for the detected petroleum and chlorinated VOC, SVOC, and PAH in ground water.

EBS Review Item 29 - Former Building 41 – This building was a preservation and packing shop, and a construction equipment and automotive parts storage building that was demolished and the area repaved during October 2002. Preservation and degreasing operations occurred at former Building 41 during 1951-53. Based on past activities, it is

apparent that petroleum products and solvents were used and stored onsite. During the EBS, NFA was determined for this review item.

Based on the Phase I RI and prior to October 2002, an old solvent recovery still was one of the few pieces of the old operations that was still present in an otherwise empty building (Figure 1-4). Additionally, somewhere beneath the former building appears to be the location of a key contributing source area for the CVOC plume area detected in the deep overburden ground-water zone and the upper bedrock ground-water zone that underlies an area between this former building and northeast to at least MW16-05 (Figures 4-31 and 4-34). However, the actual specific surface or subsurface CVOC release locations have not yet been identified.

EBS Review Item 60 - Building E-107 Septic Tanks – This Review Item included a septic tank within the Phase I RI area that was reportedly located at the southeast corner of Building E-107. A geophysical survey was conducted to locate that tank. However, excavation and removal of the tank (actually 2 buried pontoons) was addressed under Review Item 28. Therefore, NFA is appropriate for this portion of Review Item 60 under the Site 16 Phase I RI.

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The Phase I RI data, particularly the 0.4 μg/L total CVOC detected in the sample collected from MW16-11D located just downgradient from this Review Item (Figures 1-2 and 4-31), confirms the NFA decision.

EBS Review Item 85 - Former UST Area – One UST was removed from along the western portion of the south side of Building E-107. During the EBS, NFA was determined for this review item.

The Phase I RI data, particularly the 'not detected' VOC results for the samples collected from MW16-03S/D located just downgradient from this Review Item (Figures 1-2, 4-19, and 4-30), confirms the NFA decision.

EBS Review Item 86 - Building E-107 Floor Drains – Six floor drains were identified in Building 107. Two of the floor drains were under floor tile and are not accessible. Four of the floor drains were visible and accessible and so were closed by FWENC. Trenching activity was conducted by FWENC east of the building. However, no connecting piping was found between these floor drains and an outfall pipe located at the near shoreline of Allen Harbor.

During the Phase I RI, MIP screening was performed at MIP16-30 located between Building E-107 and the harbor shoreline (Figure 2-4), but was not adequate to confirm the presence or absence of VOC at low concentrations in the subsurface.

Based on the Phase I RI, historical CVOC releases appear to have occurred in three general areas:

- Somewhere through the floor of former Building 41, perhaps in the vicinity of the former vapor degreasing unit (Figure 1-4).
- The Stage I area of the Phase I RI.
- The old railroad spur area.

## 5.2 GEOLOGY AND HYDROGEOLOGY

The results of the Phase I RI field investigation and previous investigations show that the geology at Site 16 is characterized by anthropogenic fill and Quaternary (Pleistocene) glacial deposits mantling quartzite and phyllite bedrock of the Pennsylvanian age Rhode Island Formation (undifferentiated). Based upon the Phase I RI boring logs, the Site is underlain by six main types of unconsolidated deposits overlying bedrock (from the ground surface to bedrock):

1. Reworked soil and fill material—generally a reworked mix of silt, sand, and gravel with cobbles from historical construction and Seabee training activities.
2. Glacio-fluvial deposits—typically sand with varying amounts of silt and/or gravel.
3. Recent harbor and adjacent deposits—typically discontinuous silt and/or sand layers with organic material that was encountered at only 2 borings (MW16-23D and MW16-27D) and at a thickness of 1 ft at both locations.
4. Glacio-lacustrine deposits—typically dark gray silt, sandy silt, very fine sand and silt, and clayey silt that are present as discontinuous layers. This unit was not encountered at only three locations (MW16- 04D, -14D, and -18D) (Figure 2-8). MW16-14D is located along the south side of former Building 41 near a potential CVOC use area. Where present, these silt deposits are comprised of 1 to 6 lenses, typically separated by sand to silty sand.
5. Lower sand deposits—typically sand with varying amounts of silt that is limited to the south central and northeastern portions of the investigation area.
6. Sandy silty gravel to gravelly sand to sandy gravelly silt (possibly till).

The six Site 16 subsurface soil strata, plus bedrock, have been divided into the following three hydrogeological zones (beginning with the shallowest zone):

1. **Shallow Overburden Ground-Water Zone**

Shallow ground-water zone ('S' wells) is the saturated portion of the fill and/or glacio-fluvial sand unit and/or recent harbor and adjacent deposits overlying the glacio-lacustrine silt and very fine sand unit or directly overlying the silty gravelly sand to sandy gravelly silt (possibly till) where the glacio-lacustrine deposits are not present. This zone occurs under unconfined conditions. As shown on Figure 3-11, the shallow ground water is interpreted to flow approximately southwest to northeast across the Site from the intersection of Davisville Road and Westcott Road toward Allen Harbor. The shallow ground water in the area east to southeast of former Building 41 is anticipated to flow east toward Narragansett Bay.

2. **Deep Overburden Ground-Water Zone**

Deep overburden ground-water zone ('D' wells) consists of the silty gravelly sand to sandy gravelly silt (possibly till) unit and the weathered bedrock zone. These two units are considered as a single ground-water zone for the following reasons. No apparently continuous layer of lower permeability material (e.g., a clay layer) was encountered through this zone that could subdivide this zone. The weathered phyllite bedrock forms a thin zone (2–3 ft in thickness) that is hydrogeologically similar because of the apparent horizontal and vertical variation observed which would allow for horizontal and vertical flow (hydraulic communication) through it. In other words, ground water could flow more readily through the softer, fractured phyllite, but less could flow through the more weathered phyllite with fractures filled by silt and clay. The deep ground-water zone occurs primarily under partially confined conditions. Based upon Figure 3-12, the interpreted ground-water flow direction in the deep zone is from the southwest toward the northeast beneath most of the investigation area, except beneath the central and western portion of former Building 41, where the flow is interpreted to be toward the east-southeast, and beneath a large portion of the old railroad spur area where flow is interpreted to flow toward the east. The area west to Building 224 has been included to show the relationship of ground-water flow from the Sites 02 and 03 area to the Site 16 area. As shown on Figure 3-12, deep zone ground water from the Building 224 area is interpreted to flow northeast, and not east toward Site 16.

3. **Upper Bedrock Ground-Water Zone**

Competent upper bedrock ground-water zone ('R' wells) includes the upper approximately 25–30 ft of competent coreable bedrock that was investigated, but may extend deeper. This zone is in direct hydraulic connection with the overlying deep ground-water zone. Available data indicates this unit occurs under partially confined conditions. Based upon the May 2001 water level data, ground-water flow in the upper bedrock zone is interpreted to be from the southwestern portion of the Site from beneath former Building 41 toward the northeast (Figure 3-13). However, it is noted that this

interpretation is biased by the locations of the data; i.e., the monitoring wells completed in this zone are generally located along a line oriented northeast-southwest. The area west to Building 224 has been included to show the relationship of ground-water flow from the Sites 02 and 03 area to the Site 16 area. As shown on Figure 3-13, a portion of the ground-water flow in the shallow bedrock zone from the Building 224 area appears to be toward Site 16.

**Vertical Hydraulic Gradients**

Although slight vertically upward and downward hydraulic gradients have been calculated between the shallow and deep ground-water zones at various monitoring well pairs across the Site, the estimated vertical permeability is considerably less than the horizontal permeability, resulting in only a small vertical component of ground-water flow between the glacio-fluvial deposits and the till unit where the glacio-lacustrine (silt) deposits are present. The following summarizes the vertical gradients calculated for the shallow (S) and deep (D) overburden ground-water zones:

> An upward gradient was calculated at well cluster MW16-01S/D and MW16-06S/D. A downward gradient was calculated at well clusters MW16-02S/D, MW16-03S/D, MW16-04S/D, and MW16-05S/D. A vertical gradient of zero was calculated at well MW16-01S/D during one water level measuring event. The calculated vertical gradients for MW16-07S/D were both positive and negative (Table 3-2).

The following summarizes the vertical gradients calculated for the deep (D) overburden and shallow bedrock (R) zones:

- Generally, an upward gradient was calculated at well clusters MW16-27D/R and MW16-15D/R. A downward gradient was calculated at well clusters MW16-02D/R, MW16-10D/R, MW16-25D/R, and MW16-28D/R.

**Tidal Impact on Ground Water**

A preliminary tidal study was performed on monitoring wells that are located in close proximity to the Allen Harbor shoreline to determine if the water level in these monitoring wells is affected by the tides. Locations of these monitoring wells are included in Figure 2-8. The effect of tide stages was observed as cyclic fluctuations (rise and decline) of the potentiometric water surface as measured in the monitoring wells. Water levels were recorded in the following 15 monitoring wells during the period 14–21 February 2001: MW16-03S/D, MW16-04S/D, MW16-05S/D, MW16-06S/D, MW16-07S/D, MW16-27D/R, MW16-28R, and MW16-29D. Graphs of the water levels recorded during an approximately 24-hr period for each of these wells are provided in Appendix K. Of the monitoring wells tested, only 7 of the wells located closest to the harbor shoreline were found to be influenced the most by the tides (MW16-03S/D, MW16-04S/D, MW16-05S/D and MW16-28R). In addition, MW16-06S/D and MW16-07S/D, located

approximately 500 ft and 430 ft, respectively, from the shoreline, appeared to show a very minor tidal influence. The recorded cyclic fluctuation in the ground-water levels ranged from 0.01 ft in MW16-07S to 1.37 ft in MW16-04D. The data suggest that the extent of main tidal influence on the ground water appears to be generally between 150 and 200 ft inland from the shoreline.

**Salt-Water Intrusion Assessment**

Based on the detected salinity concentrations of samples from the monitoring wells: (1) the shallow ground-water zone is categorized as fresh (equal to or less than 0.5 ppth), (2) the deep ground-water zone is categorized as fresh (except MW16-27D, 0.55 ppth [slightly brackish; greater than 0.5 ppth and up to and including 10 ppth]), and (3) the upper bedrock ground-water zone is categorized as fresh (except MW16-27R at 4.4 ppth salinity and MW16-28R at 7.4 ppth salinity [both brackish]). These data indicate that a denser-than-fresh-water salt-wedge (i.e., saline; greater than 10 ppth) is not present under the Phase I RI area.

Additionally, the detected salinity concentration for SEEP16-01 (0.086 J ppth) and SEEP16-02 (0.62 J ppth) suggests that there is little to no mixing of the saline Allen Harbor water with the shallow ground water located adjacent to the shoreline.

## 5.3 NATURE AND EXTENT OF CONTAMINATION IN SOIL

Based on the Phase I RI data, detected concentrations of VOC, SVOC, pesticides, and PCB do not exceed the RIDEM RDEC. However, there were a few PAH (Figure 4-7; 3 locations) and a TAL metal (lead; one location) (Figure 4-13) that exceeded both the RIDEM RDEC and I/C DEC. The samples associated with these exceedances are generally located within the Stage I area of the RI (vicinity of the former EBS Review Item 28 activities). However, based on the results of the HHRA, using CERCLA guidance, the soil was found to not pose unacceptable risk to human health. Additionally, the related SLERA findings indicate that soil-based risks from the Site to terrestrial mammals and birds are virtually nonexistent with the application of the refined food web.

## 5.4 NATURE AND EXTENT OF CONTAMINATION IN SEEPS/SEDIMENT

The Phase I RI sediment data indicate the presence some SVOC, PAH, pesticides, and TAL metals, but no CVOC (Figures 4-15 through 4-18). Trace concentrations of VOC, SVOC, PAH, and a pesticide were detected in the seep water samples (Figures 4-19, 4-36, 4-40, and 4-43). The HHRA concluded that the seeps do not pose unacceptable risk to human health (Section 5.7). The SLERA concluded that the seep sediment results represent potential risk to marine invertebrates in the benthic community, particularly from manganese and several PAH and pesticide compounds. Additionally, the SLERA found that relatively few hazard quotients (HQs) in seep water exceeded 1.0, but barium and manganese were relatively high. There is a substantial high-bias uncertainty in this assessment because the target Receptors of Concern (ROCs), fish and plankton in Allen Harbor, would not encounter such concentrations once the

seep water entered and was diluted within Allen Harbor. Although Site 16 could contribute some of these constituents from surface run-off, shallow ground water does not appear to be a major contributor. It is difficult to determine the amount of contribution from Site 16, compared to the input from the surface run-off storm drain pipe (draining a portion of the non-Navy paved parking lot located just east of Allens Harbor Road) and that from the dynamic effects of the tidal fluctuations and mixing.

## 5.5 NATURE AND EXTENT OF CONTAMINATION IN GROUND WATER

Based on the Phase I RI data, the predominant contamination identified in ground water is a plume of dissolved CVOC, particularly TCE, in the deep overburden and upper competent bedrock ground-water zones.

### Shallow Overburden Zone

Trace concentrations of VOC, SVOC, PAH, and TAL metals were detected in the Phase I RI samples collected from the shallow ground-water zone; however only bis(2-ethylhexyl) phthalate was detected at concentrations (7–18 μg/L) above a related RIDEM GA ground-water objective (6 μg/L). Although the ground water beneath Site 16 is classified as GB, there is no RIDEM GB ground-water objective for this compound. None of the TCL pesticide compounds were detected in the samples collected from this zone.

Although individual VOC were typically detected at up to only 1 μg/L in the Phase I RI ground-water samples from the shallow monitoring wells (Figure 4-19), 16 of the MIP locations across the Stage I area had "trace" to "low" ECD responses within the interval of 2–10 ft bgs [Figure 2-4]. Because there were no "mid" to "high" ECD responses within this interval; these data suggest that potential locations of historical surface releases have been considerably weathered and/or diluted by infiltrating precipitation over the years. Total 1,2-dichloroethene was detected in direct push-probe-collected shallow ground-water screening level samples at 3 of the MIP locations in the central portion of the Stage I area (255 μg/L at 17 ft bgs from MIP16-12, 230 μg/L at 17 ft bgs from MIP16-15, and 15 μg/L at 12 ft bgs from MIP16-17). Additionally, 6 of the MIP locations in the central and northern portion of the Stage I area had "trace" to "mid" PID responses within the interval of 2–10 ft bgs (Figure 2-5). Also, during the EBS program in October 1998 (EA 1998b), vinyl chloride (up to 10 μg/L) was detected in push-probe ground-water samples at 4 locations in the central and north central portions of the Stage I area of the RI. These are assumed to be the remainder of migration of CVOC flushed from historical surficial releases of unknown volume and specific location along a pathway downward to the deep overburden zone, where currently detected (March 2001) total CVOC concentrations range from 2,107 to 5,355 μg/L.

**Deep Overburden Zone**

Based on the Phase I RI results, SVOC, PAH, pesticides, and TAL metals were not found to be a problem. However, a deep plume of CVOC, specifically TCE, was identified beneath portions of the Phase I RI area. For the deep overburden ground-water zone, the Phase I RI data as illustrated on Figures 4-31 and 4-32 indicate that the TCE plume area underlies an area from the northeastern part of former Building 41 on the southwest to at least MW16-05D near the northeast corner of the Phase I RI area. Additionally, these figures show that the western and northwestern (MW16-01D, -03D, -06D, and -26D), southwestern (MW16-09D, -10D, -11D, and -13D), southern (MW16-17D and MW16-18D), and part of the eastern (MW16-20D) extent of the monitoring well network appear to be at or beyond the fringe of the CVOC plume in the deep overburden ground-water zone. Ground-water samples collected from monitoring wells MW16-27D and MW16-28D (northeastern edge of the Phase I RI area), MW16-05D and MW16-04D (northern edge of the Phase I RI area), and MW16-19D (part of the eastern edge of the Phase I RI area) had detected total CVOC concentrations greater than 100 μg/L. These deep overburden ground-water samples indicate that the edge of the plume extends beyond these wells.

**Upper Bedrock Zone**

Based on the Phase I RI results, SVOC, PAH, pesticides, and TAL metals were not found to be a problem. However, a deep plume of CVOC, specifically TCE, was identified beneath portions of the Phase I RI area. In general, Figures 4-34 and 4-35 show that the highest total CVOC and TCE concentrations were detected in the sample collected from MW16-15R (northeast end of former Building 41) followed by the sample collected from MW16-02R. These 2 samples are constructed deeper than the related deep (D) wells MW16-15D and MW16-02D, respectively, and are located directly beneath the CVOC (predominantly TCE) plume area described for the overlying deep ground-water zone (Section 4.7.1.2). These results indicate that the plume has migrated vertically downward from the deep overburden ground-water zone through fractures into at least the upper 25–30 ft of competent bedrock and is at concentrations similar to that detected in the overlying deep overburden zone (Figure 4-24).

Southeast and west from MW16-15R, the total CVOC concentrations decrease to less than 1μg/L (MW16-10R and MW16-25R). To the northeast beyond MW16-02R, detected total CVOC concentrations decrease substantially to 2 μg/L (MW16-27R) and 0.9 μg/L (MW16-28R). However, these 2 wells may be located east of a northeast trending fracture zone along which there may be preferential migration of the CVOC, perhaps beneath MW16-05D. The western and northern extent of this plume in the upper bedrock zone are not known. However, they are probably very similar to the overlying portion of the plume in the deep ground-water zone, extending northeast from a source area beneath former Building 41 through fractures, with the general northeast direction of ground-water flow (Figure 3-13).

**Summary of the TCE Release and Migration**

The CVOC detected in the ground-water samples is almost entirely TCE (Table 4-15). The other detected CVOC may have been impurities in TCE used for degreasing and/or they may be trace amounts of degradation products. Based on the Phase I RI, historical CVOC releases appear to have occurred in three general areas:

- Somewhere through the floor of former Building 41, perhaps in the vicinity of the former vapor degreasing unit (Figure 1-4).
- The Stage I area of the Phase I RI.
- The old railroad spur area.

The conceptual model for the deep CVOC plume area begins with TCE releases from the three apparent release areas (as stated above) being denser than ground water and migrating directly downward to the gravelly sand deposits in the deep overburden where the silt layers are not present, or along less direct vertical paths where the discontinuous silt layers are present. Dissolved TCE may have then migrated between the areas of release within the deep overburden in the interpreted valley in the bedrock surface (Figure 2-2) and in the generally northeast direction of ground-water flow (Figure 3-12), resulting in a deep CVOC plume area that has been detected between the area beneath the former Building 41 to the southwest and MW16-05 to the northeast. As the migration of the plume area occurred in the deep overburden zone, some of the CVOC also continued to migrate downward into the upper portion of bedrock through fracture and jointing zones. Based on the RQD values calculated for the 29, 5-ft length cores of bedrock at each deep (D) monitoring well, the area of the interpreted valley in the bedrock surface correlates with the location of many of the lower RQD values (Figure 3-10), indicative of more fractured bedrock that may be of higher permeability, and thus, preferential zones for ground water and plume movement. The Phase I RI data indicate that this TCE plume is about 35–50 ft bgs and does not discharge to the southern portion of Allen Harbor that is adjacent to the Site.

No LNAPL or DNAPL has been measured (observed as a separate phase liquid) in the Phase I RI monitoring wells. The CVOC concentrations detected in subsurface soil and ground-water samples do not suggest the current presence of residual DNAPL.

## 5.6 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

The key guidance followed in the SLERA are the *Navy Policy for Conducting Ecological Risk Assessment* (U.S. Department of the Navy 1999) and *Ecological Risk Assessment Guidance for Superfund* [U.S. Environmental Protection Agency (U.S. EPA) 1997]. These two approaches are very similar in that they are based on a tiered, step-wise protocol. Assessment methodologies are described in the Final *Work Plan, Remedial Investigation of IR Program Site 16 (Former*

*Creosote Dip Tank and Fire Fighting Training Area), Naval Construction Battalion Center, North Kingston, RI* (EA 2000a). This SLERA for Site 16 is included as Appendix Q.

The following provides the findings of the SLERA. Exposure to contaminants detected in surface soil reflects some potential risk to terrestrial plants and invertebrates and, based on the conservative food web, to terrestrial mammals and birds. There are a number of HQs >1 for terrestrial plants and invertebrates; none is very high, suggesting a low potential for risk to these receptors. Soil-based risks to terrestrial mammals and birds, potentially significant based on the conservative food web, virtually disappeared with the application of the refined food web.

The screening assessments in the aquatic environment indicated the potential for risk to fish and plankton in Allen Harbor from seep water and to benthos from seep sediment. Relatively few HQs in seep water exceeded 1.0, but barium and manganese were relatively high. There is a substantial high-bias uncertainty in this assessment because the target ROCs, fish and plankton in Allen Harbor, would not encounter such concentrations once the seep water entered and was diluted within Allen Harbor. The seep sediment results represent potential risk to marine invertebrates in the benthic community, particularly from manganese and several PAH and pesticide compounds. It has not been determined whether the seep sediment areas represent localized concentrations of constituents of potential concern, or whether the data reflect general sediment conditions throughout the Site 16 shoreline area (approximately 350-ft length). This shoreline area is dynamic and is impacted by the cyclic tidal fluctuations in Allen Harbor.

## 5.7 HUMAN HEALTH RISK ASSESSMENT

The HHRA for Site 16 was conducted in accordance with EPA *Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part A) (Interim Final)* (U.S. EPA 1989) and U.S. EPA RAGS, *Volume 1 – Human Health Evaluation Manual (Part D), Standardized Planning, Reporting and Review of Superfund Risk Assessments Interim* (U.S. EPA 1998). This HHRA for Site 16 is included as Appendix R. The risk assessment followed the methodologies presented in the *Final Work Plan, Remedial Investigation of IR Program Site 16 (Former Creosote Dip Tank and Fire Fighting Area), Naval Construction Battalion Center, North Kingstown, RI* (EA 2000a) and comments provided by EPA Region I (Appendix S).

A human health site conceptual model was developed (Figure ES-2 and Table ES-1 of Appendix R). Media of concern included surface soil, total soil (combined surface and subsurface soil), seep water, and ground water. Based on the shallow and intermittent nature of the seeps at Site 16, sediment was not addressed as a medium of concern, and instead, seep water was evaluated. Seep water samples were not filtered, and thus, their evaluation is representative of both seep water and sediment exposure. The human health site conceptual model also depicts the receptors and exposure pathways evaluated in this HHRA.

Risks were evaluated for site soil, seep water, and ground water for potential human receptors. Receptor-specific pathways are detailed in the human health conceptual site model (Figure ES-2 and Table ES-1 of Appendix R). Non-carcinogenic risks, carcinogenic risks, and potential lead exposure risks were all evaluated. Potential risks associated with ground-water exposure for the residential (adult and child) scenario and the construction worker scenario were unacceptable for non-carcinogenic risk and were unacceptable for the residential scenario for carcinogenic risk. These risks were driven by manganese and TCE in ground water.

Potential risks for all other evaluated media for all evaluated receptors were acceptable. Therefore, no unacceptable risk was identified for human exposure to site soil and seep water. Blood-lead level modeling indicated that exposure to lead is not of concern at the site for any of the evaluated receptors in any of the evaluated media.

## 5.8 RECOMMENDATIONS

Based on the results of the Phase I RI, the following recommendations for Phase II are provided. The objective of the Phase II RI would be additional characterization of the three general CVOC source areas and the dissolved TCE plume in deep ground water to support the Feasibility Study for this Site in addressing potential alternatives to remedy the CVOC source areas and for selection of appropriate Site long-term monitoring components and institutional controls. In accomplishing this objective, the following is recommended:

- Installation of additional monitoring wells completed in the shallow overburden, intermediate overburden, deep overburden, upper bedrock, and deeper bedrock ground-water zones as listed in Table 5-1 and shown on Figure 5-1.

- Sampling of all Site 16 monitoring wells for analysis of TCL VOC, salinity, and natural attenuation parameters to assess the viability of the subsurface conditions for natural attenuation.

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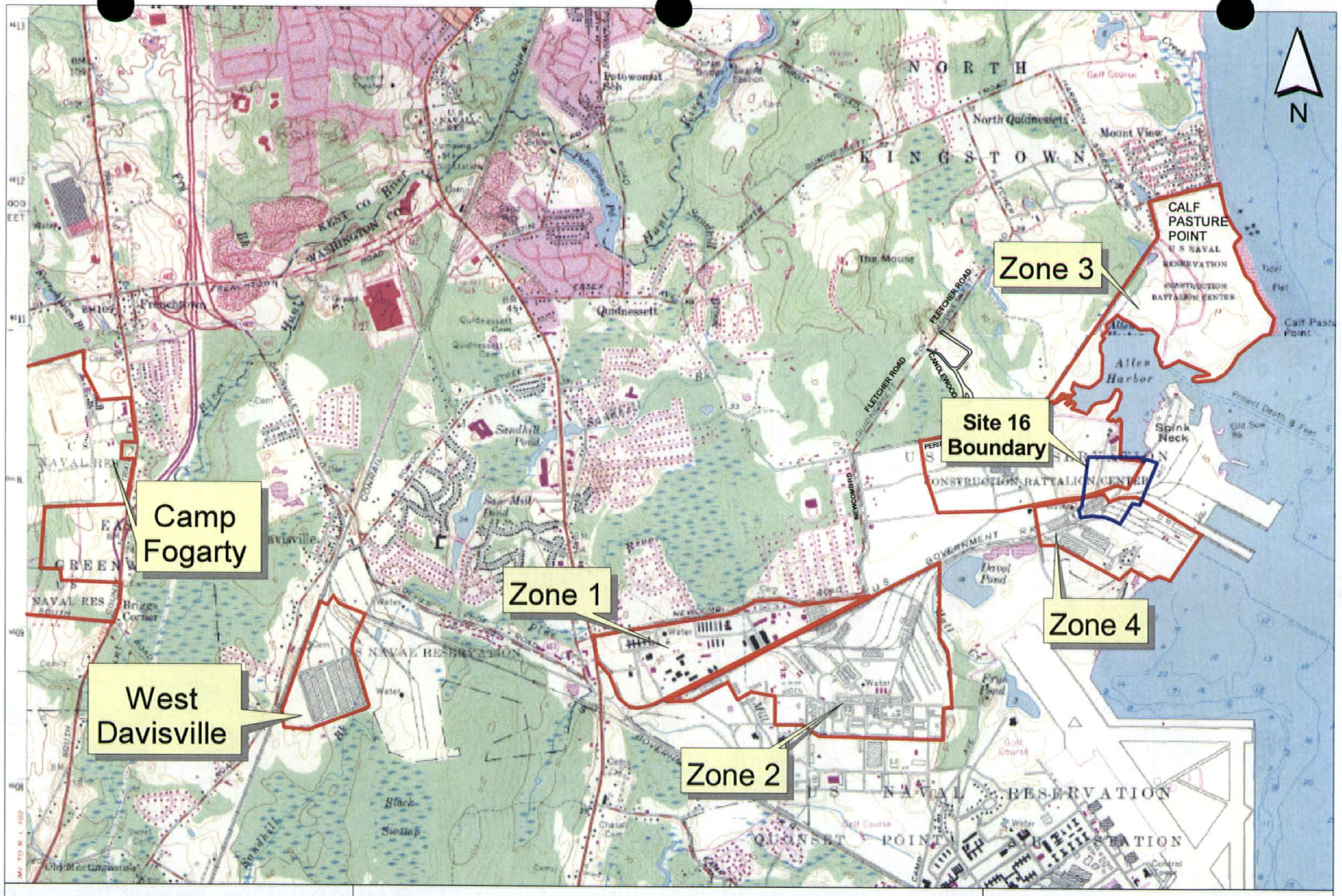


Site16 Boundary
NCBC Zones

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IR PROGRAM SITE 16
NCBC DAVISVILLE, NORTH KINGSTOWN, RHODE ISLAND

LOCUS MAP

FIGURE 1-1

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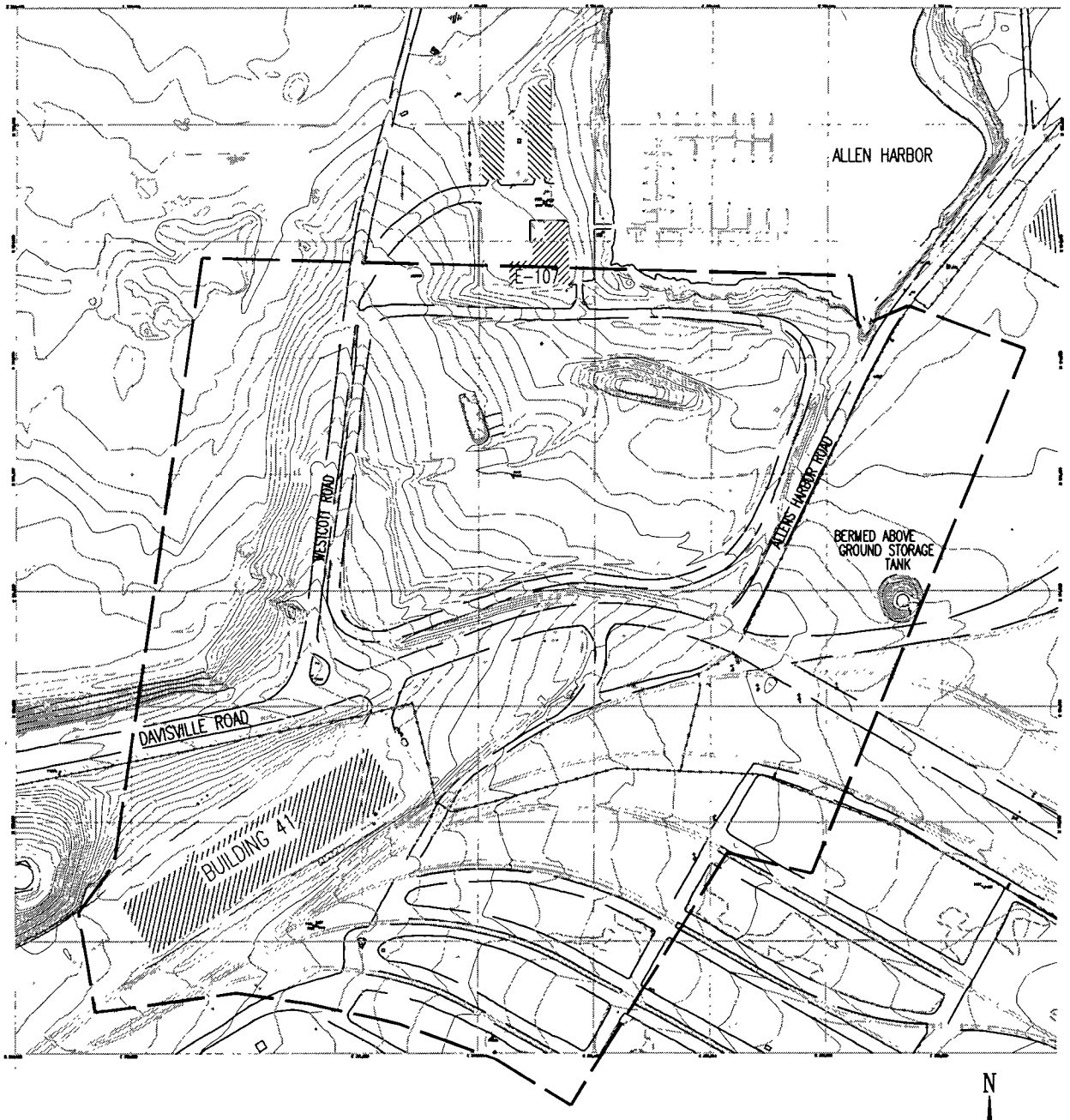
North Kingstown, Rhode Island

SITE MAP

FIGURE 1-2

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PHASE I SITE INVESTIGATION BOUNDARY

200 100 0 200

GRAPHIC SCALE IN FEET

NOTES:
BASE MAP PROVIDED BY RIEDC, CAD FILES 1997.

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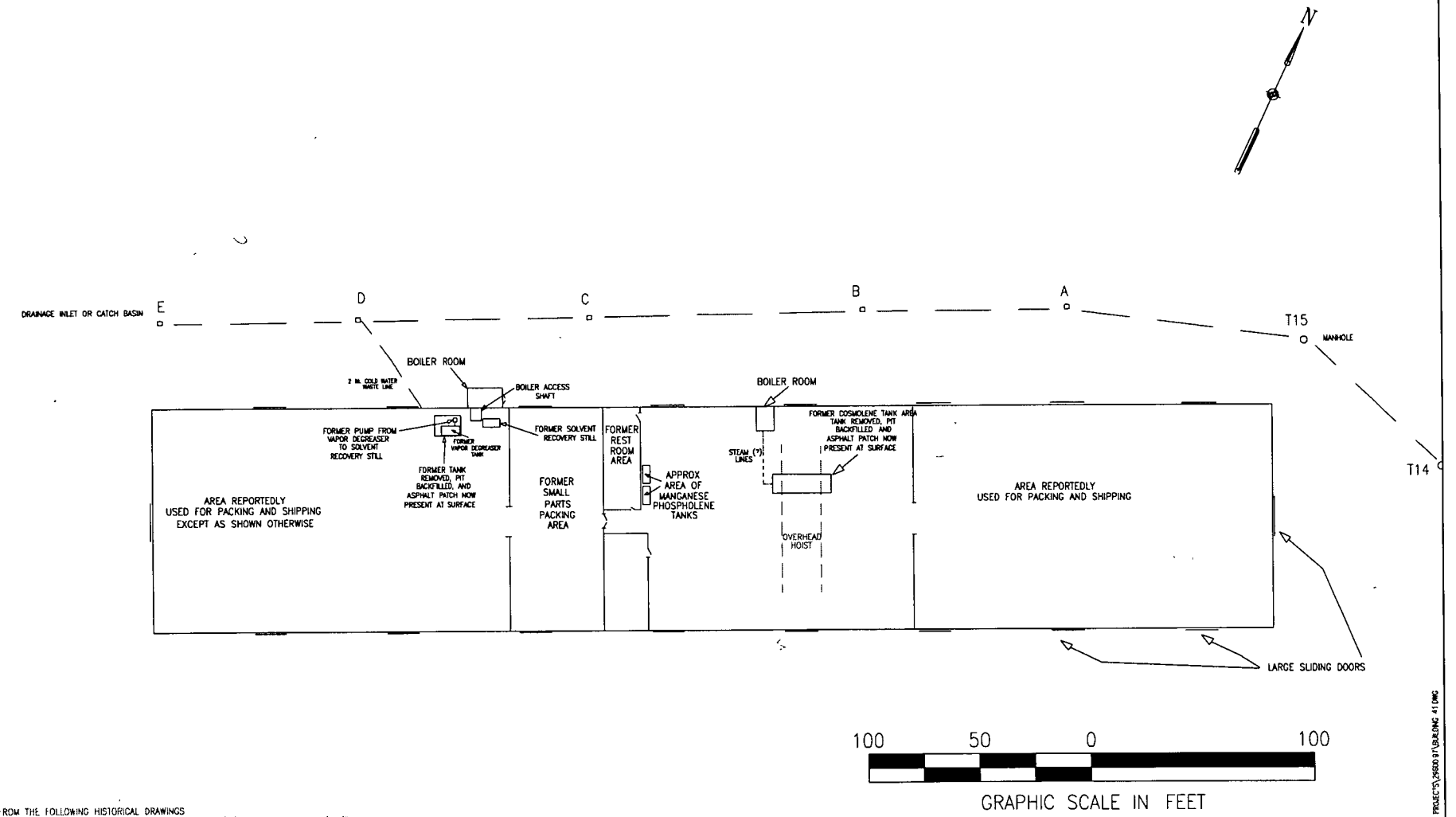


COMPILED FROM THE FOLLOWING HISTORICAL DRAWINGS
BUILDING 41, FLOOR PLAN AND ELEVATION, ARCHITECHTURAL, 1/9/53, LAST UPDATED 7/26/54
MANIFOLD LINE AND SOLVENT STILL F/ BLDG #41, 8 SEPT 1952, LAST UPDATED 4/30/53
MANGANESE PHOSPHOLENE TANK IN 41, 8 AUGUST 1952
BLDG 41 LAYOUT AND DETAIL OF TANK RAILING, 9/8/53
MASTER SHORE STATION DEVELOPMENT PLAN UTILITIES STORM DRAINAGE SYSTEM, SHEET 13 OF 27 REVISED 6/ 58

FILE D:\CAD PROJECTS\29600 97\BLDG41.DWG

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| EA ENGINEERING, SCIENCE, AND TECHNOLOGY | DESIGNED BY JS | DRAWN BY RC | DATE 7/11/03 | PROJECT NO 29600 97 | FILE NAME BLDG 41 | EFANE<br>IR PROGRAM SITE 16<br>REMEDIAL INVESTIATION REPORT<br>FORMER NCBC DAVISVILLE FACILITY<br>NORTH KINGSTOWN, RHODE ISLAND |
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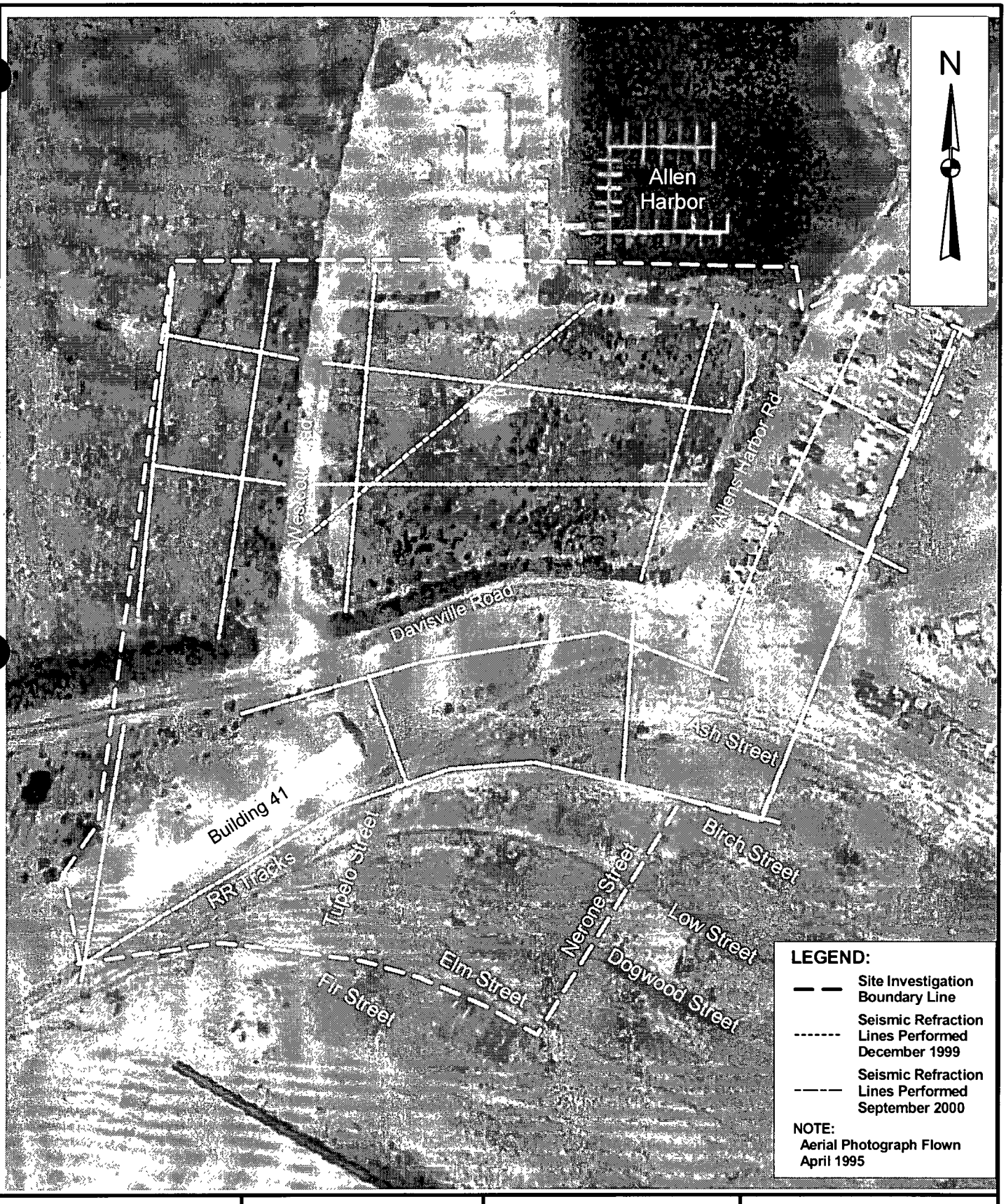
FORMER BUILDING 41
HISTORICAL USE FLOOR PLAN
FIGURE 1-4

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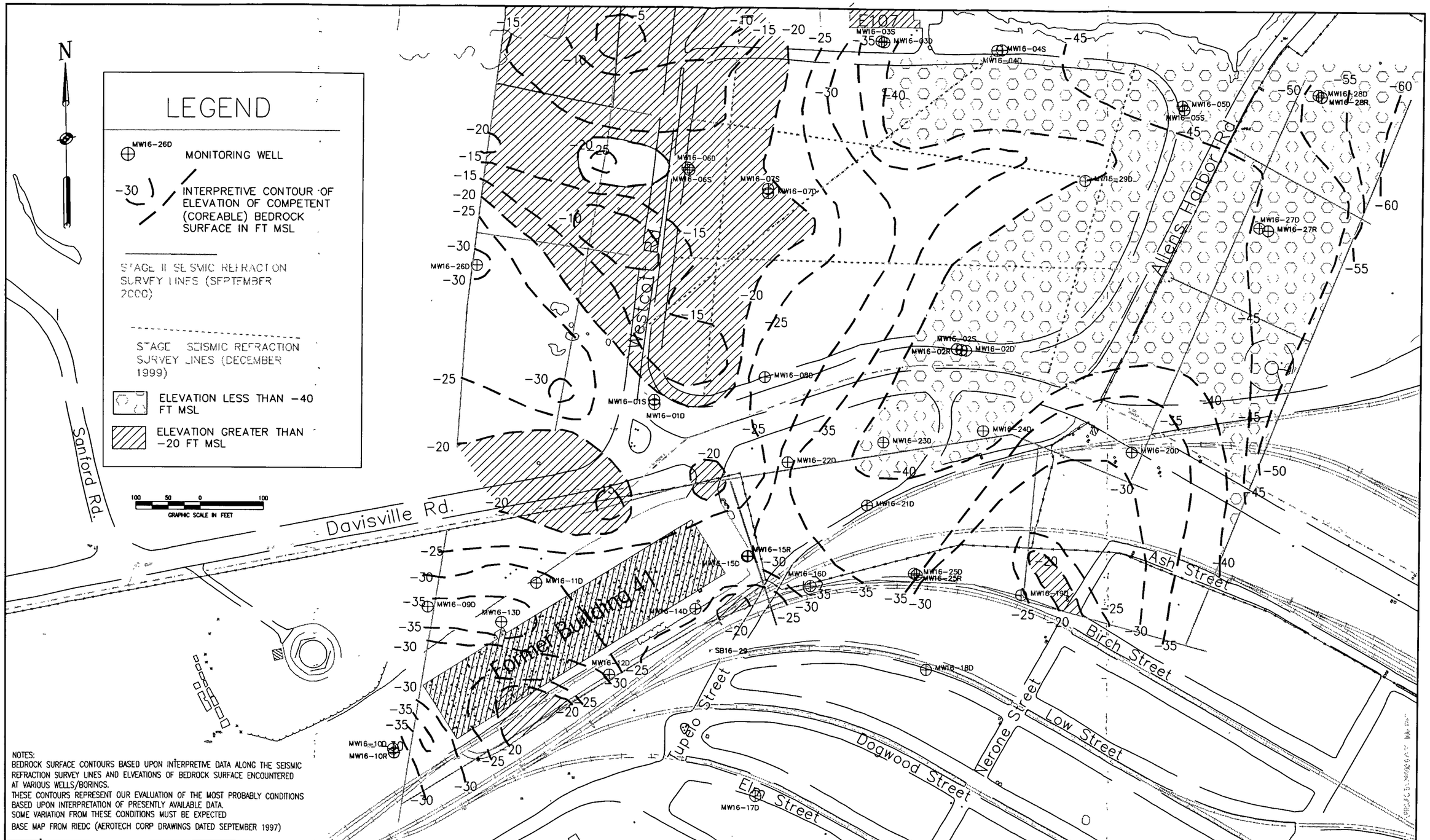
LOCATION OF SEISMIC REFACTION LINES

FIGURE 2-1




NOTES:
BEDROCK SURFACE CONTOURS BASED UPON INTERPRETIVE DATA ALONG THE SEISMIC REFRACTION SURVEY LINES AND ELVEATIONS OF BEDROCK SURFACE ENCOUNTERED AT VARIOUS WELLS/BORINGS.
THESE CONTOURS REPRESENT OUR EVALUATION OF THE MOST PROBABLY CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA.
SOME VARIATION FROM THESE CONDITIONS MUST BE EXPECTED
BASE MAP FROM RIEDC (AEROTECH CORP DRAWINGS DATED SEPTEMBER 1997)

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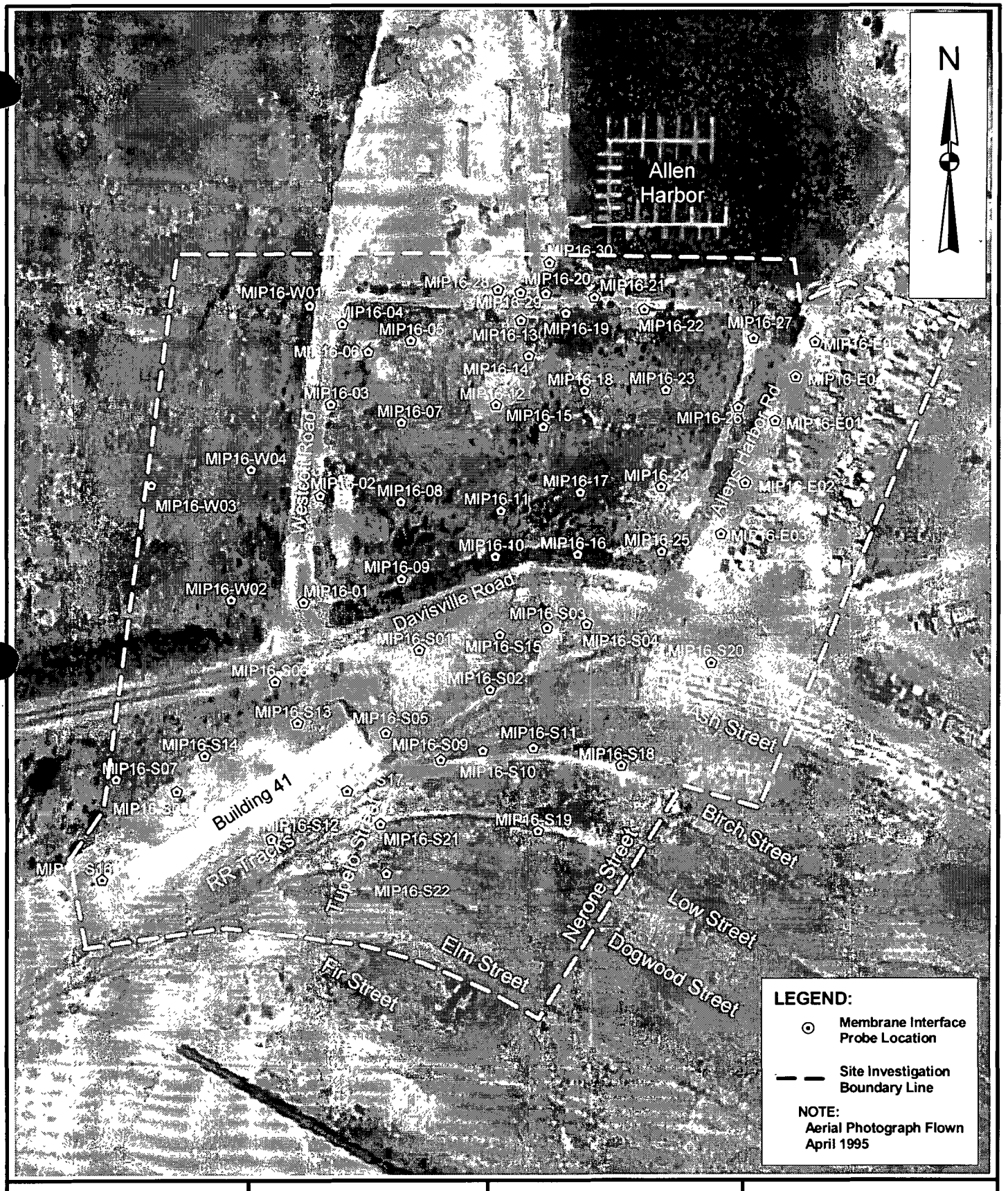
INTERPRETIVE BEDROCK SURFACE CONTOUR MAP
UPDATED 10 JULY 2002
FIGURE 2-2

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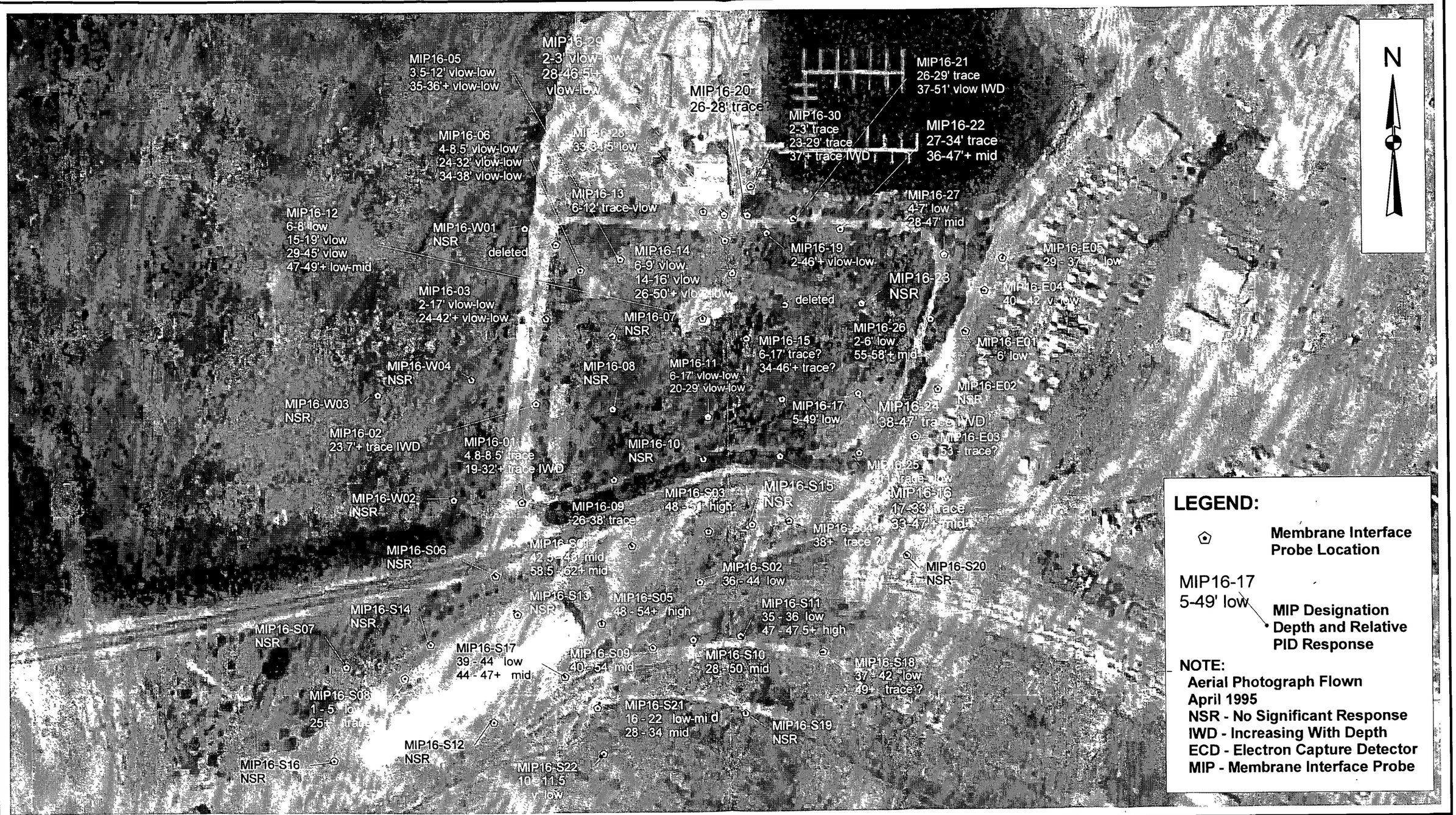
LOCATION OF MEMBRANE INTERFACE PROBE SCREENING POINTS

FIGURE 2-3

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SUMMARY OF MIP ECD RESPONSES

FIGURE 2-4

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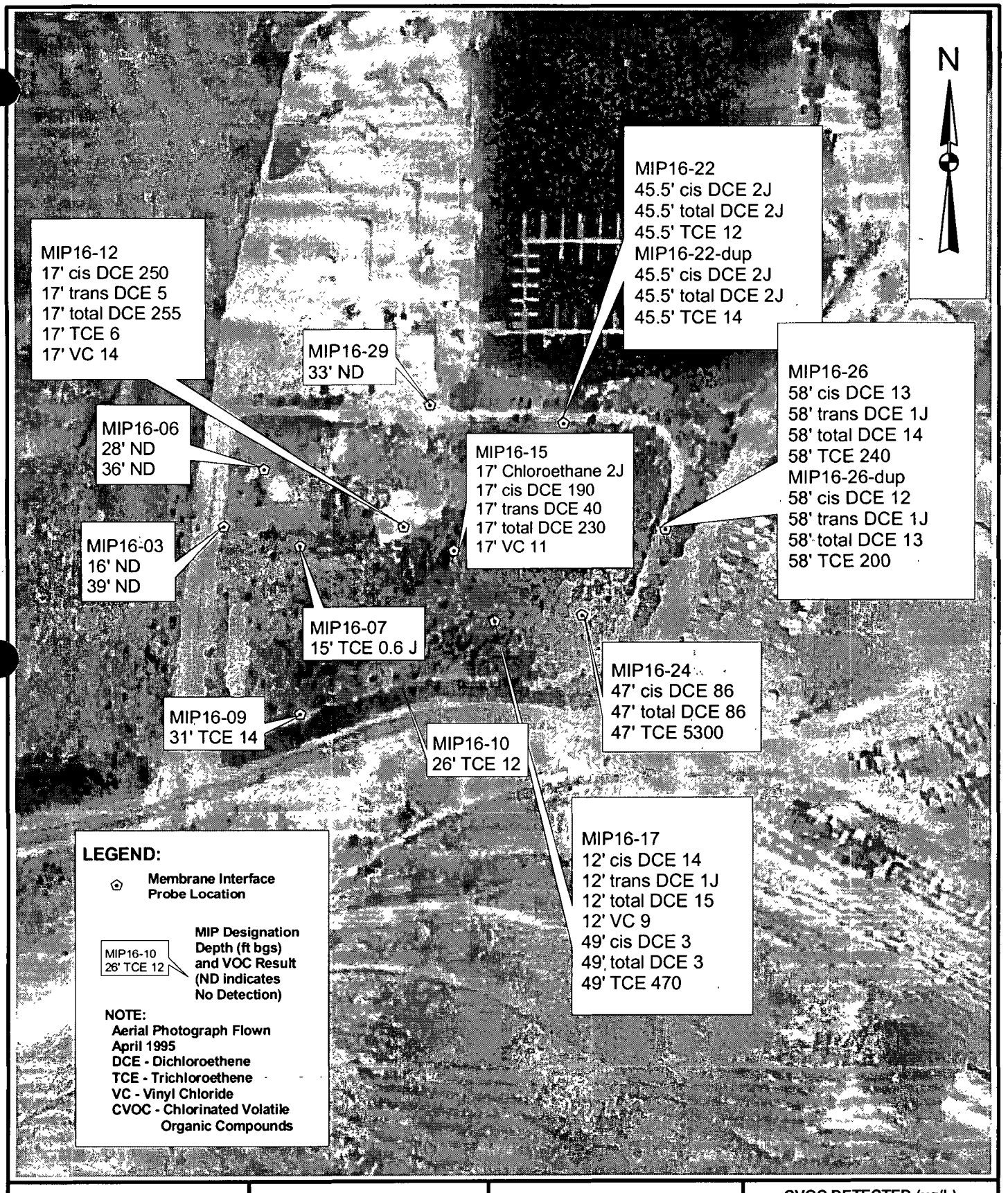
North Kingstown, Rhode Island

SUMMARY OF MIP PID RESPONSES

FIGURE 2-5

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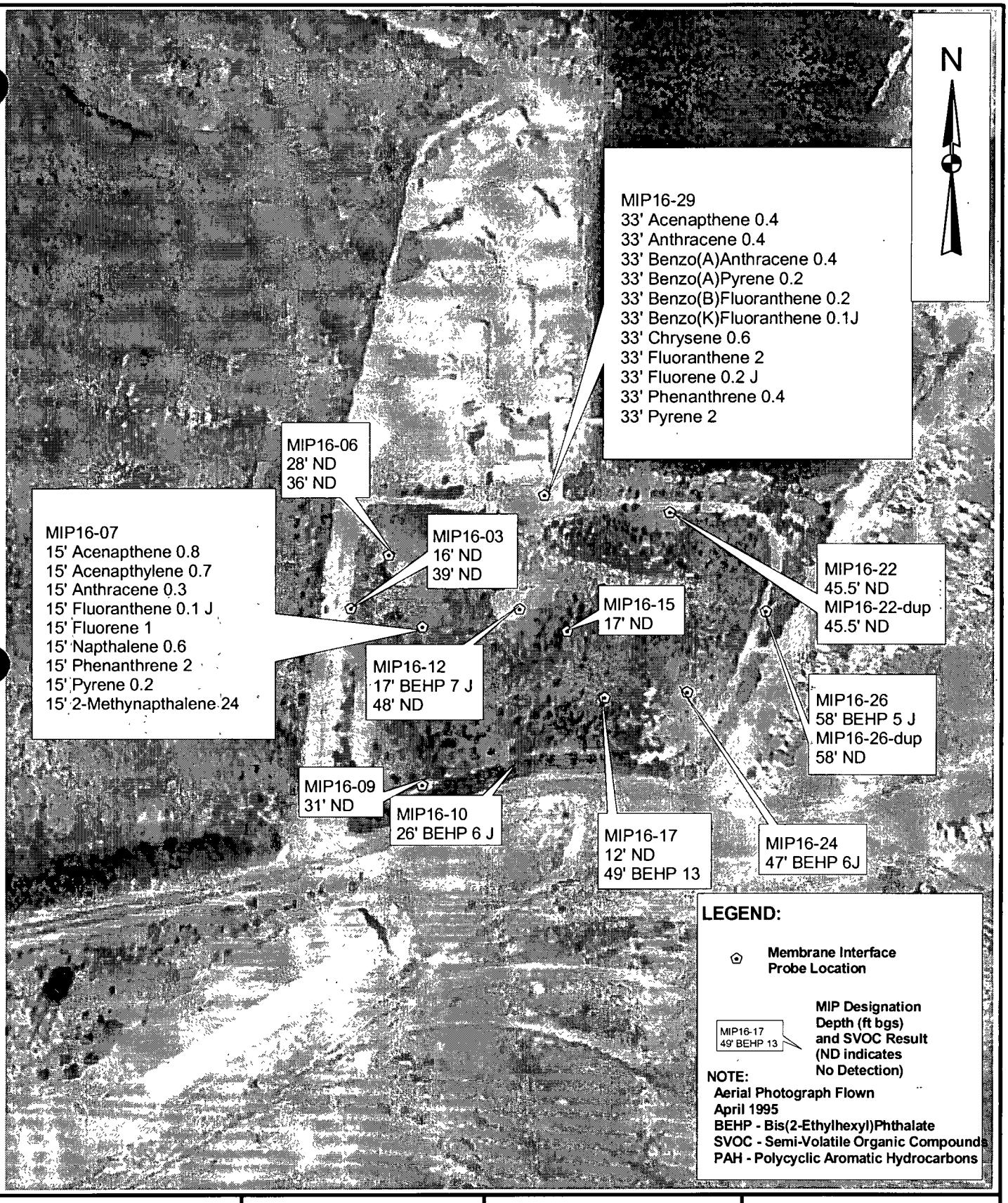
CVOC DETECTED (ug/L) (UNVALIDATED) IN PROBE-COLLECTED GROUND-WATER SAMPLES (APRIL-MAY 2000)

FIGURE 2-6

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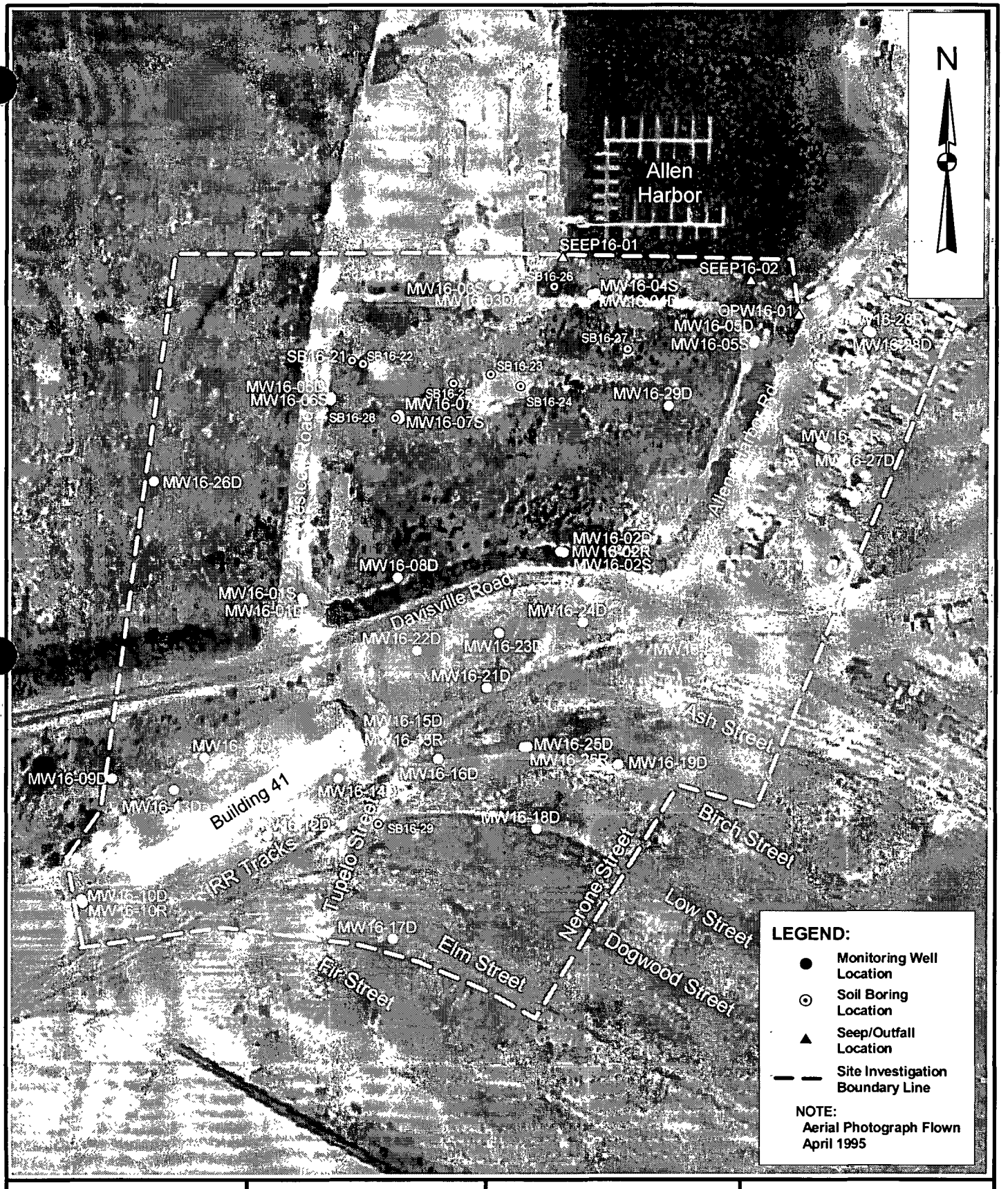
North Kingstown, Rhode Island

SVOC & PAH DETECTED (ug/L) (UNVALIDATED) IN PROBE-COLLECTED GROUND-WATER SAMPLES (APRIL-MAY 2000)

FIGURE 2-7

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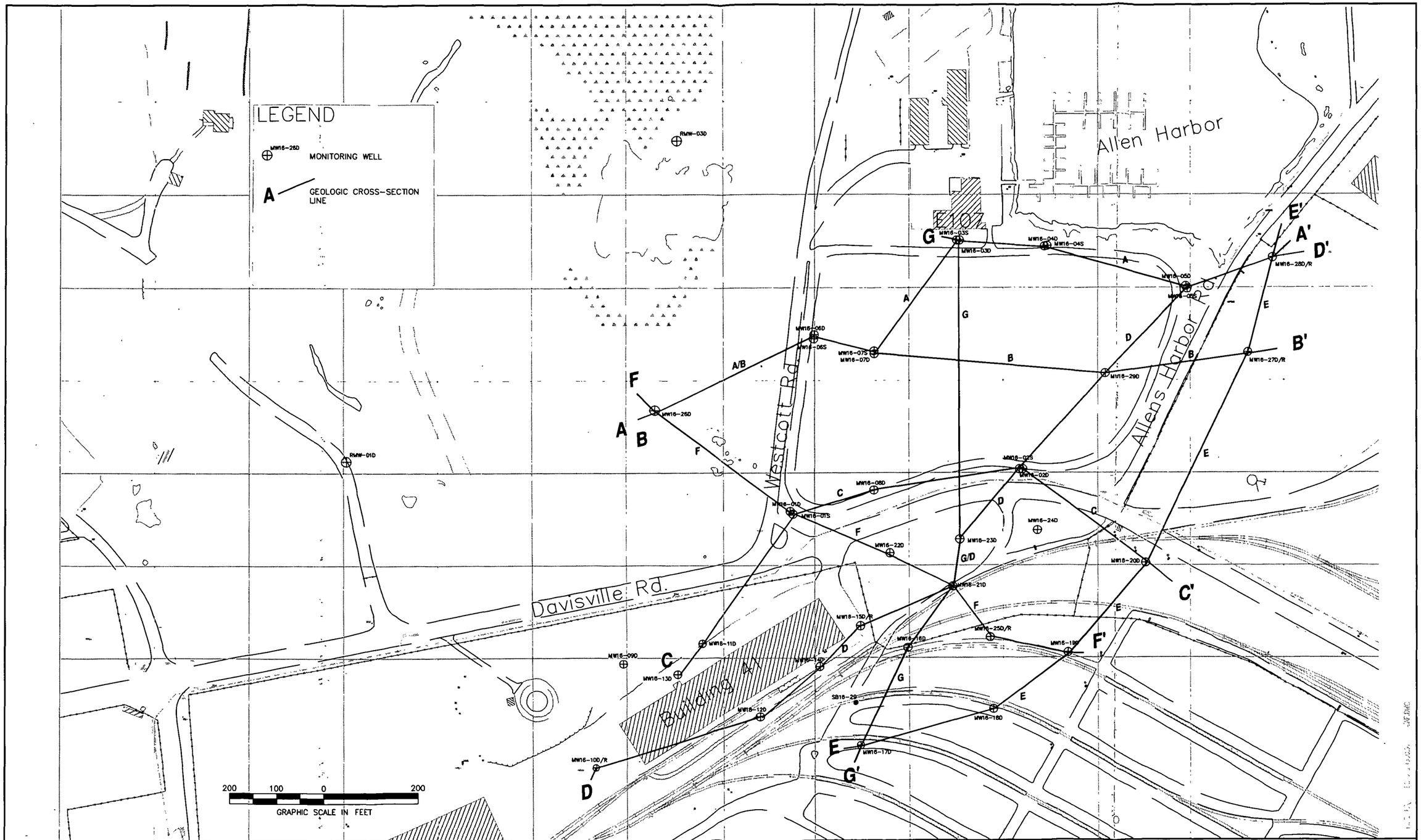
GROUND-WATER, SEEP, AND SOIL SAMPLE LOCATION MAP

FIGURE 2-8

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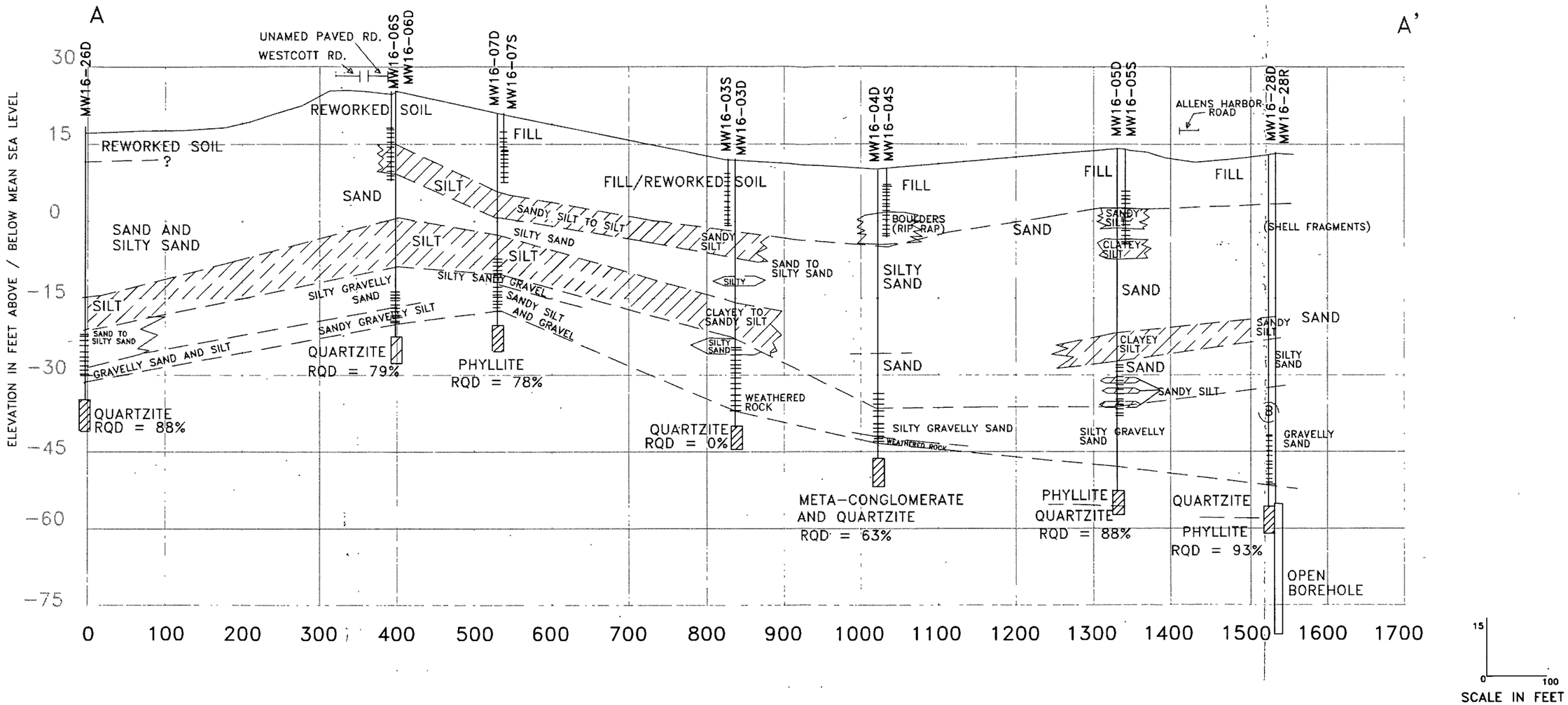
| | CHECKED BY JAS | PROJECT MGR JAS | SCALE AS SHOWN | DRAWING NO | FIGURE 3-1 | LOCATION OF GEOLOGICAL CROSS SECTIONS<br>FIGURE 3-1 |




NOTES:
1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS
2) THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION.

LEGEND

SCREENED INTERVAL OF MONITORING WELL
ROLLERBIT DRILLED INTERVAL
CORED INTERVAL

S SHALLOW MONITORING WELL
D DEEP MONITORING WELL
R ROCK MONITORING WELL

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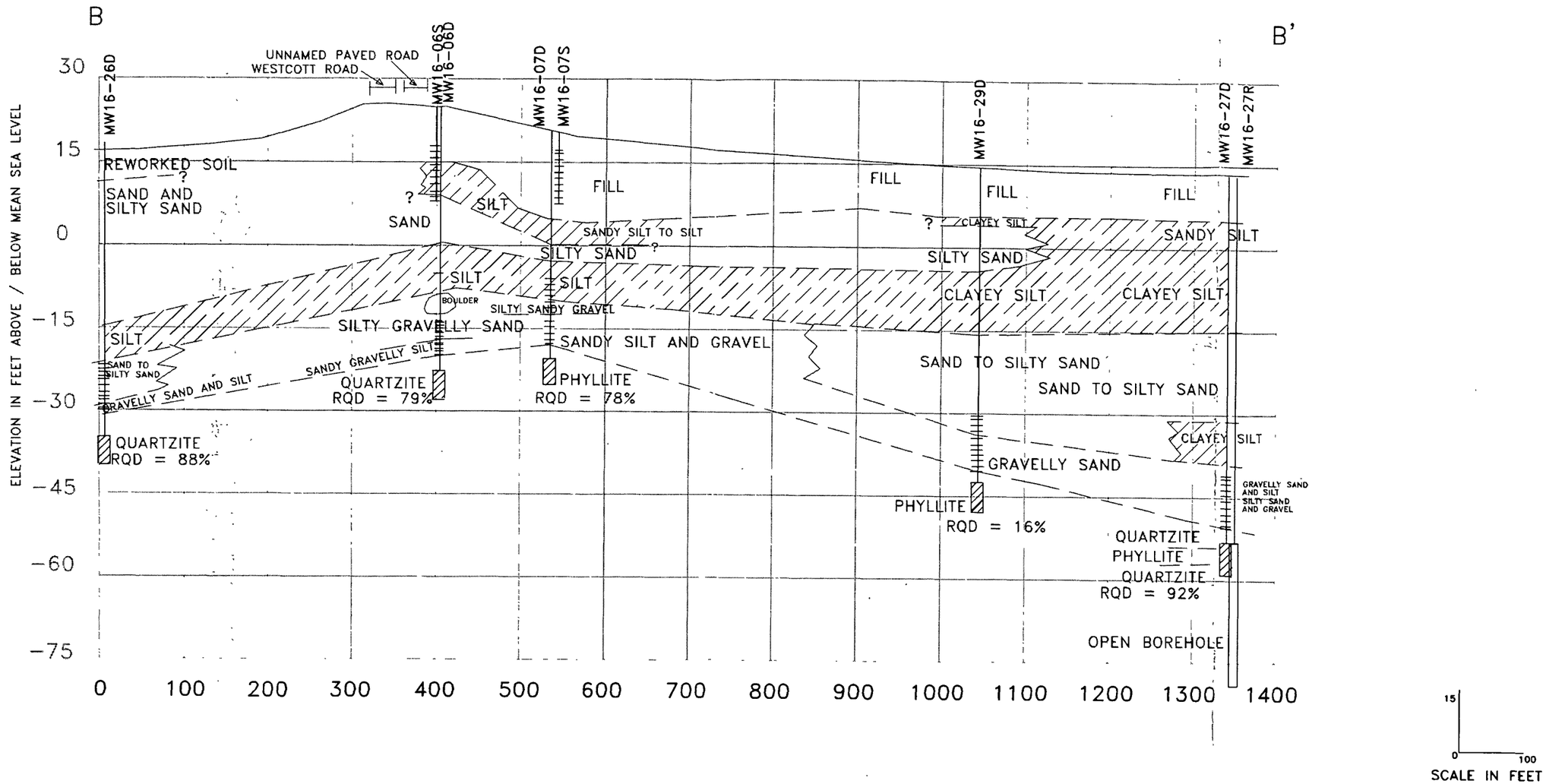
GEOLOGIC CROSS SECTION A–A'

FIGURE 3–2




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION.

LEGEND

SCREENED INTERVAL OF MONITORING WELL

ROLLERBIT DRILLED INTERVAL

CORED INTERVAL

S SHALLOW MONITORING WELL

D DEEP MONITORING WELL

R ROCK MONITORING WELL

F:\PROJECTS\29600.42\.329\REPORTS\DRAFT\CA001\FIG4-20.DWG

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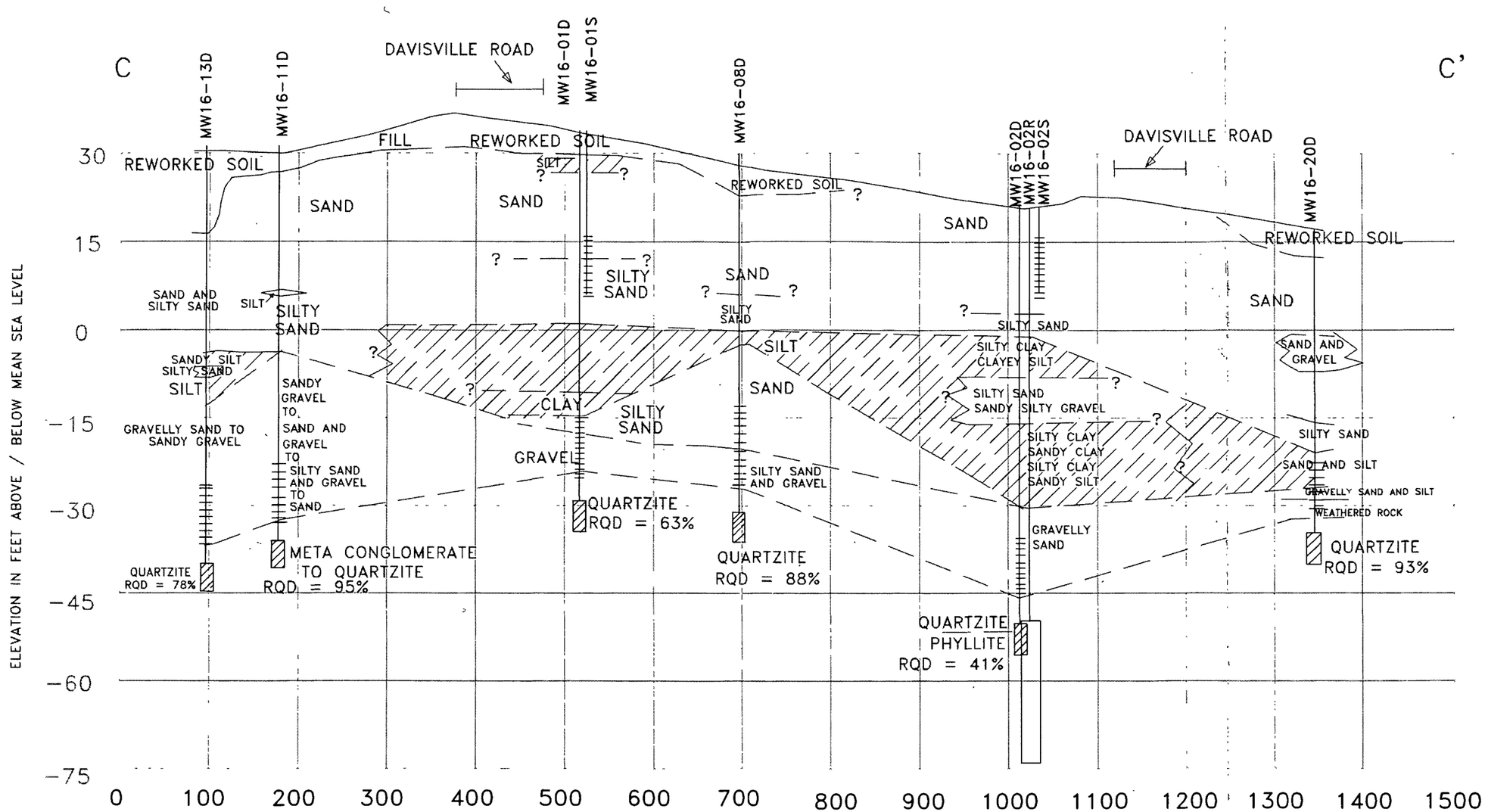
|---|---|---|---|
| RWC | RWC | 7/11/03 | 29600.97 |
| CHECKED BY | PROJECT MGR | SCALE | FILE NAME |
| JAS | JAS | AS SHOWN | B_B.DWG |

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE, NORTH KINGSTOWN, RHODE ISLAND

GEOLOGIC CROSS SECTION B–B'

FIGURE 3–3




## LEGEND

| | |
|---|---|
| S | SHALLOW MONITORING WELL |
| D | DEEP MONITORING WELL |
| R | ROCK MONITORING WELL |
| TD | TOTAL DEPTH |
| ▼ | WATER LEVEL |

SCREENED INTERVAL OF MONITORING WELL

BENTONITE SEALED BOREHOLE

NOTES:
1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS
2) THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION

15
0 100
SCALE IN FEET

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|---|---|---|---|
| RWC | RWC | 7/11/03 | 29600.97 |
| CHECKED BY | PROJECT MGR. | SCALE | FILE NAME |
| JAS | JAS | AS SHOWN | C_C.DWG |

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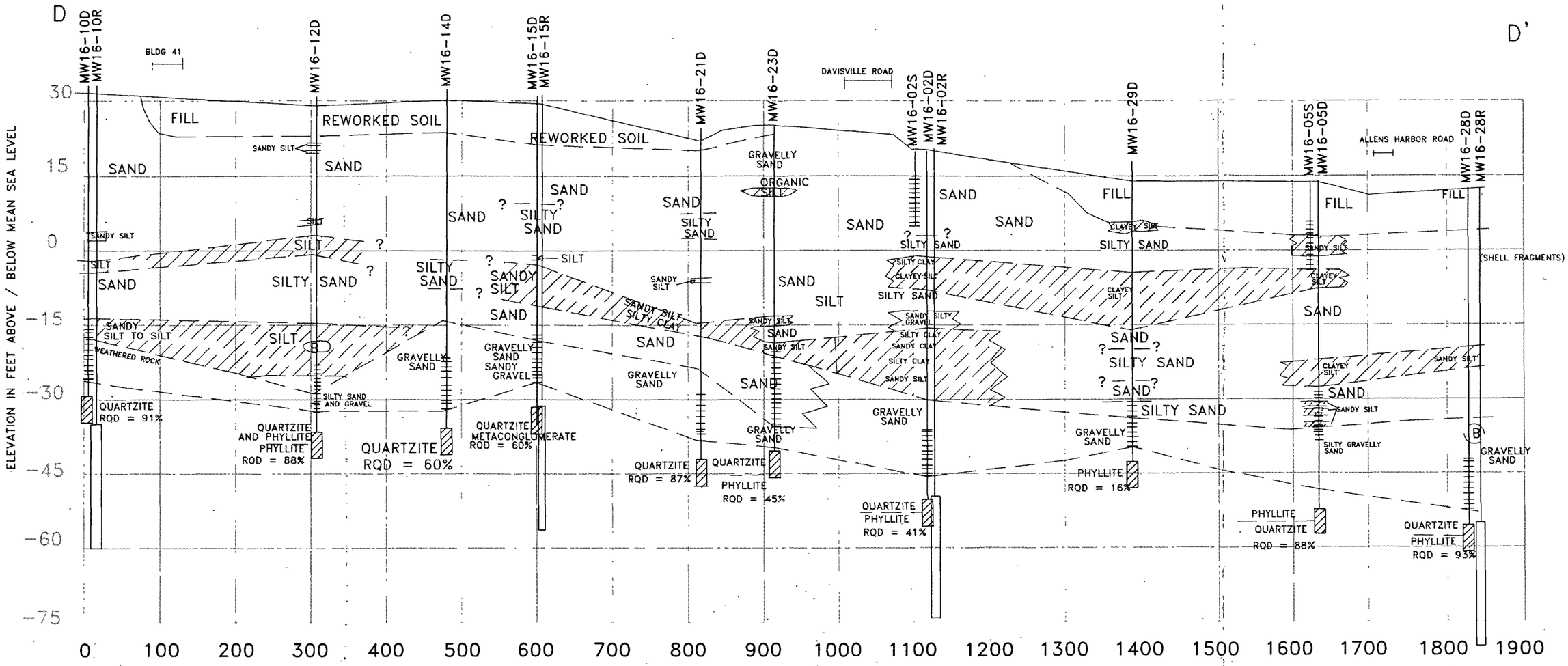
GEOLOGIC CROSS SECTION C-C'

FIGURE 3-4




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION

LEGEND

- SCREENED INTERVAL OF MONITORING WELL
- ROLLERBIT DRILLED INTERVAL
- CORED INTERVAL

S SHALLOW MONITORING WELL
D DEEP MONITORING WELL
R ROCK MONITORING WELL

F:\PROJECTS\29600.32\297\REPORTS\DRAFT\CAD01\FIG4-20.DWG

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|---|---|---|---|
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| CHECKED BY | PROJECT MGR. | SCALE | FILE NAME |
| JAS | JAS | AS SHOWN | D_D.DWG |

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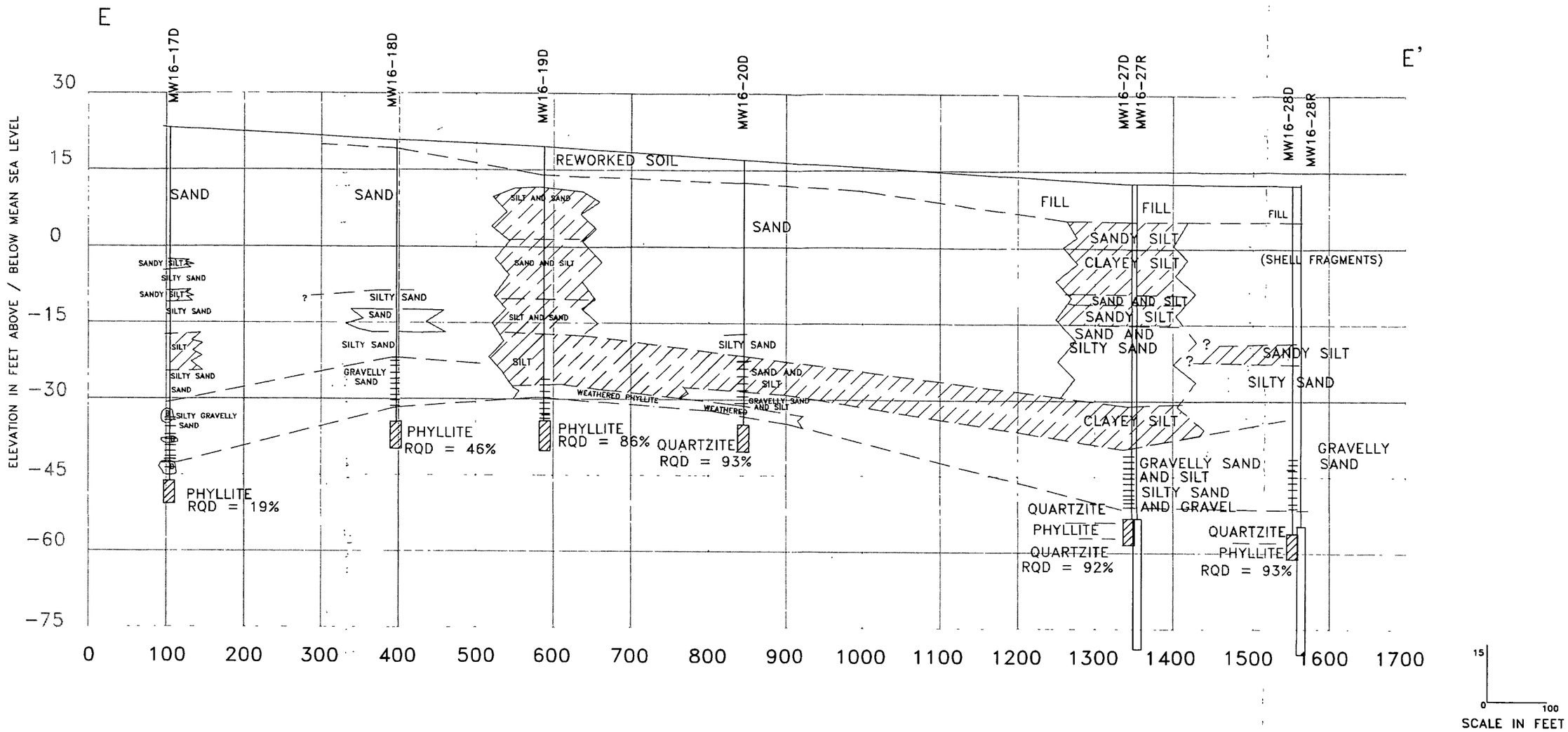
GEOLOGIC CROSS SECTION D-D'

FIGURE 3-5




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL INSTALLATION

LEGEND

SCREENED INTERVAL OF MONITORING WELL

ROLLERBIT DRILLED INTERVAL

CORED INTERVAL

S SHALLOW MONITORING WELL

D DEEP MONITORING WELL

R ROCK MONITORING WELL

F:\PROJECTS\29600.32\3297\REPORTS\DRAFT\CAD01\7164-20.DWG

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|---|---|---|---|
| RWC | RWC | 7/11/03 | 29600.97 |
| CHECKED BY | PROJECT MGR. | SCALE | FILE NAME |
| JAS | JAS | AS SHOWN | E_E.DWG |

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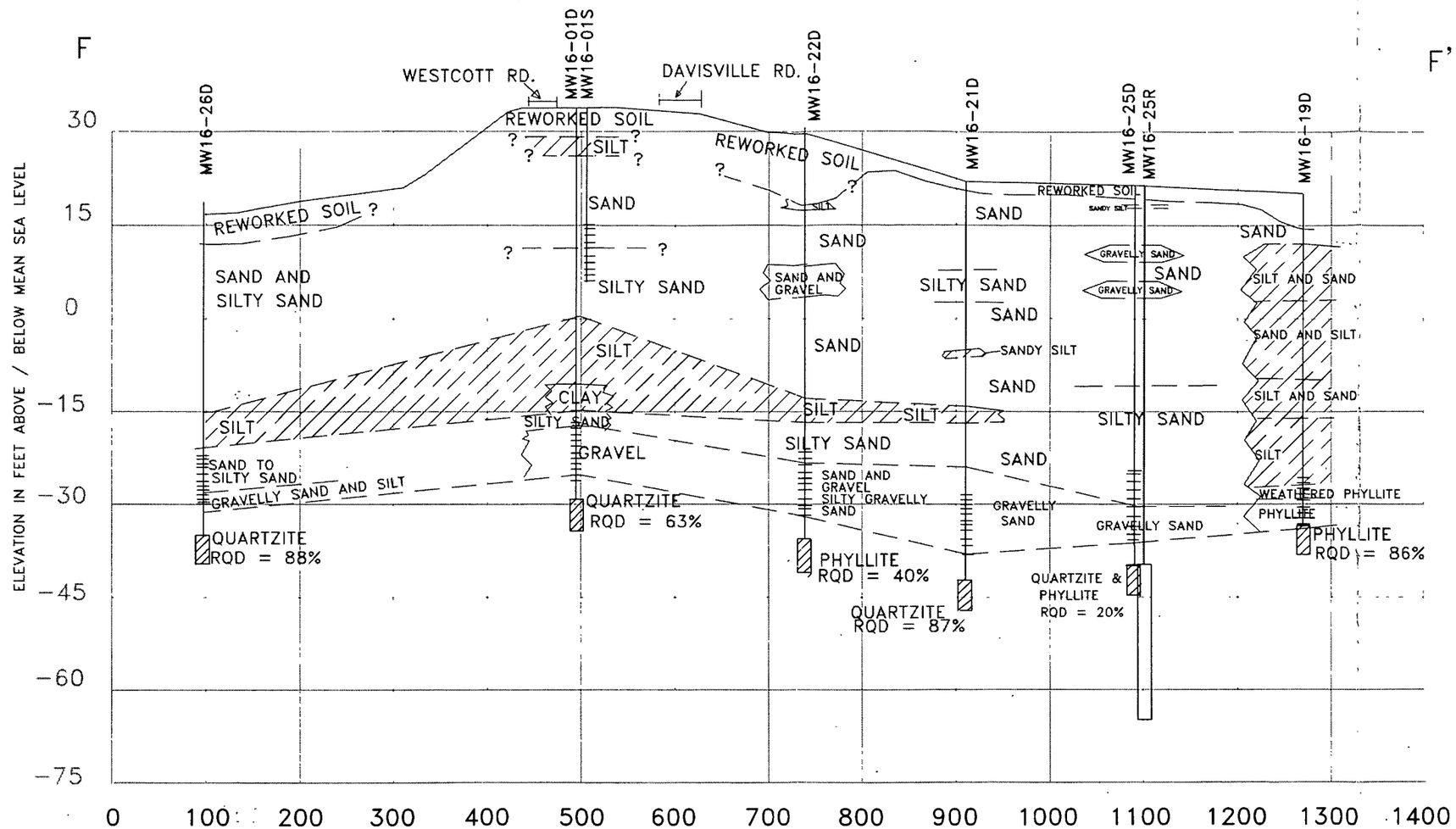
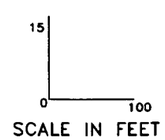
GEOLOGIC CROSS SECTION E-E'

FIGURE 3-6




NOTES:
1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS
2) THE SUBSURFACE SECTIONS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3) ROLLERBIT DRILLED AND CORED INTERVALS WITH BENTONITE PRIOR TO MONITORING WELL INSTALLATION

LEGEND

SCREENED INTERVAL OF MONITORING WELL
ROLLERBIT DRILLED INTERVAL
CORED INTERVAL

S SHALLOW MONITORING WELL
D DEEP MONITORING WELL
R ROCK MONITORING WELL

F:\PROJECTS\29600.32\329?\REPORTS\DRAFT\CAD01\FIG4-20.DWG

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| DESIGNED BY | DRAWN BY | DATE | PROJECT NO. |
|---|---|---|---|
| RWC | RWC | 7/11/03 | 29600.97 |
| CHECKED BY | PROJECT MGR. | SCALE | FILE NAME |
| JAS | JAS | AS SHOWN | F_F.DWG |

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IR PROGRAM SITE 16
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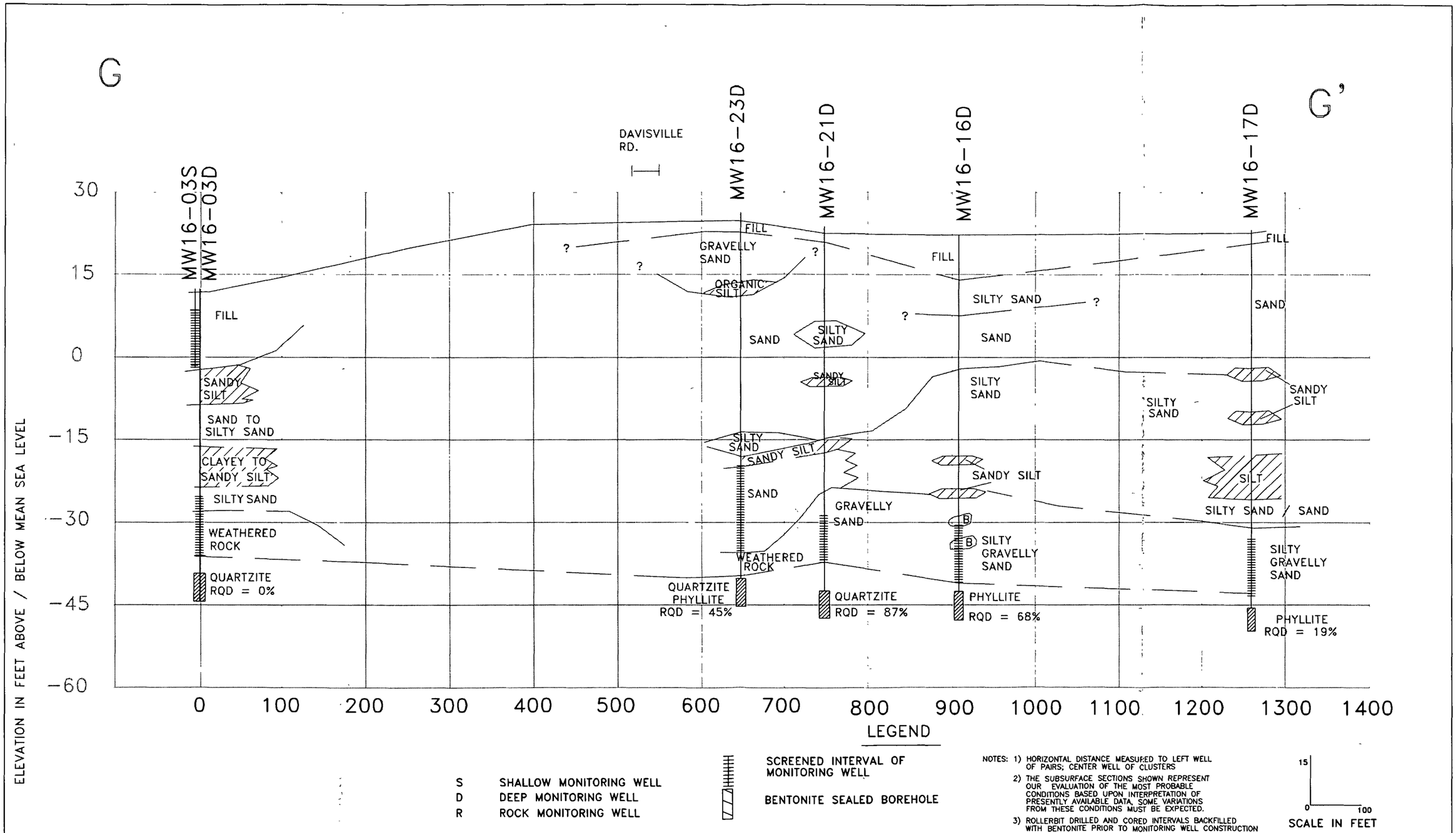
GEOLOGIC CROSS SECTION F-F'

FIGURE 3-7




EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

| DESIGNED BY | DRAWN BY | DATE | PROJECT NO. |
|---|---|---|---|
| JAS | RWC | 7/14/03 | 29600.97 |
| CHECKED BY | PROJECT MGR. | SCALE | FILE NAME |
| JAS | JAS | AS SHOWN | G_G.DWG |

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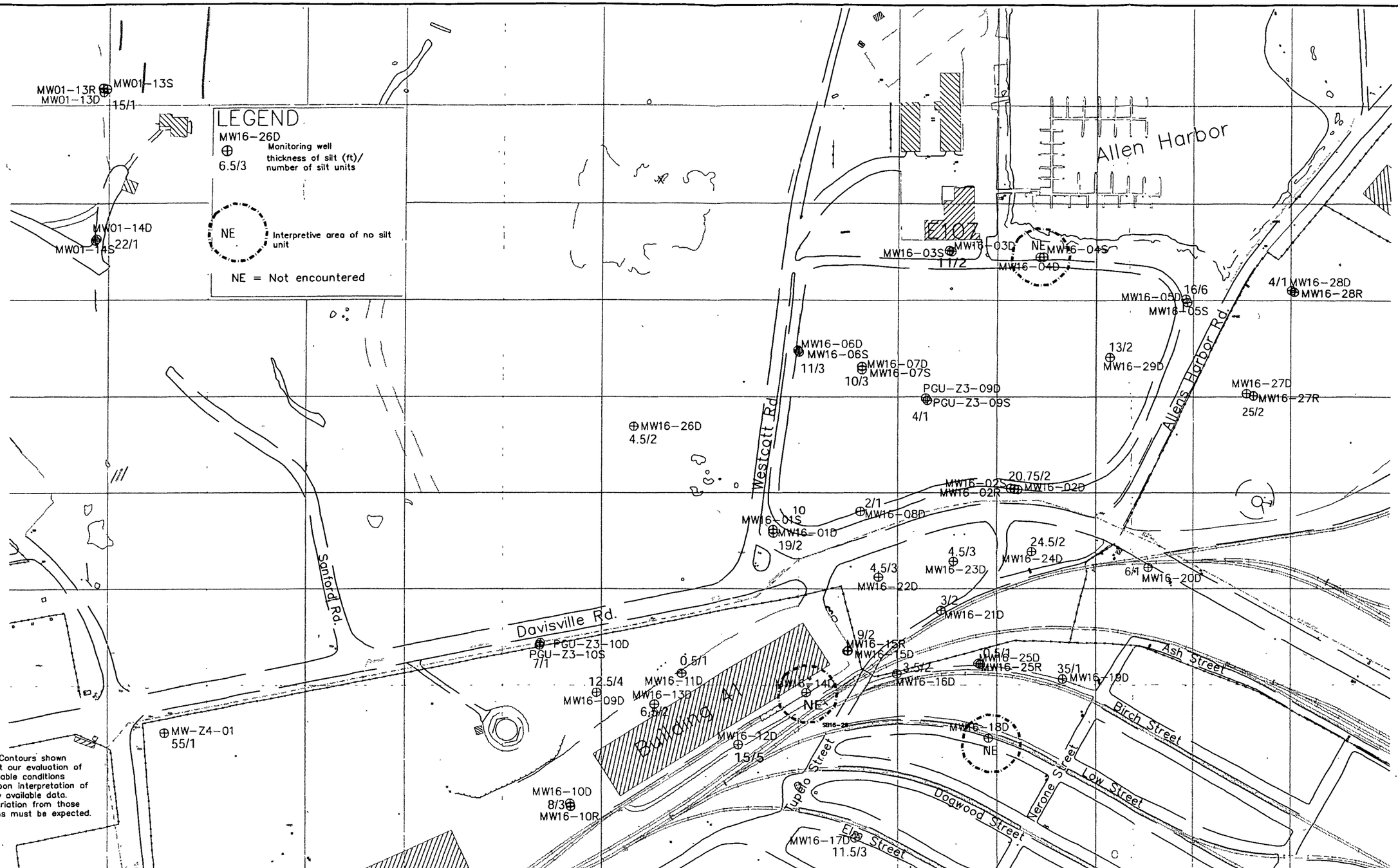
GEOLOGIC CROSS SECTION G–G'

FIGURE 3–8




NOTE: Contours shown represent our evaluation of the probable conditions based upon interpretation of presently available data. Some variation from those conditions must be expected.

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| DESIGNED BY | DRAWN BY | DATE | PROJECT NO. | FILE NAME |
|---|---|---|---|---|
| JAS | RWC | 9/10/03 | 29600.97 | SITE MAP |
| CHECKED BY | PROJECT MGR. | SCALE | DRAWING NO. | FIGURE |
| JAS | JAS | 200 | | 3-10 |

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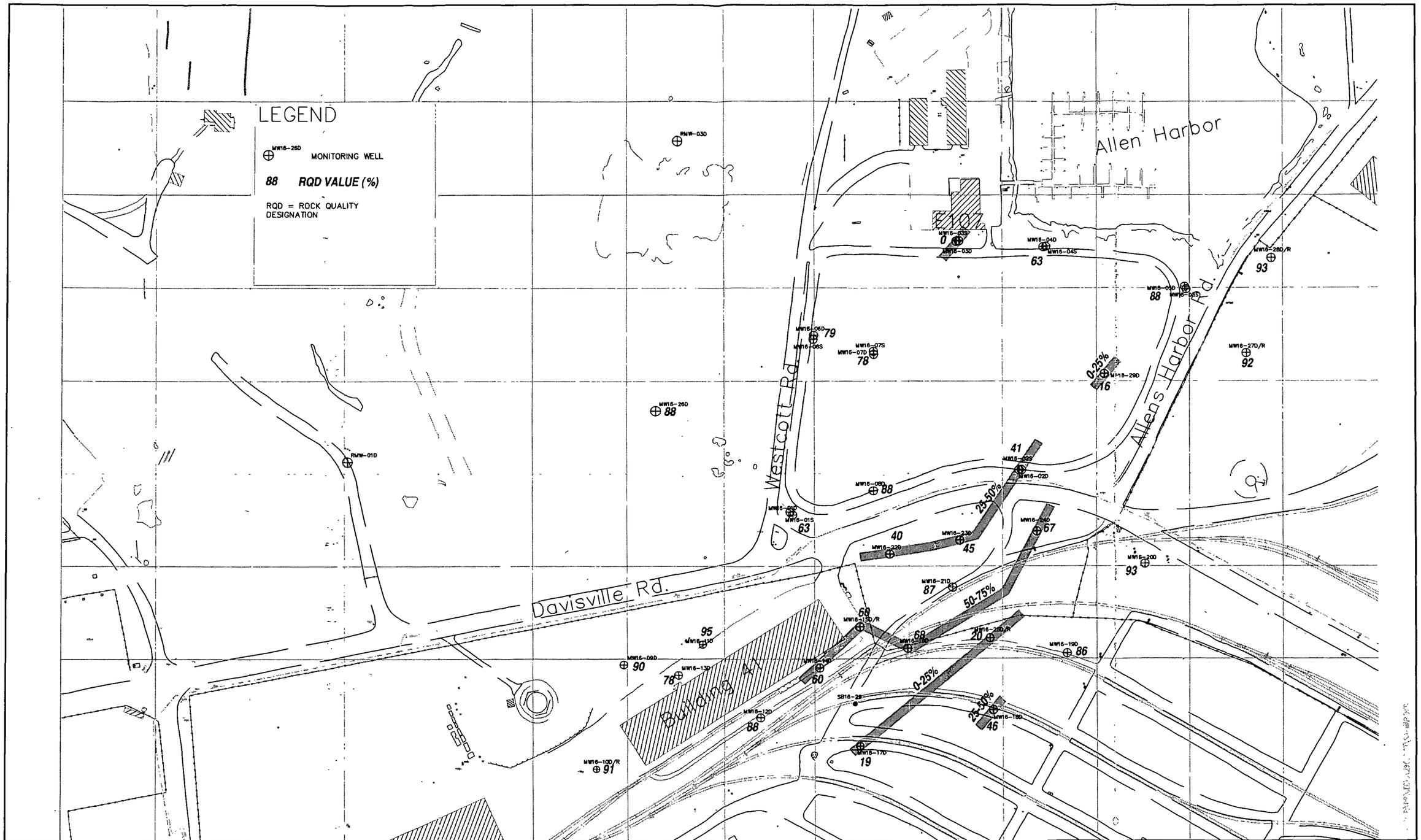
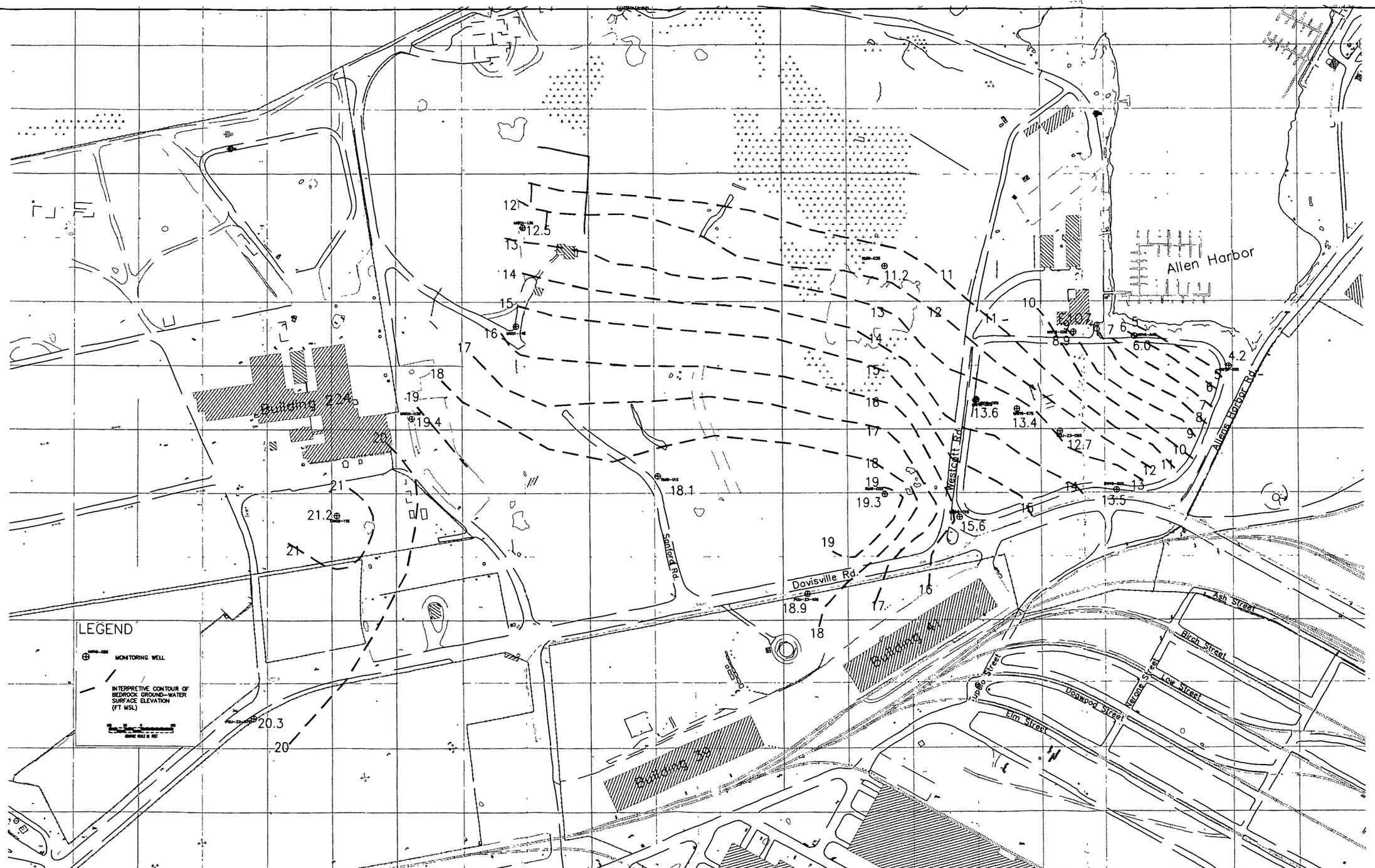
IR PROGRAM SITE 16
NCBC DAVISVILLE, NORTH KINGSTOWN, RI

INTERPRETIVE THICKNESS OF THE SILT UNIT (IN FEET)

FIGURE 3-9




| | | | | | | |
|---|---|---|---|---|---|---|
| EA ENGINEERING, SCIENCE, AND TECHNOLOGY | DESIGNED BY JAS | DRAWN BY RWC | DATE 7/14/03 | PROJECT NO. 29600.97 | FILE NAME RQD MAP | EFANE<br>PHASE I REMEDIAL INVESTIGATION<br>IR PROGRAM SITE 16<br>NCBC DAVISVILLE, NORTH KINGSTOWN, RI |
| | CHECKED BY JAS | PROJECT MGR. JAS | SCALE AS SHOWN | DRAWING NO. | FIGURE 3-10 | ROCK QUALITY DESIGNATION<br>OF CORED INTERVALS OF BEDROCK<br>FIGURE 3-10 |




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

| DESIGNED BY | DRAWN BY | DATE | PROJECT NO | FILE NAME |
|---|---|---|---|---|
| JAS | RWC | 7/14/03 | 29600.97 | SHAL_CONT |
| CHECKED BY | PROJECT MGR. | SCALE | DRAWING NO. | FIGURE |
| JAS | JAS | AS SHOWN | | 3-11 |

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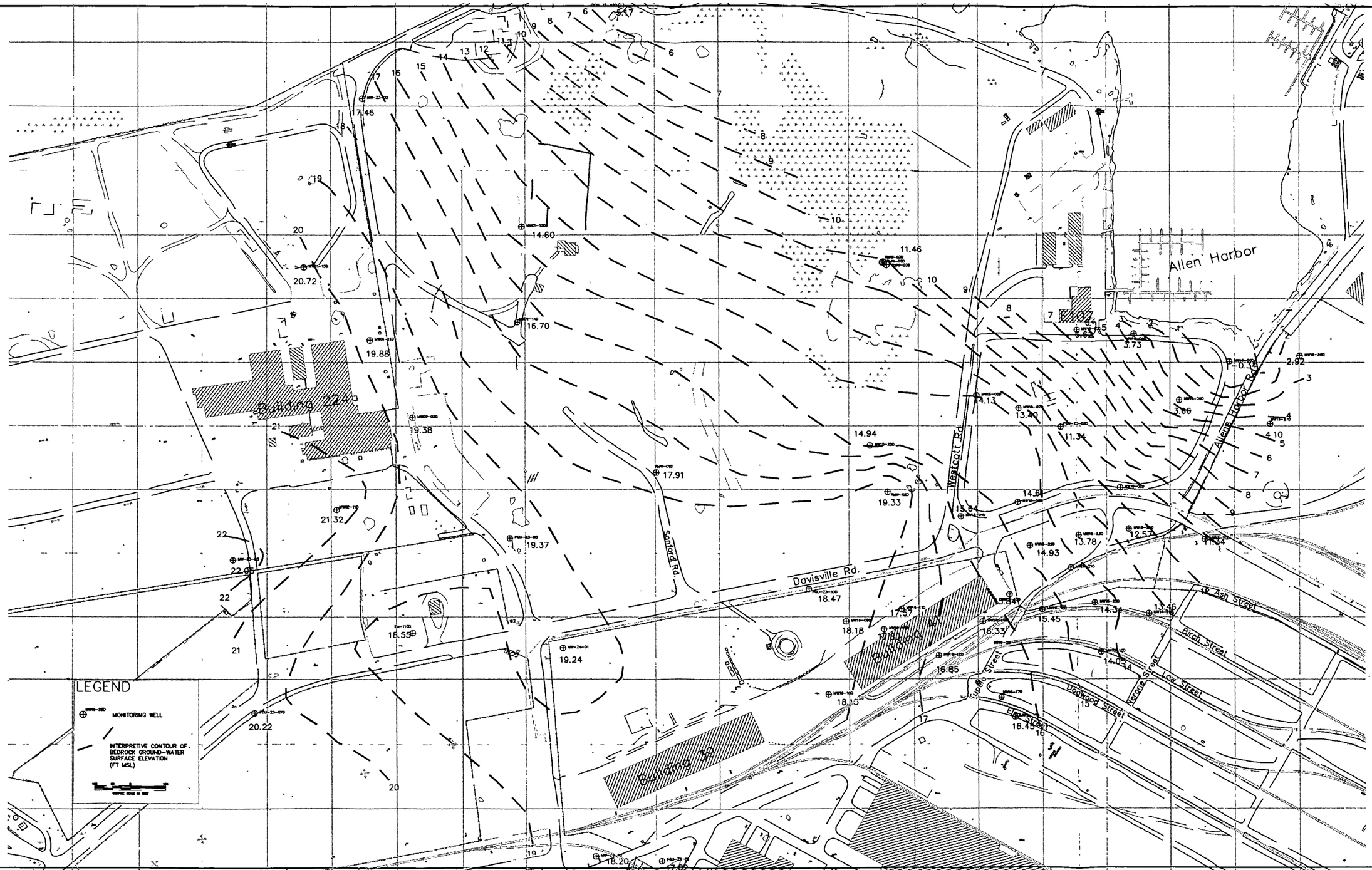
IR PROGRAM SITE 16
NCBC DAVISVILLE, NORTH KINGSTOWN, RI

INTERPRETIVE GROUND WATER CONTOUR MAP
SHALLOW WELLS, SITE 16
MAY 2001

FIGURE 3-11




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

| DESIGNED BY | DRAWN BY | DATE | PROJECT NO. | FILE NAME |
|---|---|---|---|---|
| JAS | RWC | 7/14/03 | 29600.97 | DEEP CONTOUR |
| CHECKED BY | PROJECT MGR. | SCALE | DRAWING NO. | FIGURE |
| JAS | JAS | AS SHOWN | | 3-12 |

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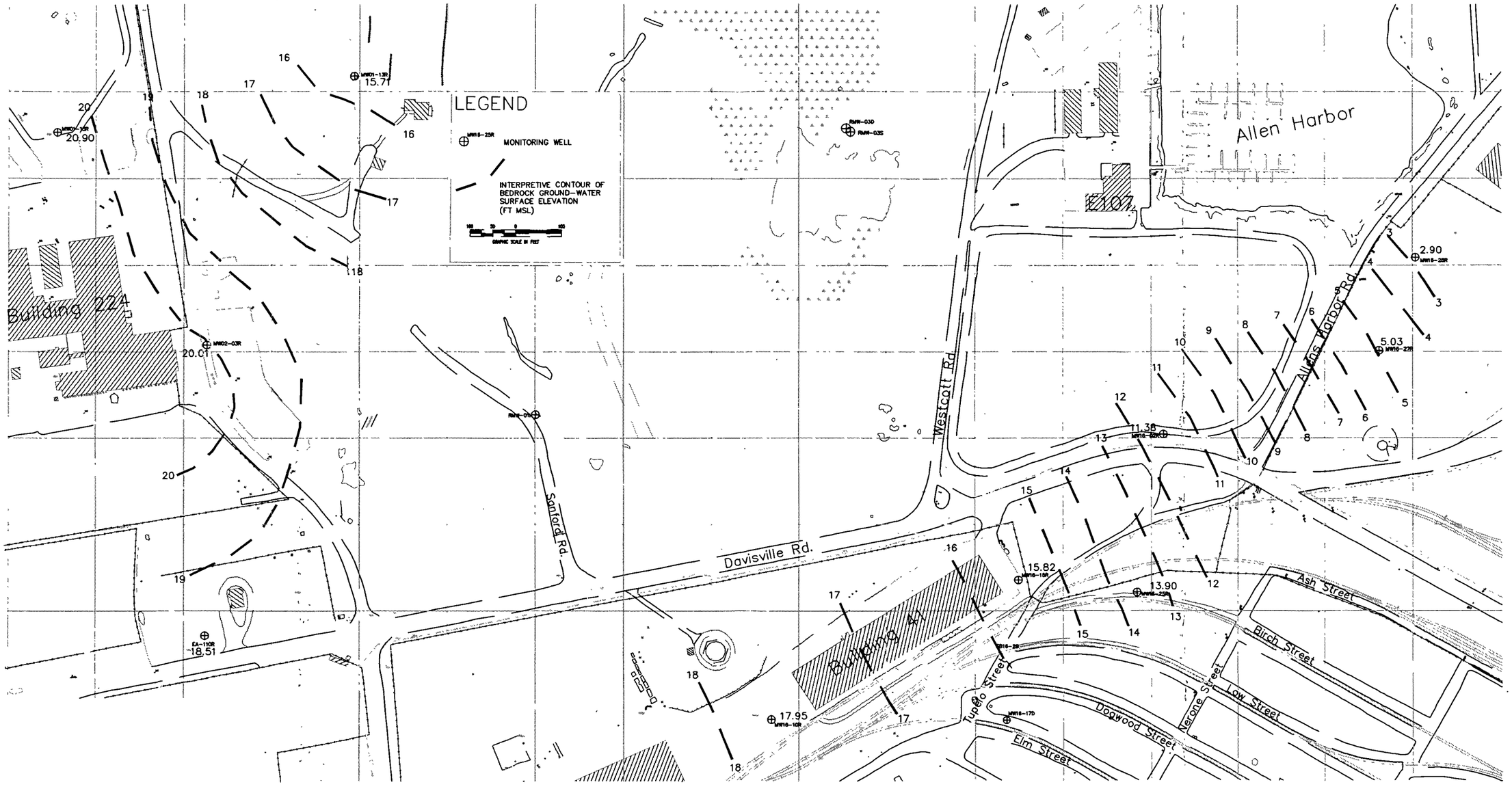
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE, NORTH KINGSTOWN, RI

INTERPRETIVE GROUND WATER CONTOUR MAP
DEEP WELLS, SITE 16
MAY 2001

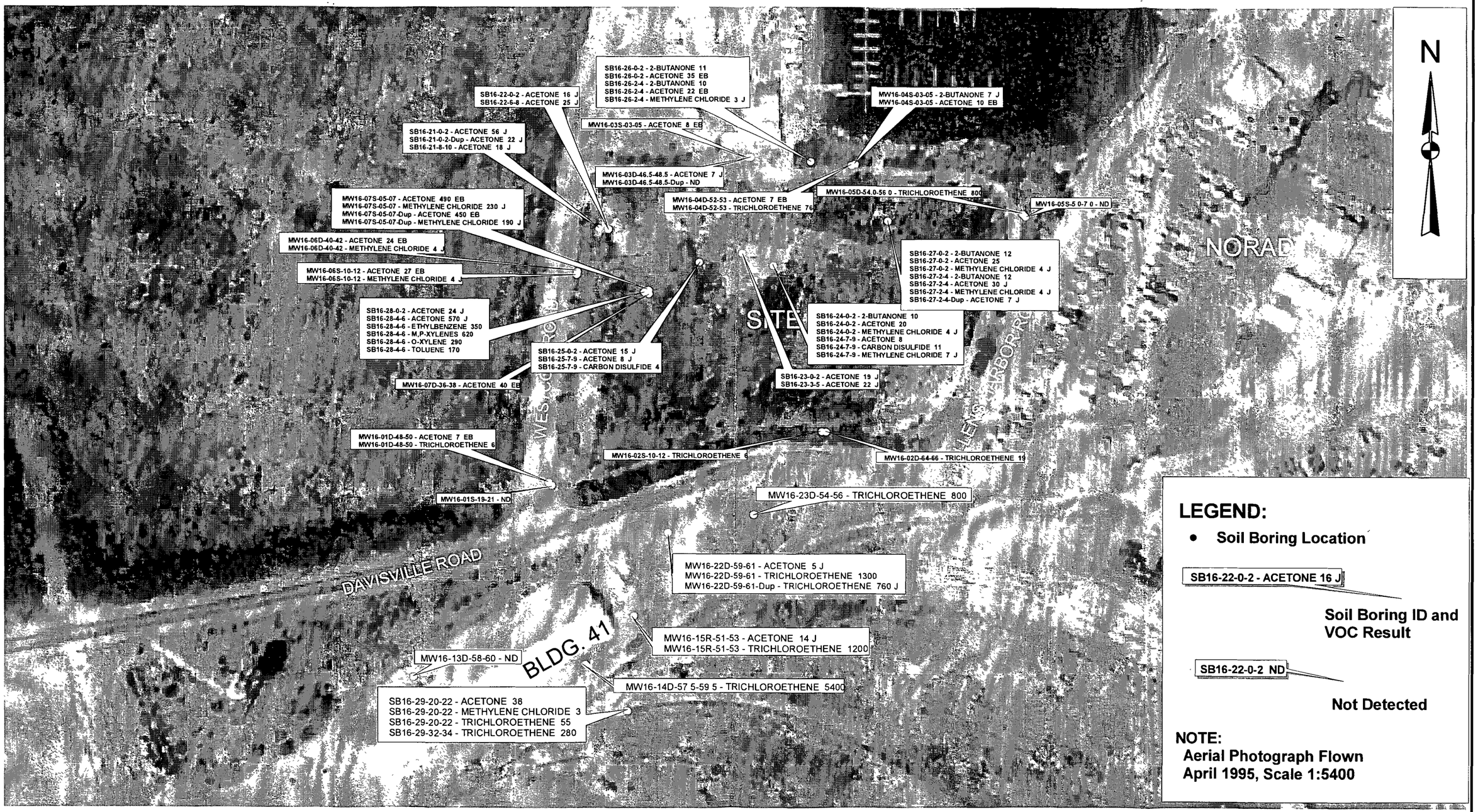
FIGURE 3-12




| | | | | | | |
|---|---|---|---|---|---|---|
| EA ENGINEERING, SCIENCE, AND TECHNOLOGY | DESIGNED BY JAS | DRAWN BY RWC | DATE 7/14/03 | PROJECT NO. 29600.97 | FILE NAME ROCK CONTOUR | EFANE<br>PHASE I REMEDIAL INVESTIGATION<br>IR PROGRAM SITE 16<br>NCBC DAVISVILLE, NORTH KINGSTOWN, RI |
| | CHECKED BY JAS | PROJECT MGR. JAS | SCALE AS SHOWN | DRAWING NO. | FIGURE 3-13 | |

INTERPRETIVE GROUND WATER CONTOUR MAP
BEDROCK WELLS, SITE 16
MAY 2001

FIGURE 3-13



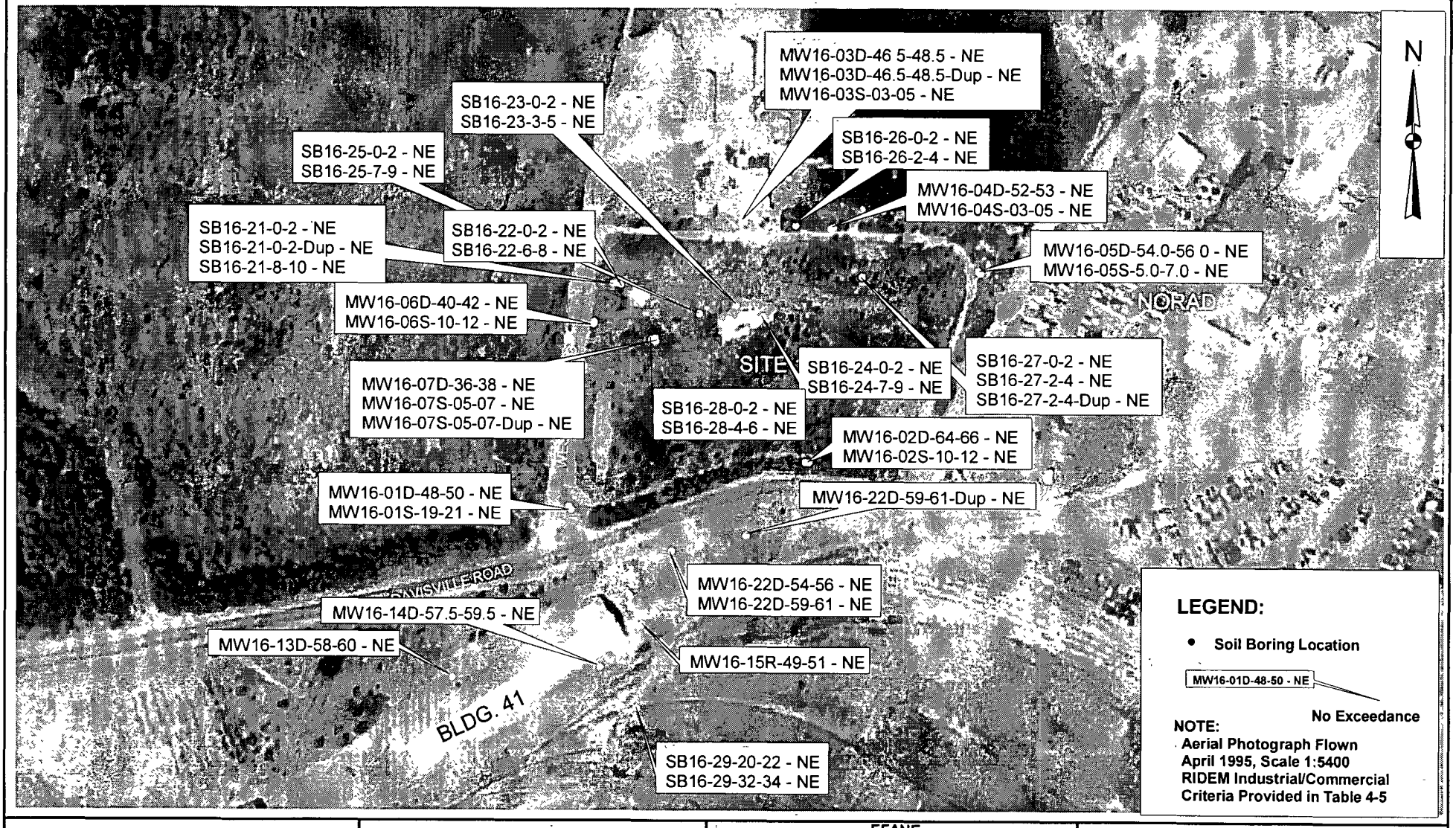

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

VOC COMPOUNDS (UG/KG)
DETECTED IN SOIL SAMPLES
(MAY 2000 AND JANUARY 2001)

FIGURE 4-1



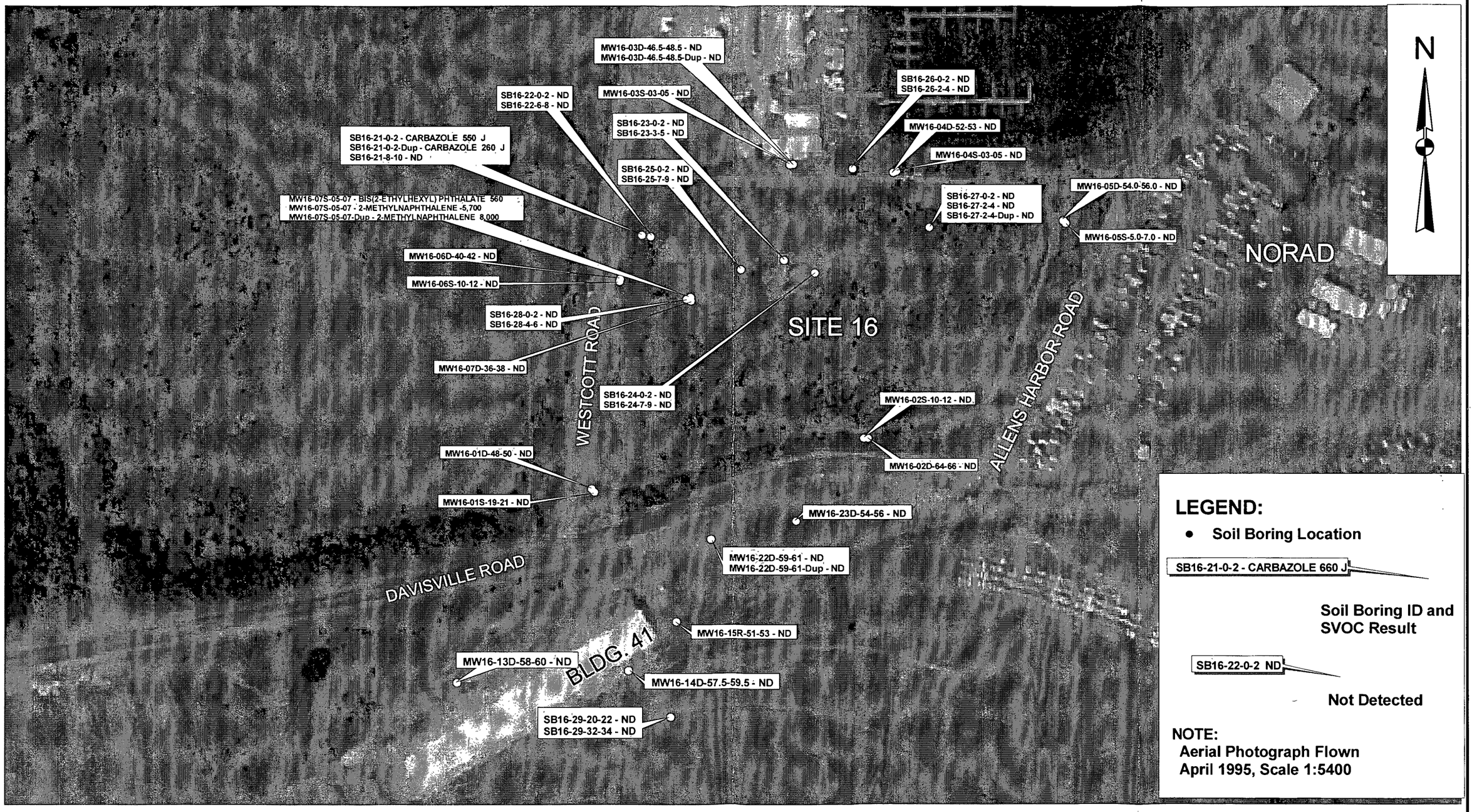

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

VOC COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM RESIDENTIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-2



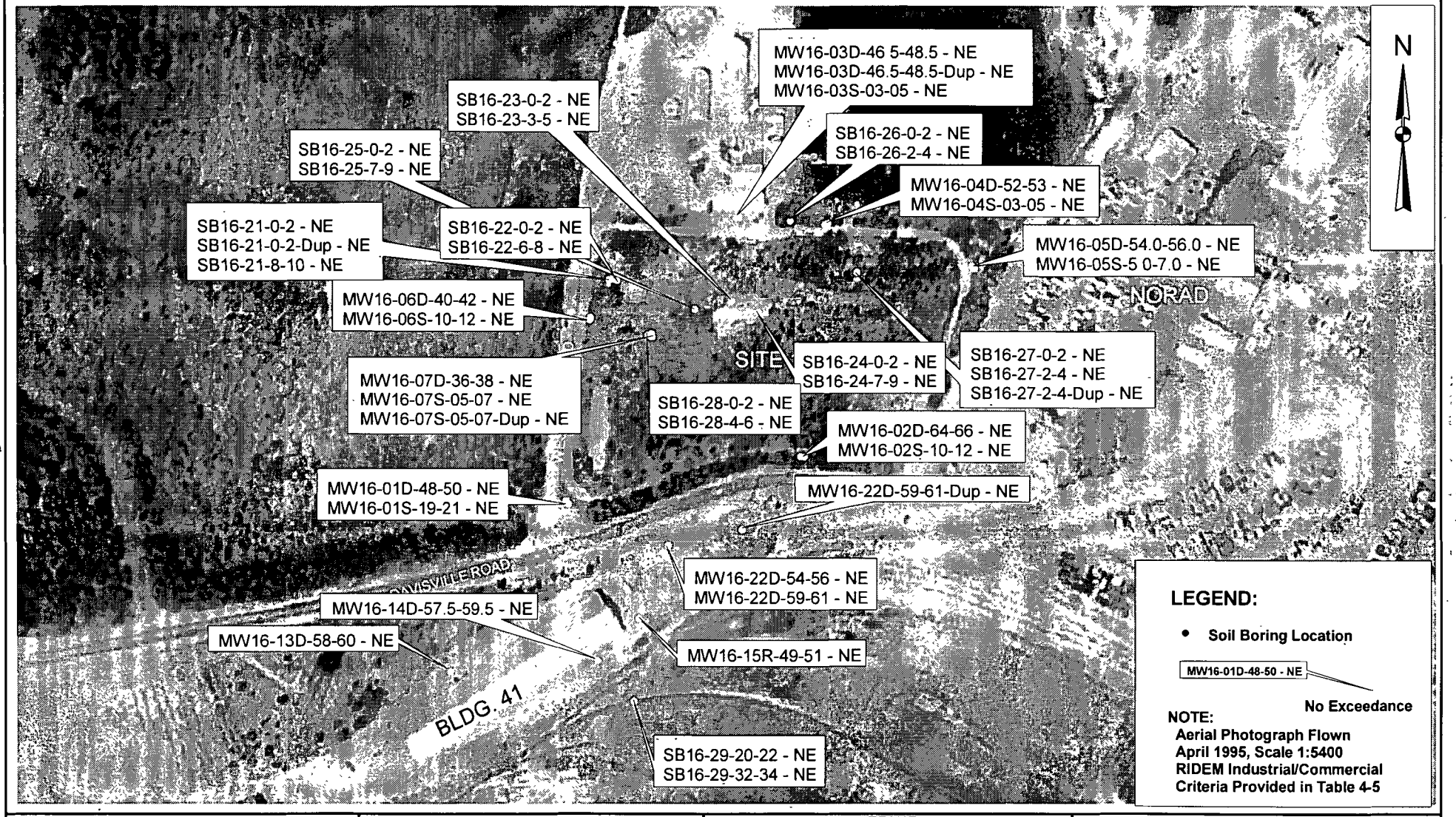

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

SVOC COMPOUNDS (UG/KG)
DETECTED IN SOIL SAMPLES
(MAY 2000 AND JANUARY 2001)

FIGURE 4-3



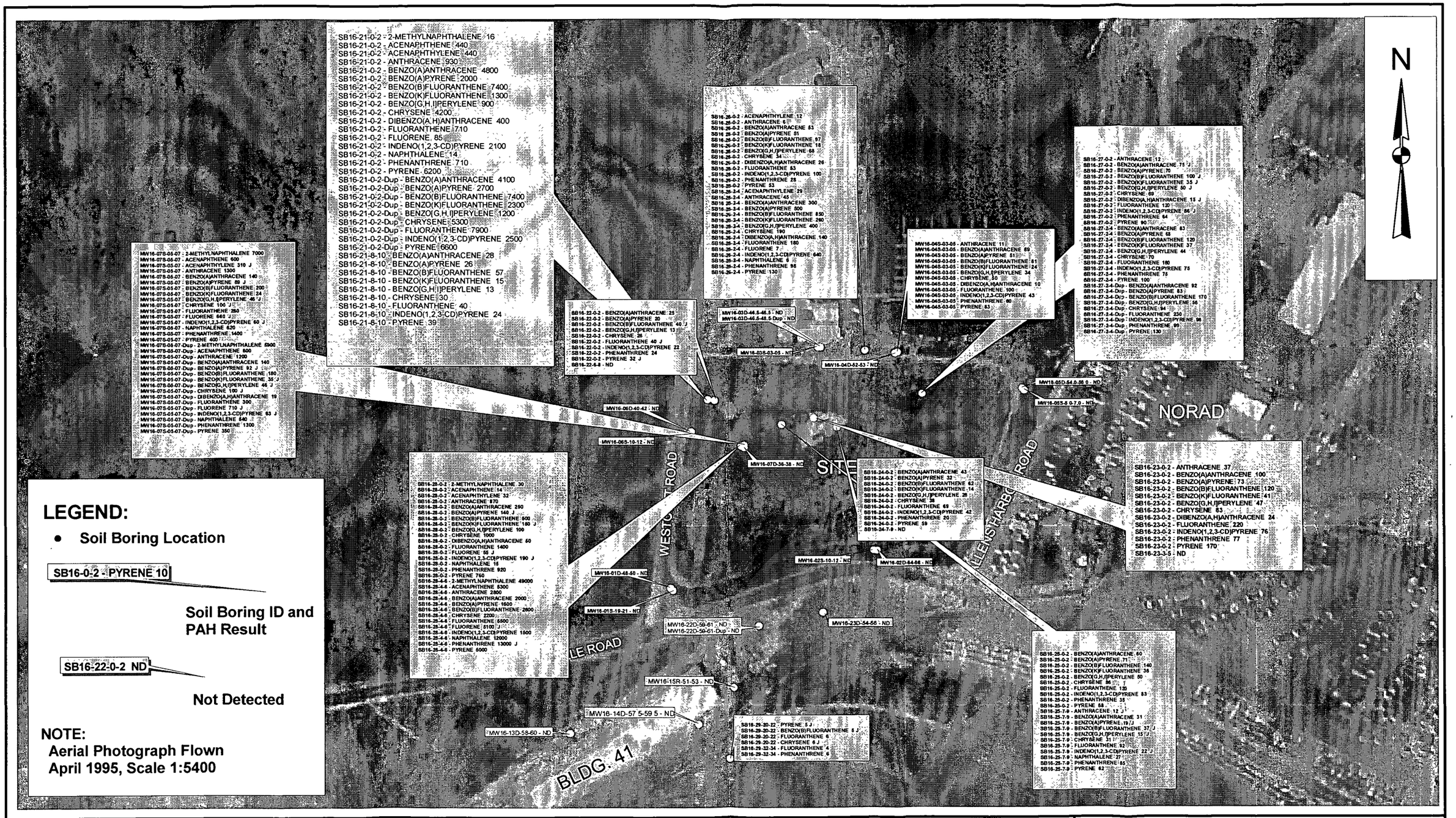

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

SVOC COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM RESIDENTIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-4




## LEGEND:

- Soil Boring Location

SB16-0-2 - PYRENE 10

Soil Boring ID and PAH Result

SB16-22-0-2 ND

Not Detected

**NOTE:**
Aerial Photograph Flown
April 1995, Scale 1:5400

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
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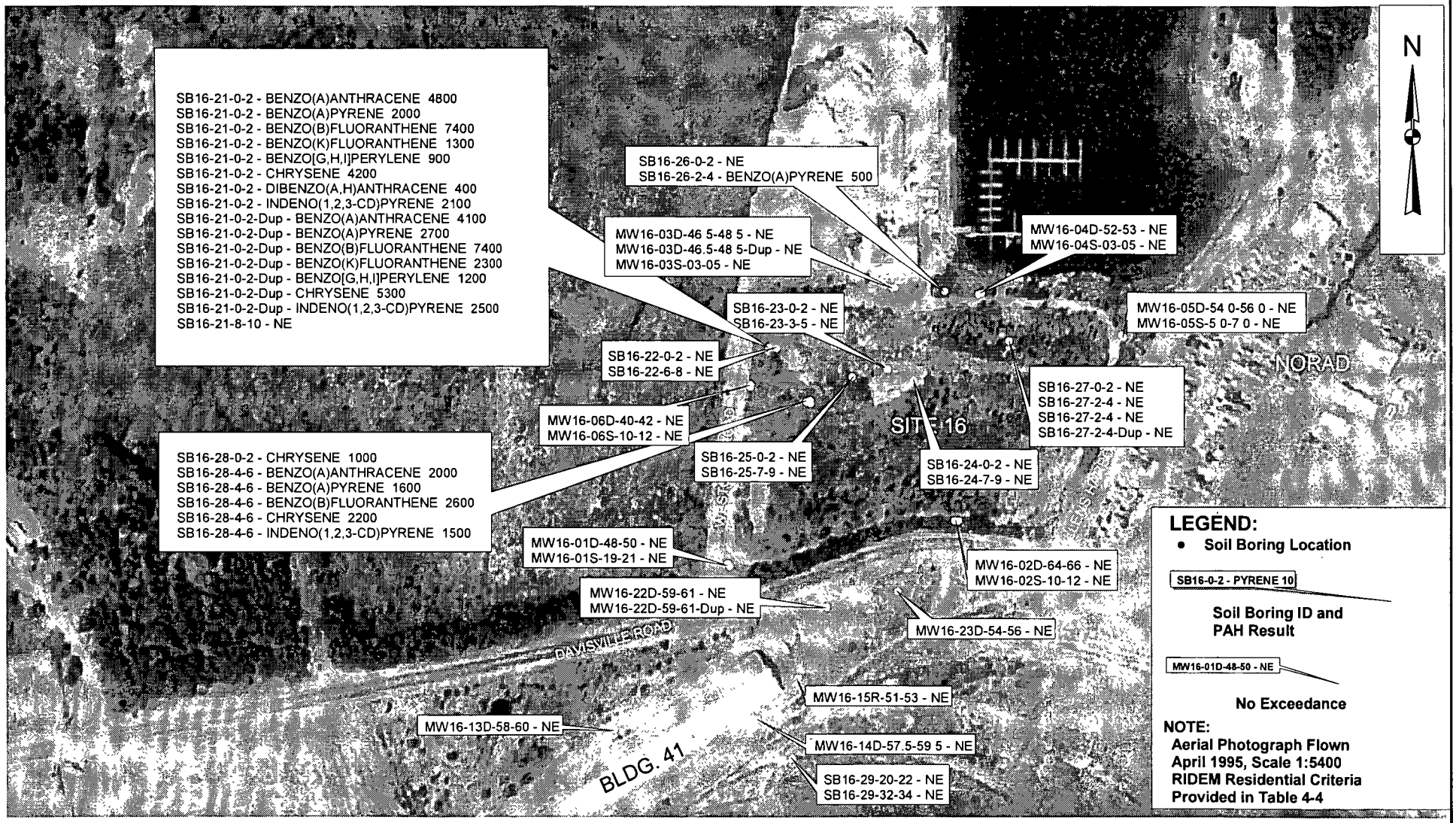
NORTH KINGSTOWN, RHODE ISLAND

PAH COMPOUNDS (UG/KG)
DETECTED IN SOIL SAMPLES
(MAY 2000 AND JANUARY 2001)

FIGURE 4-5




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PAH COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM RESIDENTIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-6

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
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NORTH KINGSTOWN, RHODE ISLAND

PAH COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM COMMERCIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-7

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
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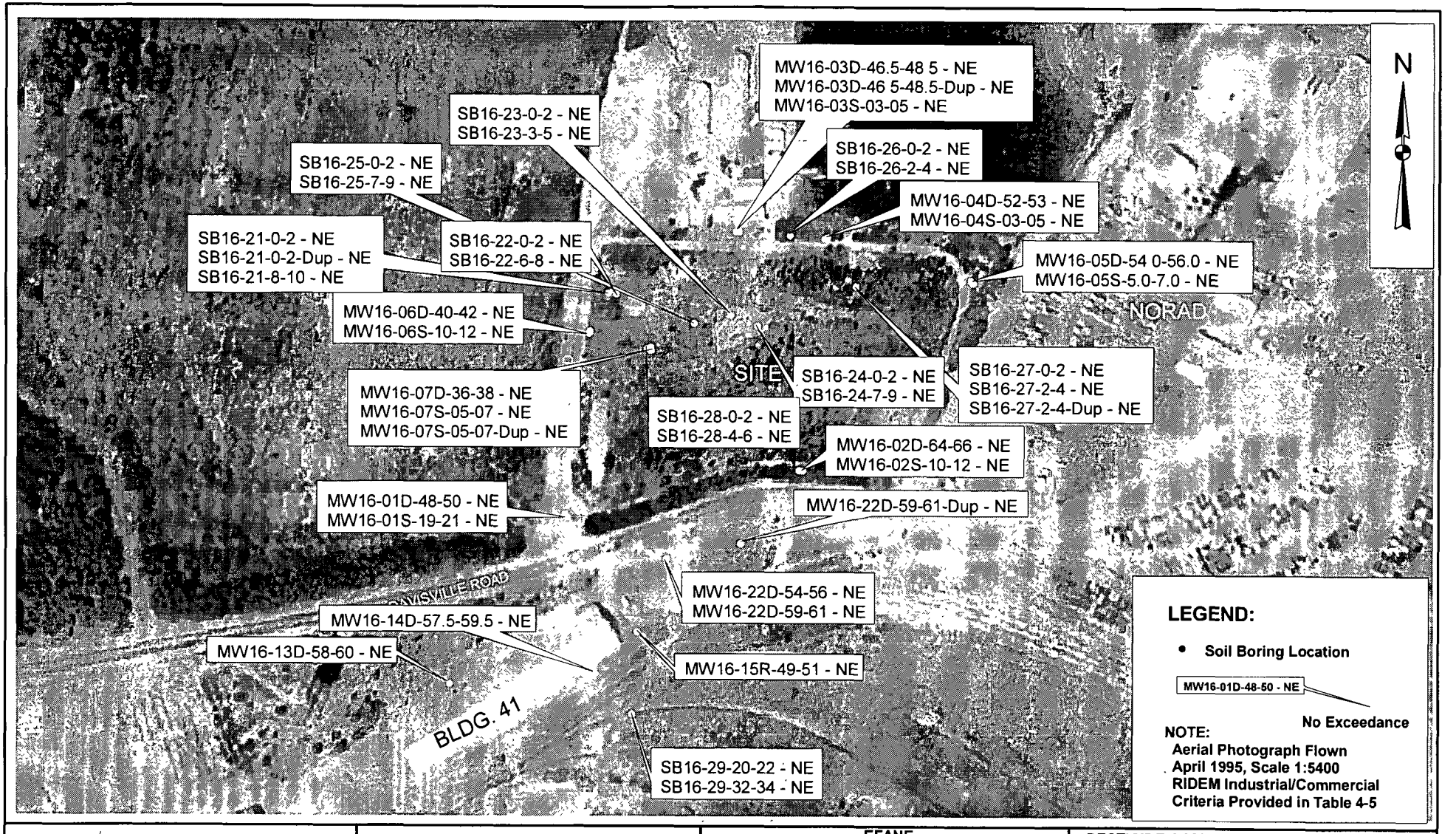
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PESTICIDE COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES (MAY 2000 AND JANUARY 2001)

FIGURE 4-8




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PESTICIDE COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM RESIDENTIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-9

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

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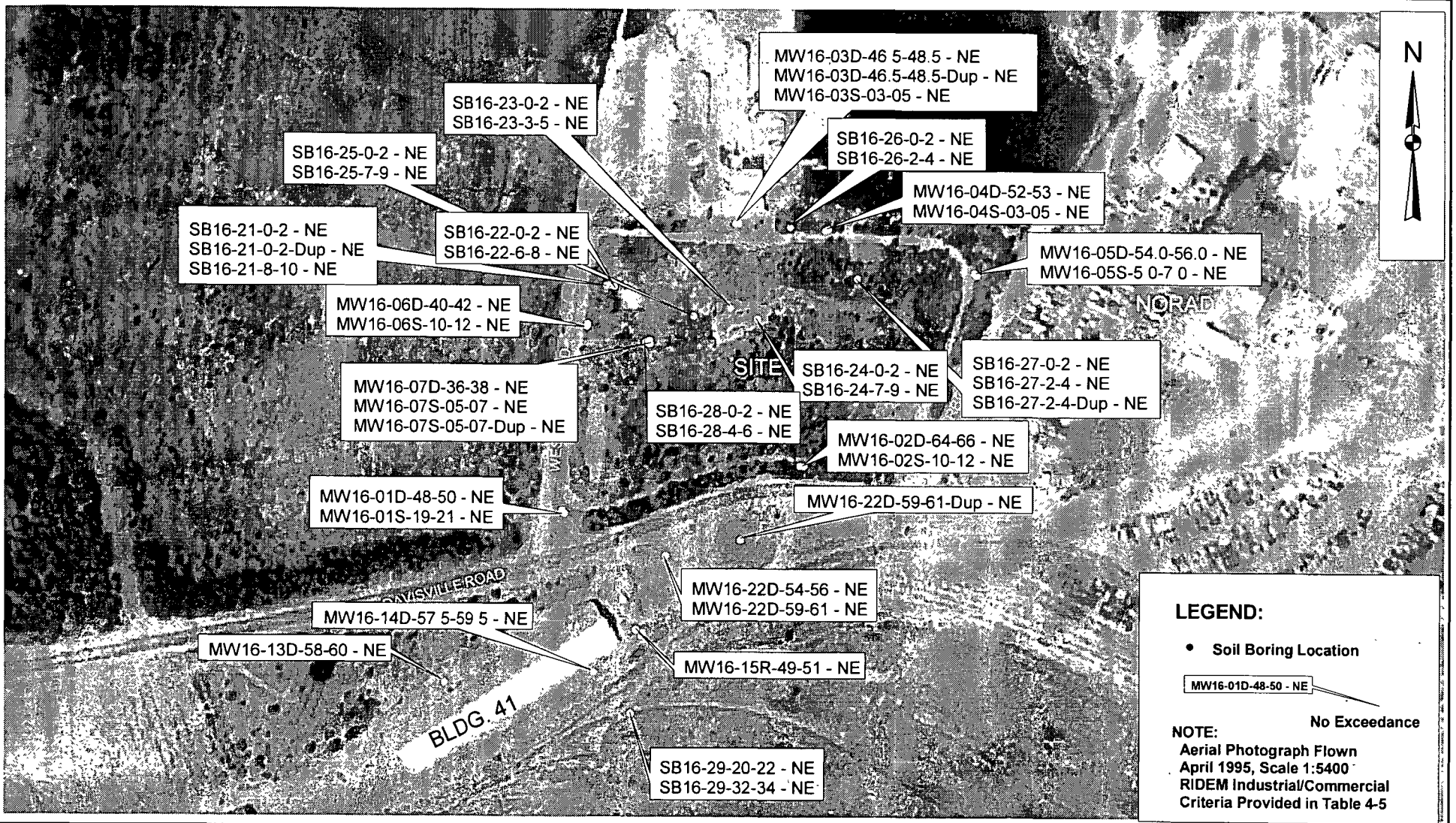
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PCB COMPOUNDS (UG/KG)
DETECTED IN SOIL SAMPLES
(MAY 2000 AND JANUARY 2001)

FIGURE 4-10



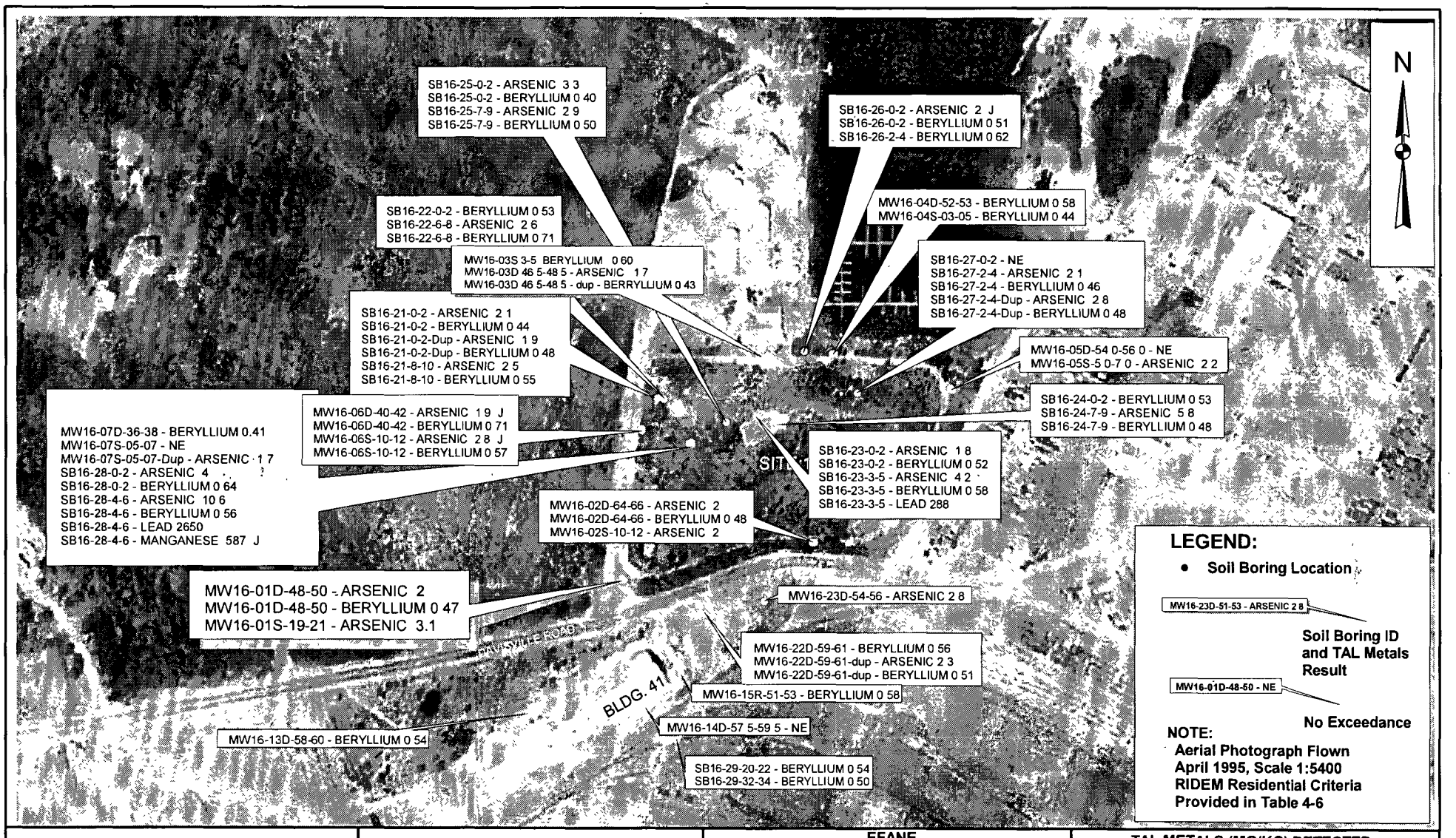

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PCB COMPOUNDS (UG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM RESIDENTIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-11



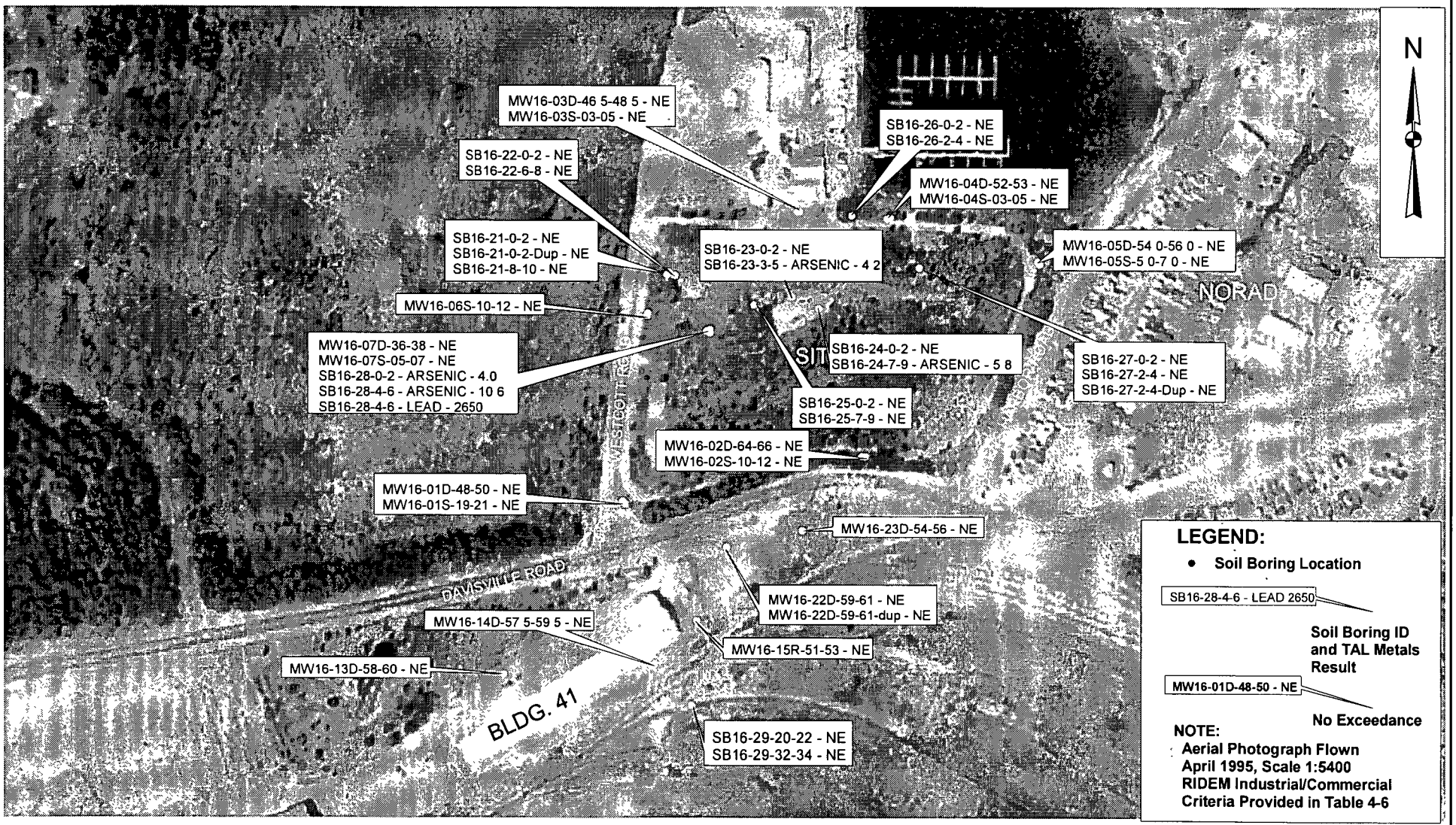

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

TAL METALS (MG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM RESIDENTIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-12




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
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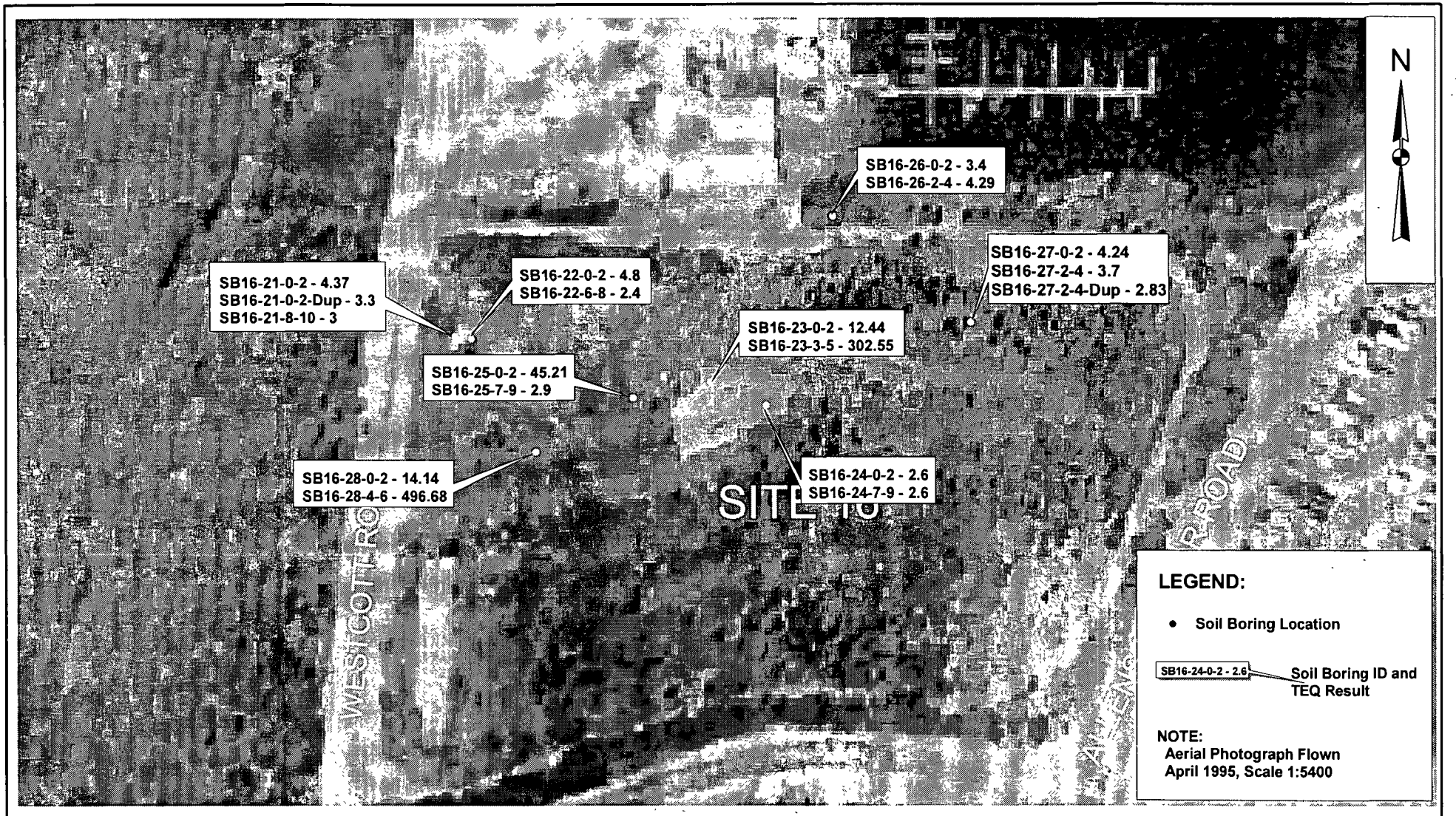
NORTH KINGSTOWN, RHODE ISLAND

TAL METALS (MG/KG) DETECTED IN SOIL SAMPLES IN EXCEEDANCE OF RIDEM INDUSTRIAL/COMMERCIAL EXPOSURE CRITERIA (MAY 2000 AND JANUARY 2001)

FIGURE 4-13



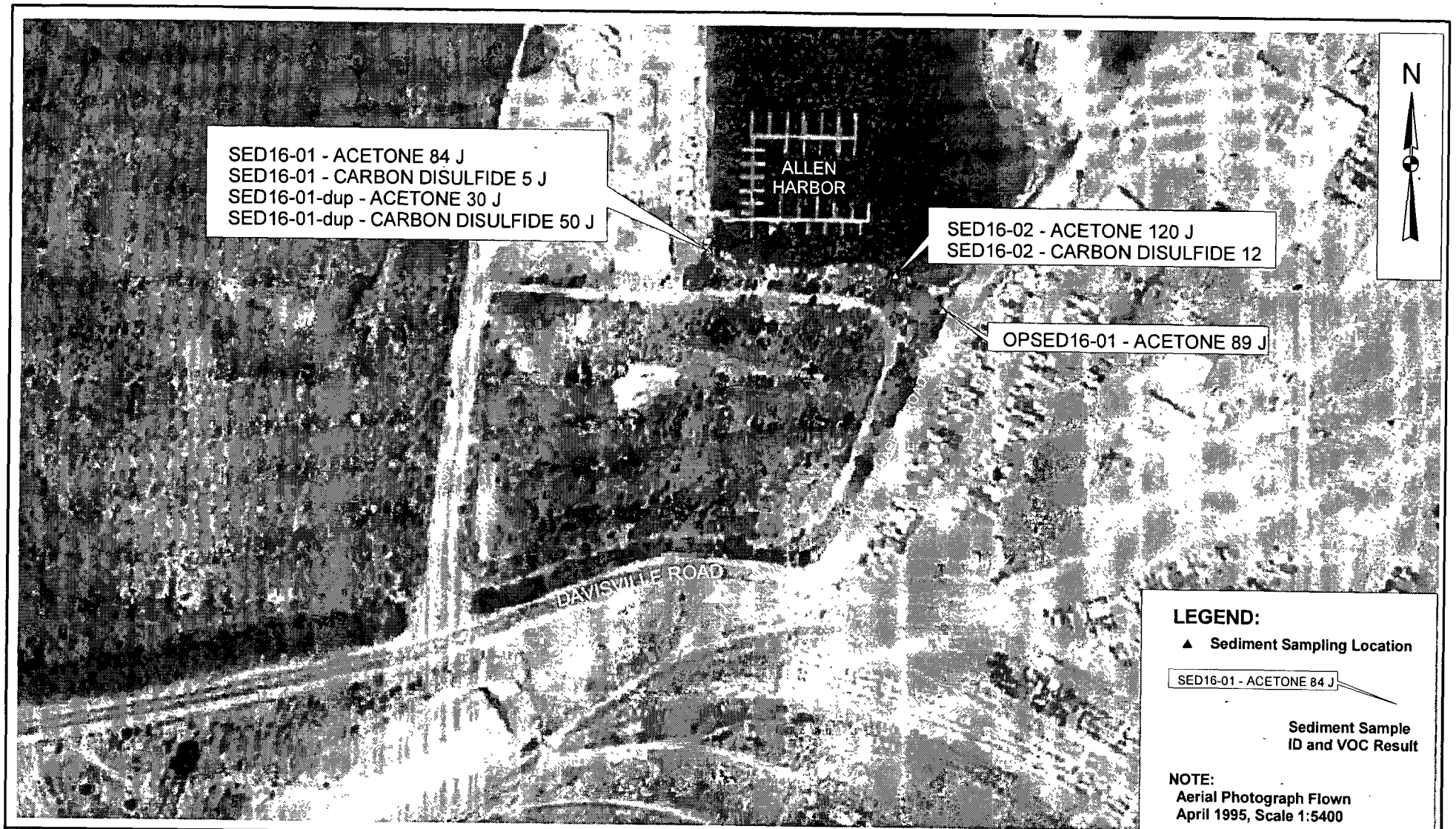

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

DIOXIN TEQ (PPTr)
DETECTED IN SOIL SAMPLES
(JUNE 2000)

FIGURE 4-14

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200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

VOC COMPOUNDS (UG/KG) DETECTED IN SEDIMENT SAMPLES (MARCH 2001)

FIGURE 4-15

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

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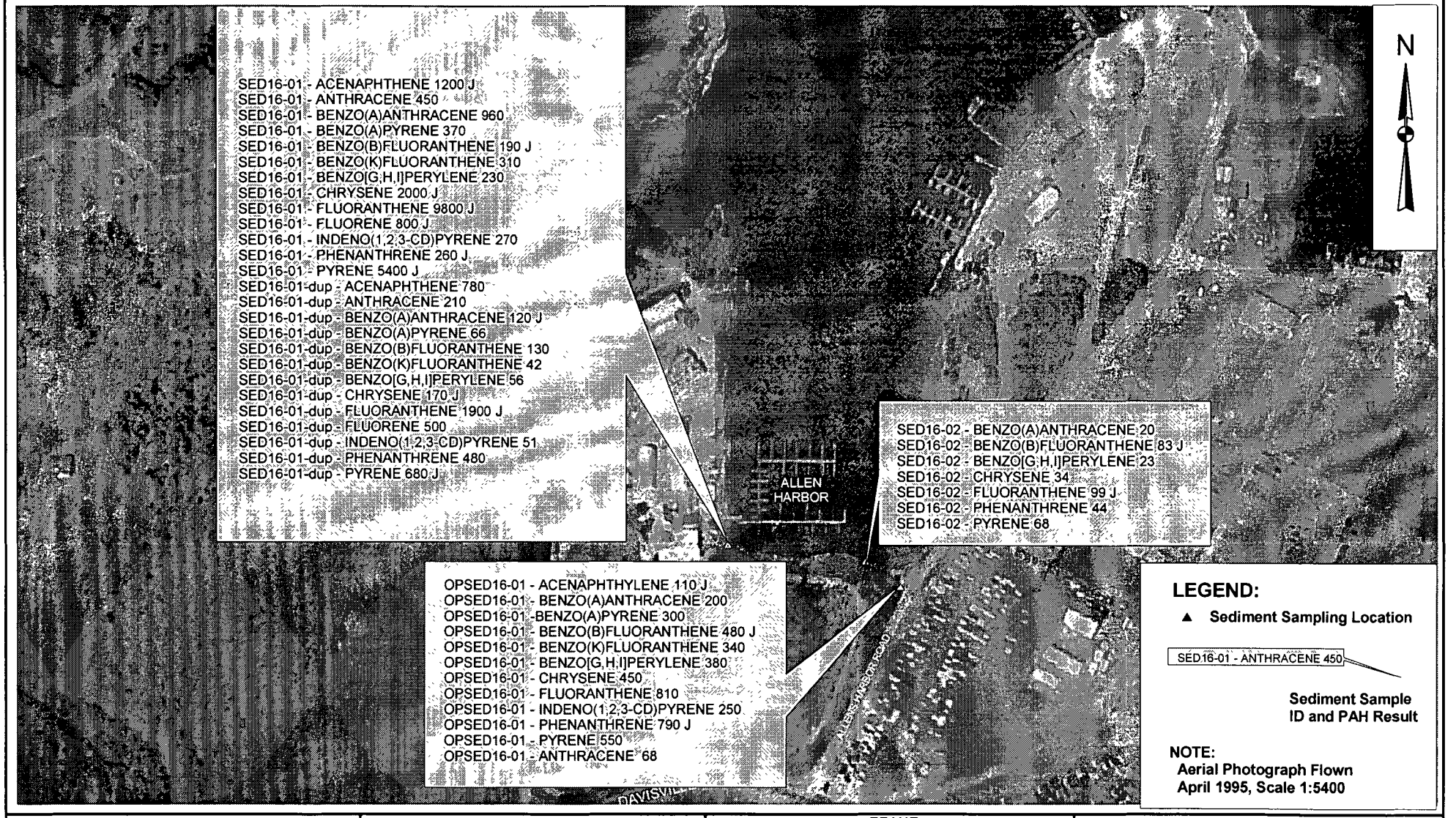
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

SVOC COMPOUNDS (UG/KG) DETECTED IN SEDIMENT SAMPLES (MARCH 2001)

FIGURE 4-16




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
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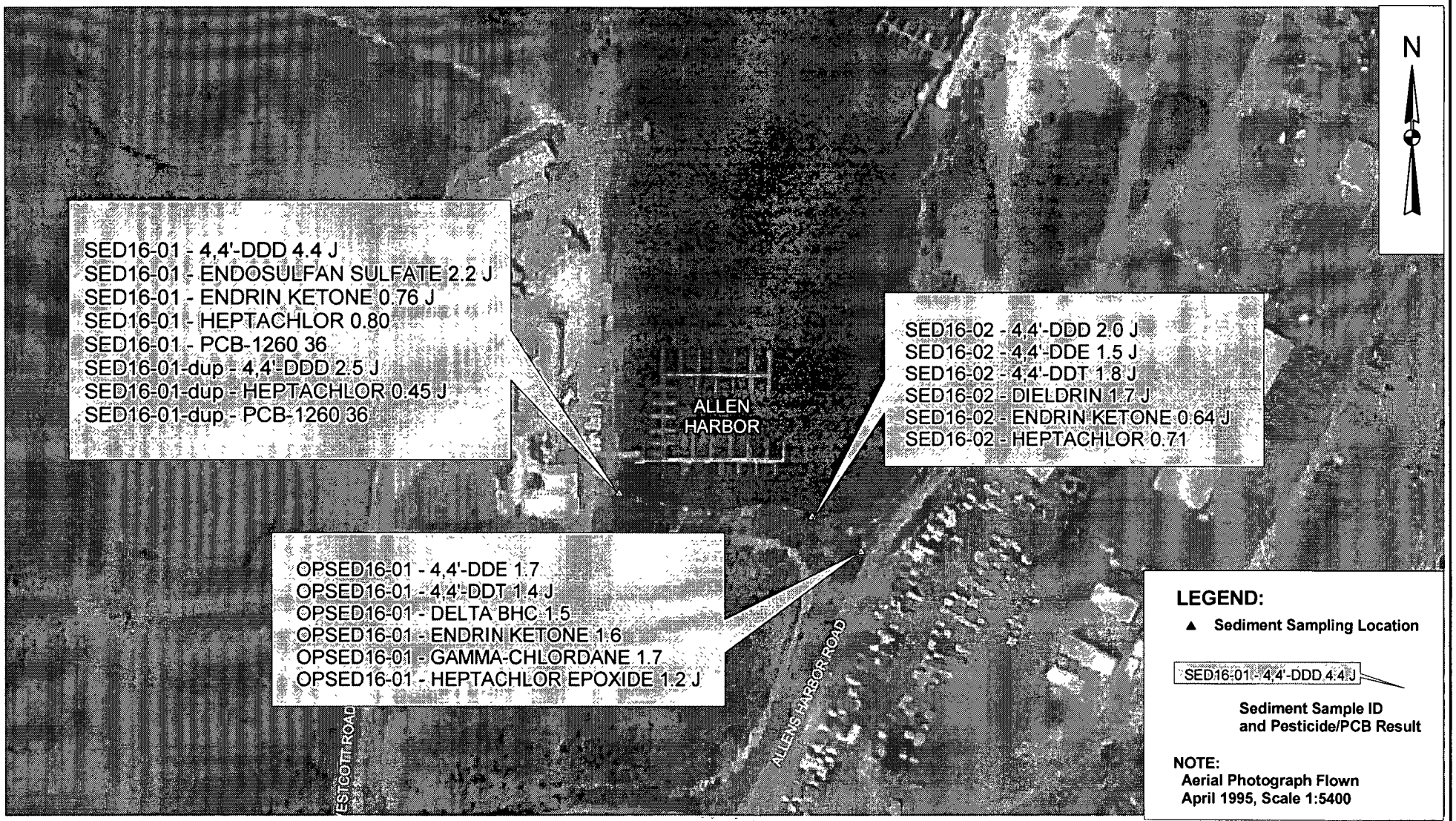
PAH COMPOUNDS (UG/KG) DETECTED IN SEDIMENT SAMPLES (MARCH 2001)

FIGURE 4-17

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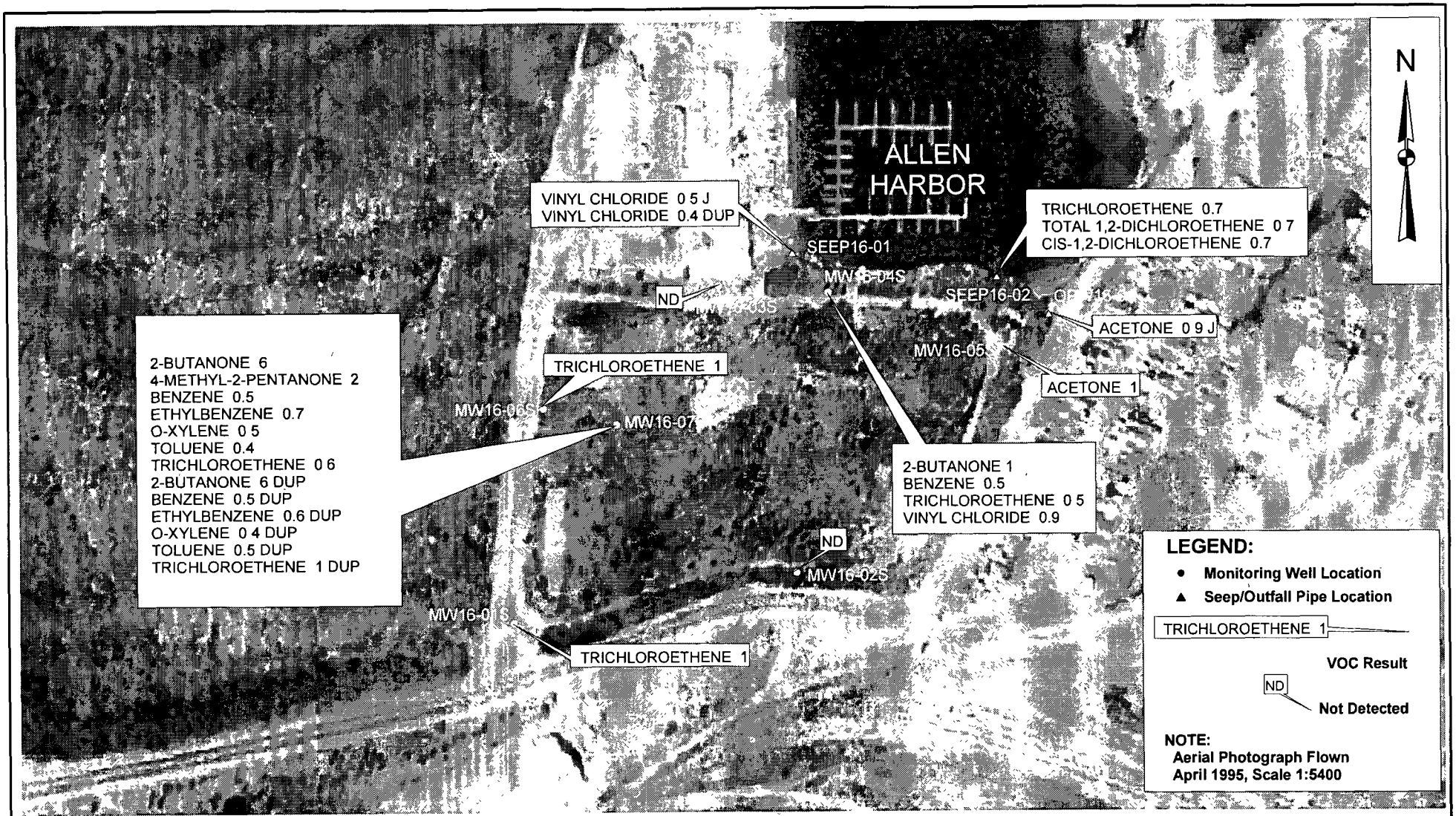
PESTICIDE AND PCB COMPOUNDS (UG/KG) DETECTED IN SEDIMENT SAMPLES (MARCH 2001)

FIGURE 4-18

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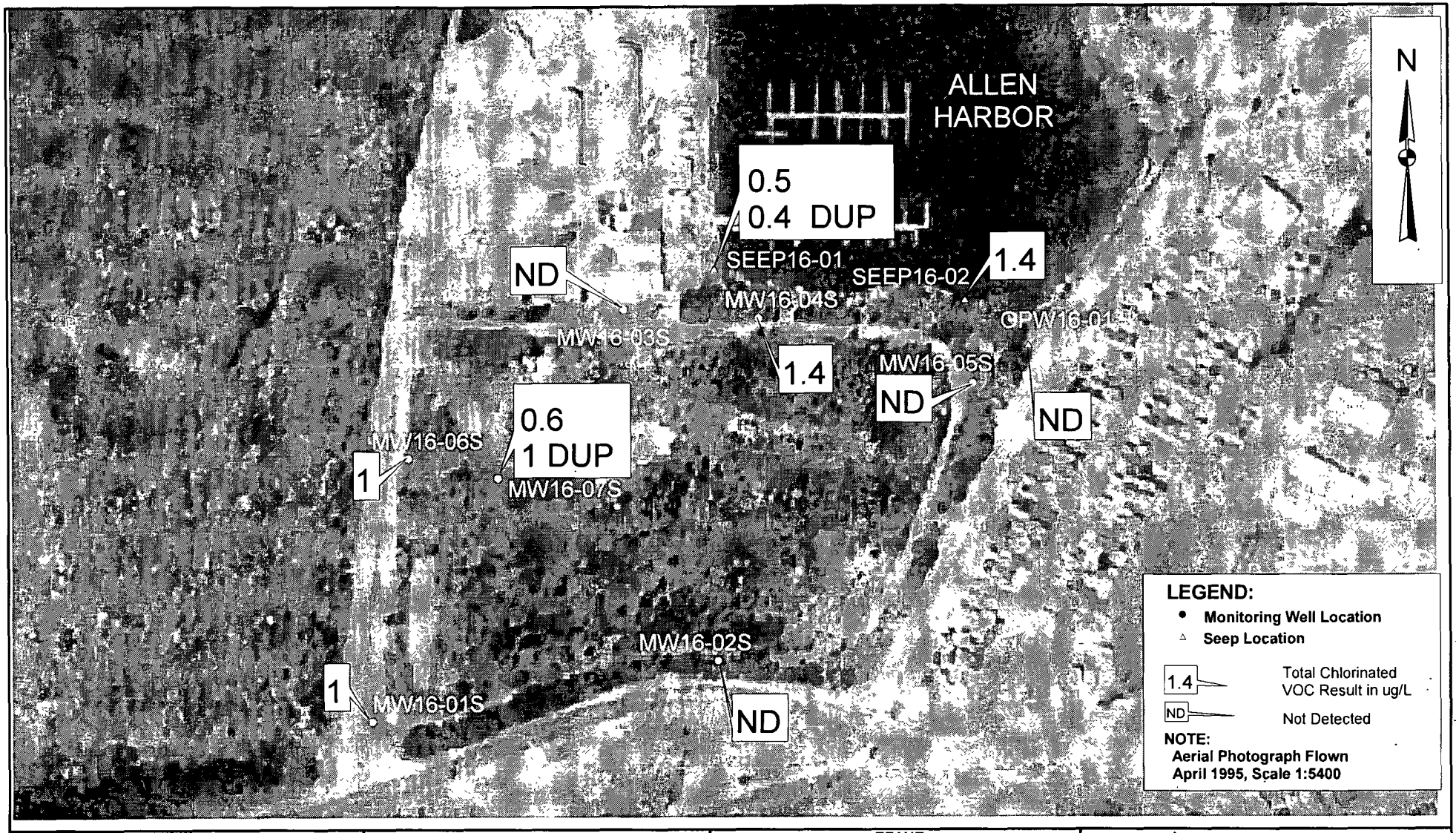
VOLATILE ORGANIC COMPOUNDS (UG/L) DETECTED IN SEEPS AND SHALLOW GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-19

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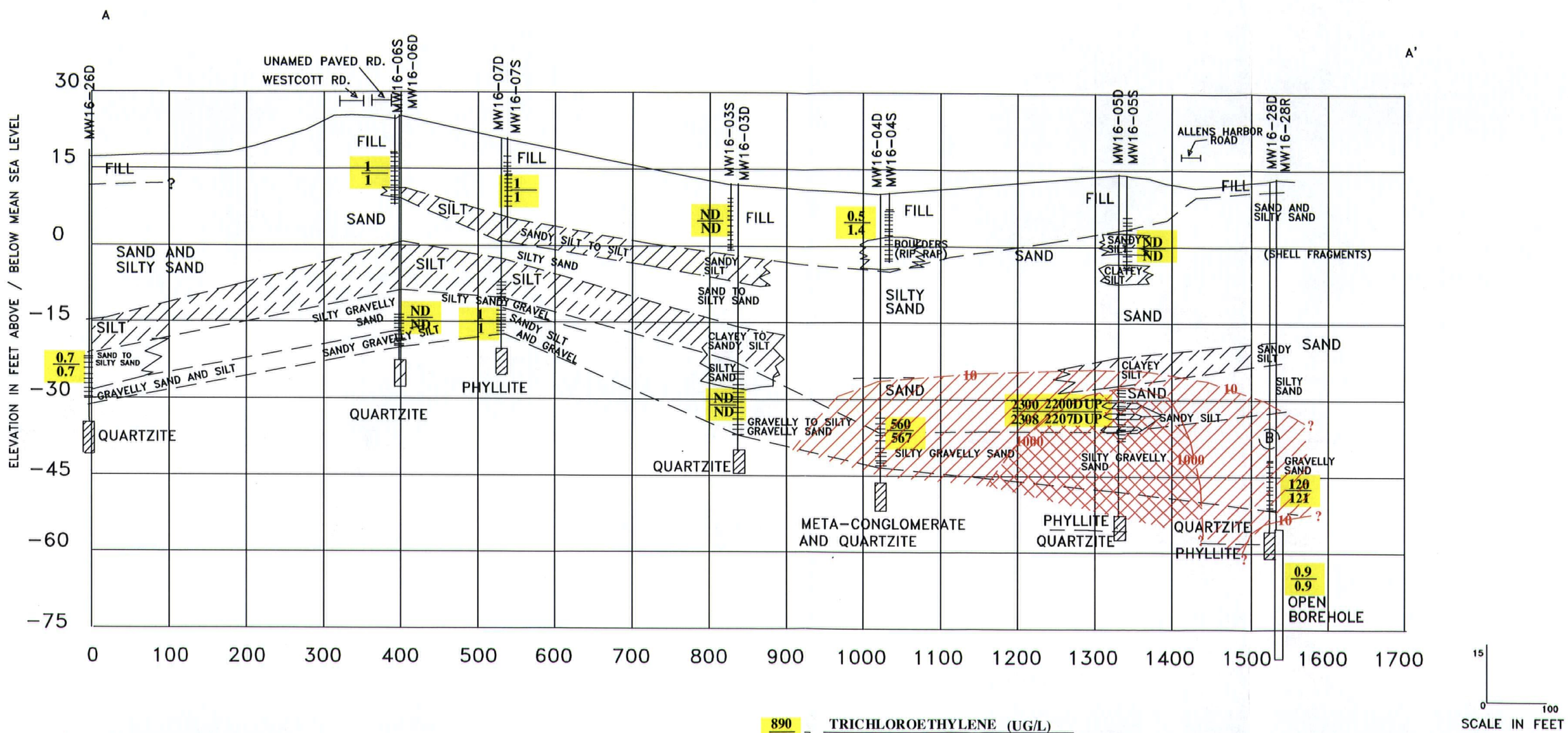
TOTAL CVOC (UG/L) DETECTED IN SHALLOW GROUND-WATER AND SEEP SAMPLES
MARCH 2001

FIGURE 4-20




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS AND CONTOURS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION.

890/890 = TRICHLOROETHYLENE (UG/L) / TOTAL CVOC (UG/L)

10 — INTERPRETIVE CONTOUR OF EQUAL TOTAL CVOC CONCENTRATION (UG/L)

LEGEND

- SCREENED INTERVAL OF MONITORING WELL
- ROLLERBIT DRILLED INTERVAL
- CORED INTERVAL

S — SHALLOW MONITORING WELL
D — DEEP MONITORING WELL
R — ROCK MONITORING WELL

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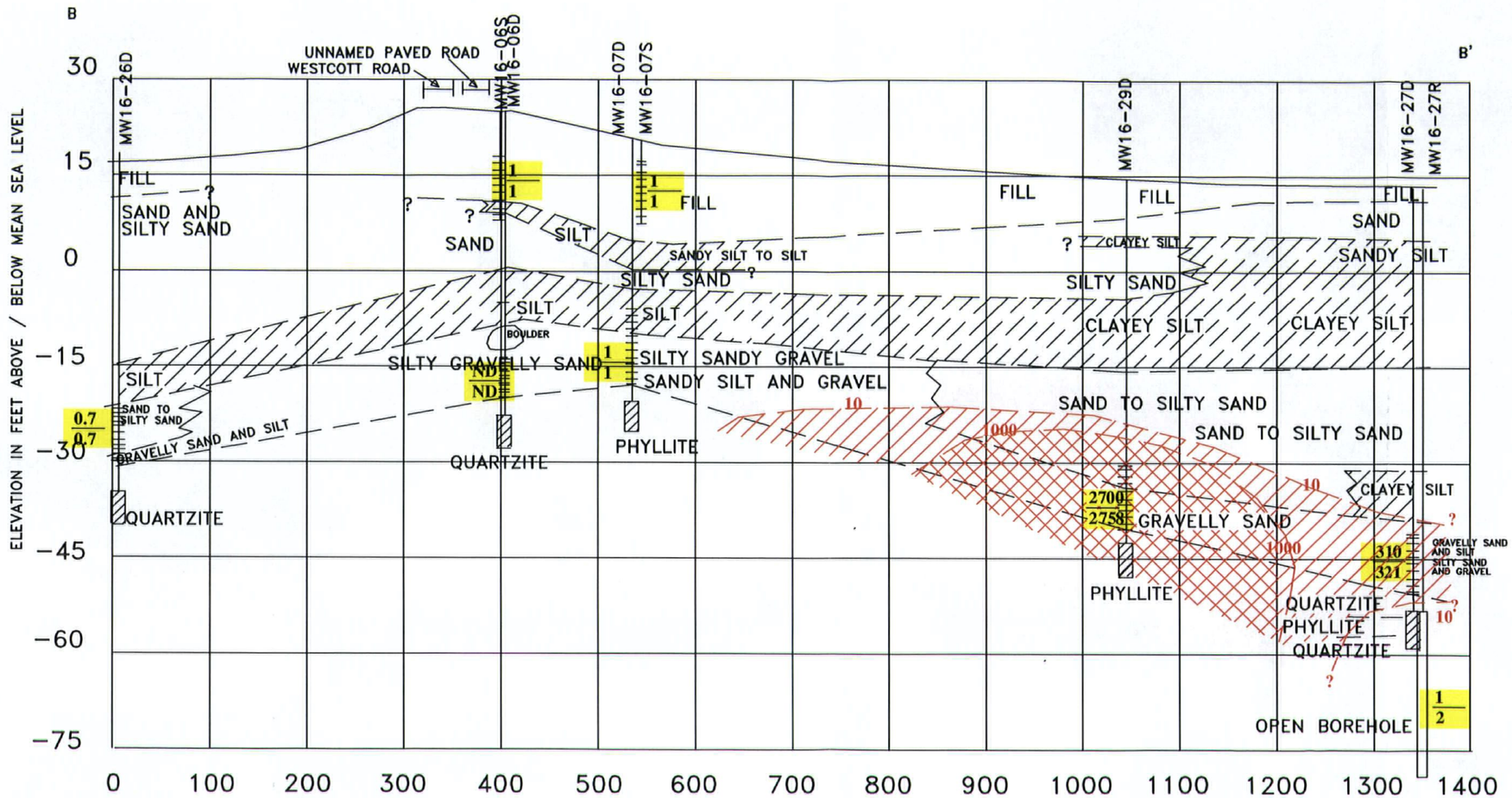
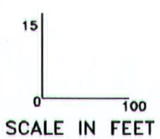
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER (MARCH 2001)
GEOLOGIC CROSS SECTION A–A'

FIGURE 4–21




$$\frac{890}{890} = \frac{\text{TRICHLOROETHYLENE (UG/L)}}{\text{TOTAL CVOC (UG/L)}}$$

10 — INTERPRETIVE CONTOUR OF EQUAL TOTAL CVOC CONCENTRATION (UG/L)




NOTES:
1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS
2) THE SUBSURFACE SECTIONS AND CONTOURS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION.

LEGEND

- SCREENED INTERVAL OF MONITORING WELL
- ROLLERBIT DRILLED INTERVAL
- CORED INTERVAL

S — SHALLOW MONITORING WELL
D — DEEP MONITORING WELL
R — ROCK MONITORING WELL

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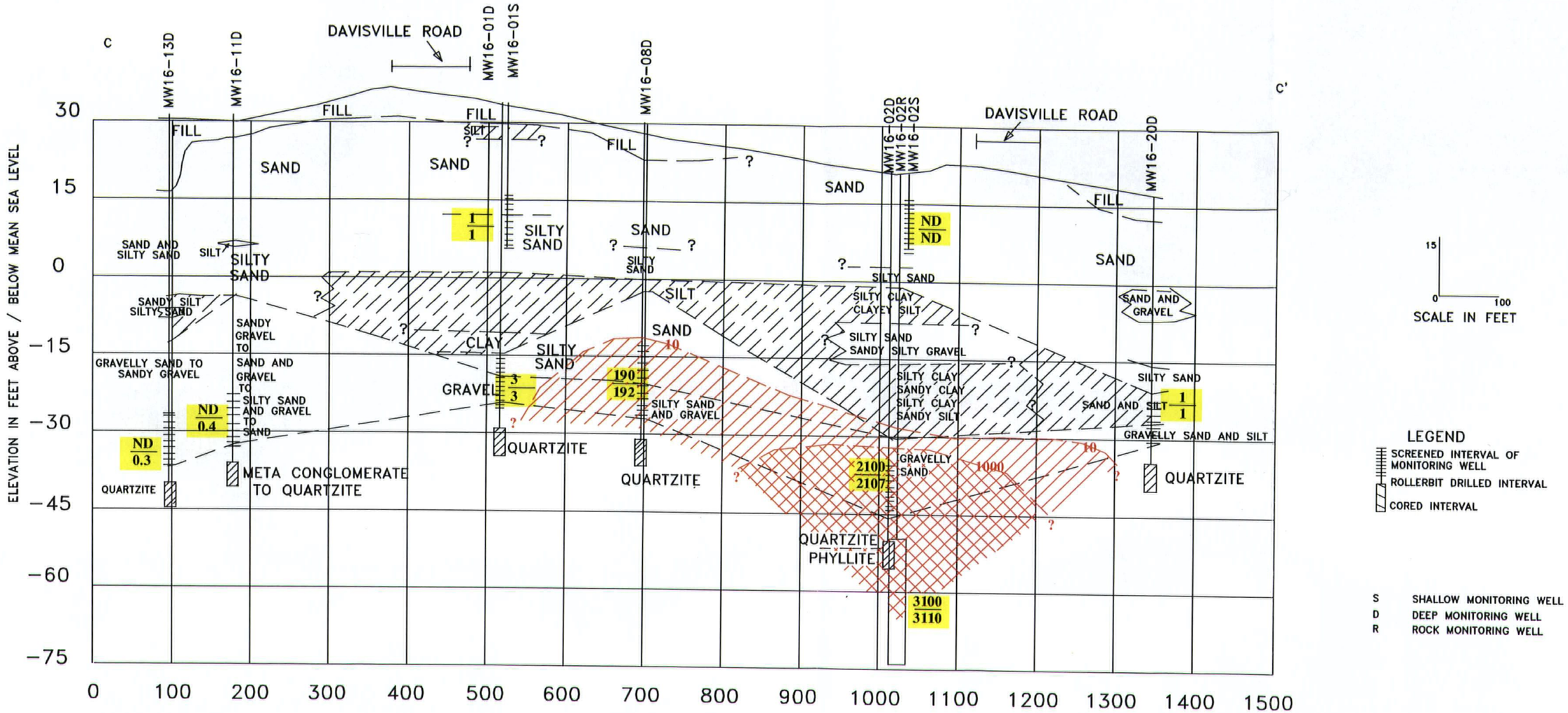
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER (MARCH 2001)
GEOLOGIC CROSS SECTION B–B'

FIGURE 4–22




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS AND CONTOURS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION

$$\frac{890}{890} = \frac{\text{TRICHLOROETHYLENE (UG/L)}}{\text{TOTAL CVOC (UG/L)}}$$

10 — INTERPRETIVE CONTOUR OF EQUAL TOTAL CVOC CONCENTRATION (UG/L)

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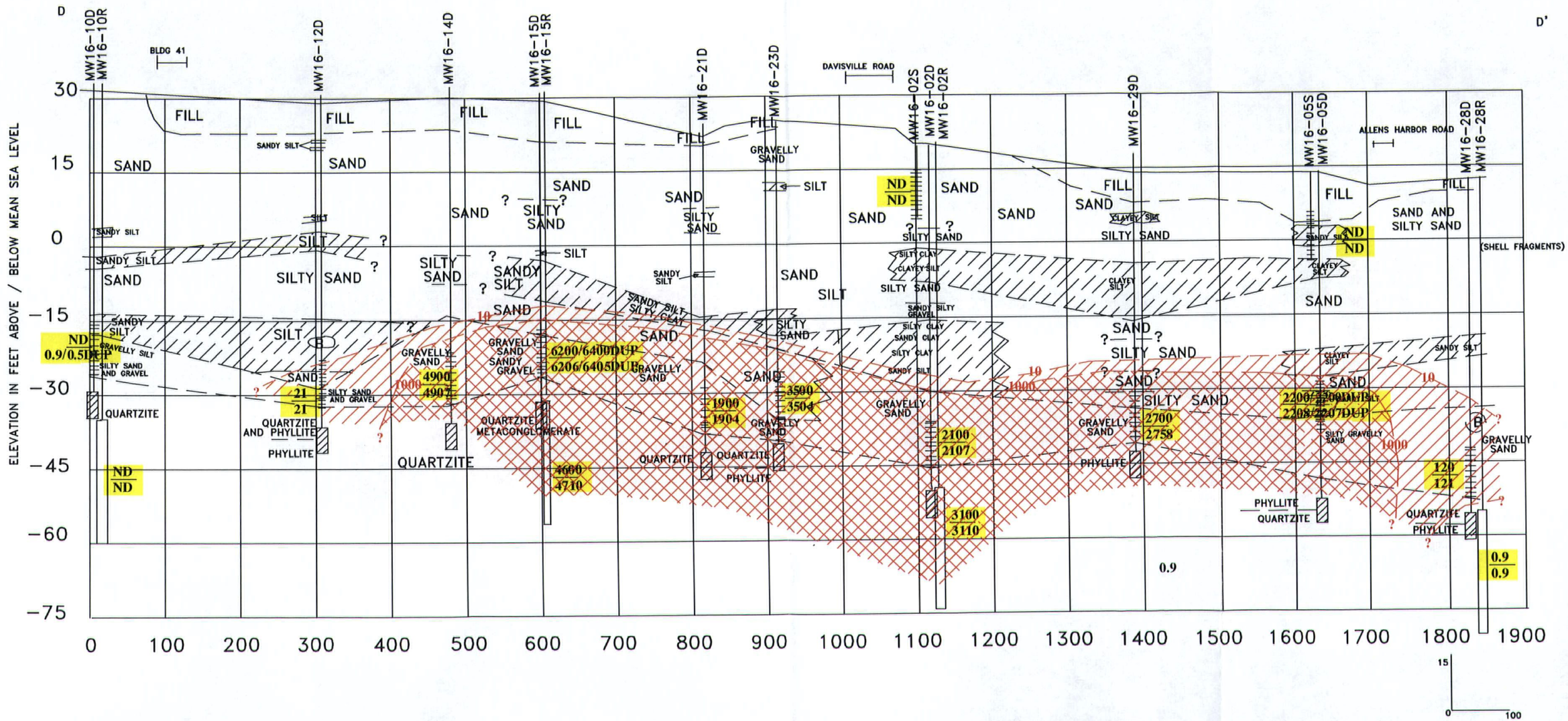
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER ()MARCH 2001)
GEOLOGIC CROSS SECTION C–C'

FIGURE 4–23




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS AND CONTOURS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL CONSTRUCTION

890/890 = TRICHLOROETHYLENE (UG/L) / TOTAL CVOC (UG/L)

10 — INTERPRETIVE CONTOUR OF EQUAL TOTAL CVOC CONCENTRATION (UG/L)

LEGEND

- SCREENED INTERVAL OF MONITORING WELL
- ROLLERBIT DRILLED INTERVAL
- CORED INTERVAL

S — SHALLOW MONITORING WELL
D — DEEP MONITORING WELL
R — ROCK MONITORING WELL

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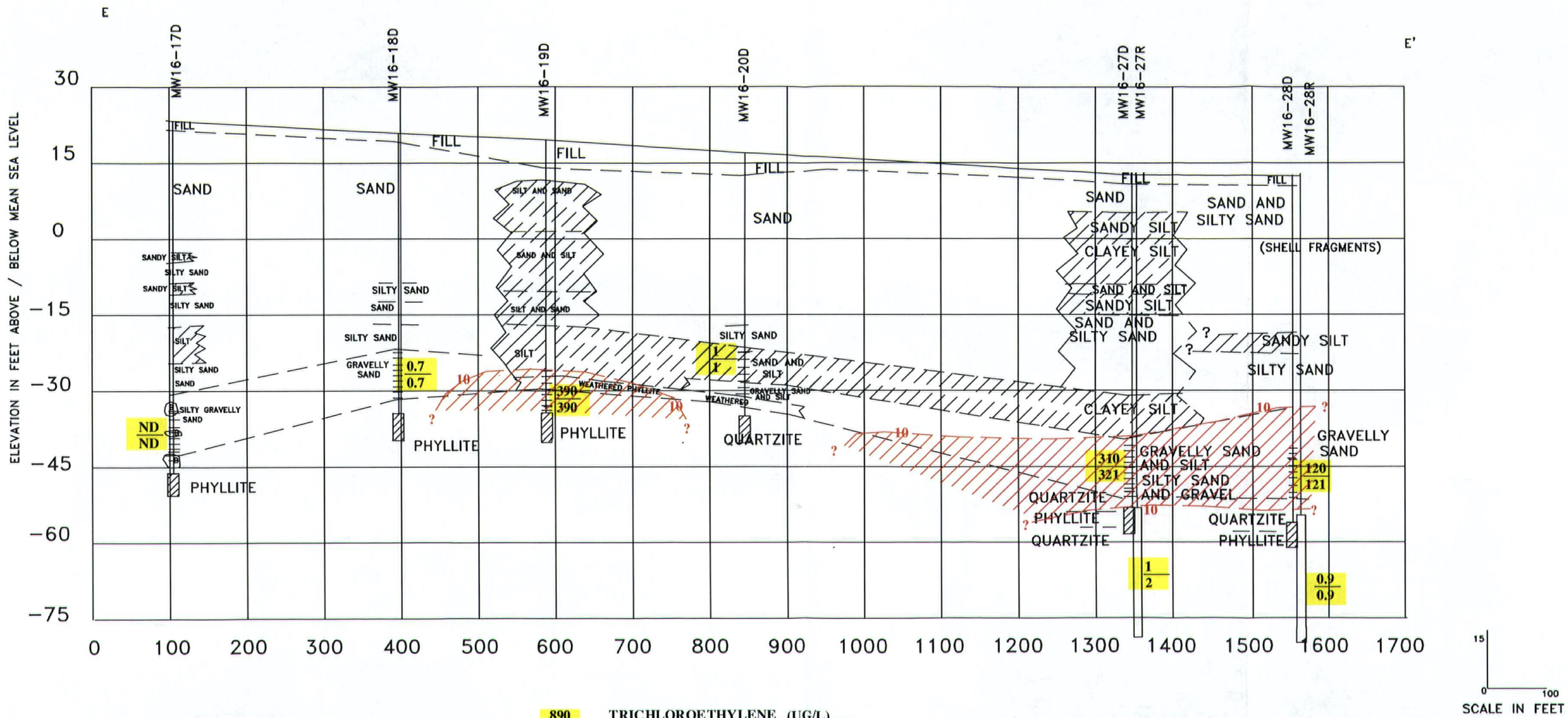
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER (MARCH 2001)
GEOLOGIC CROSS SECTION D–D'

FIGURE 4–24




NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS AND CONTOURS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS BACKFILLED WITH BENTONITE PRIOR TO MONITORING WELL INSTALLATION

$$\frac{890}{890} = \frac{\text{TRICHLOROETHYLENE (UG/L)}}{\text{TOTAL CVOC (UG/L)}}$$

10 — INTERPRETIVE CONTOUR OF EQUAL TOTAL CVOC CONCENTRATION (UG/L)

LEGEND

- SCREENED INTERVAL OF MONITORING WELL
- ROLLERBIT DRILLED INTERVAL
- CORED INTERVAL

| | |
|---|---|
| S | SHALLOW MONITORING WELL |
| D | DEEP MONITORING WELL |
| R | ROCK MONITORING WELL |

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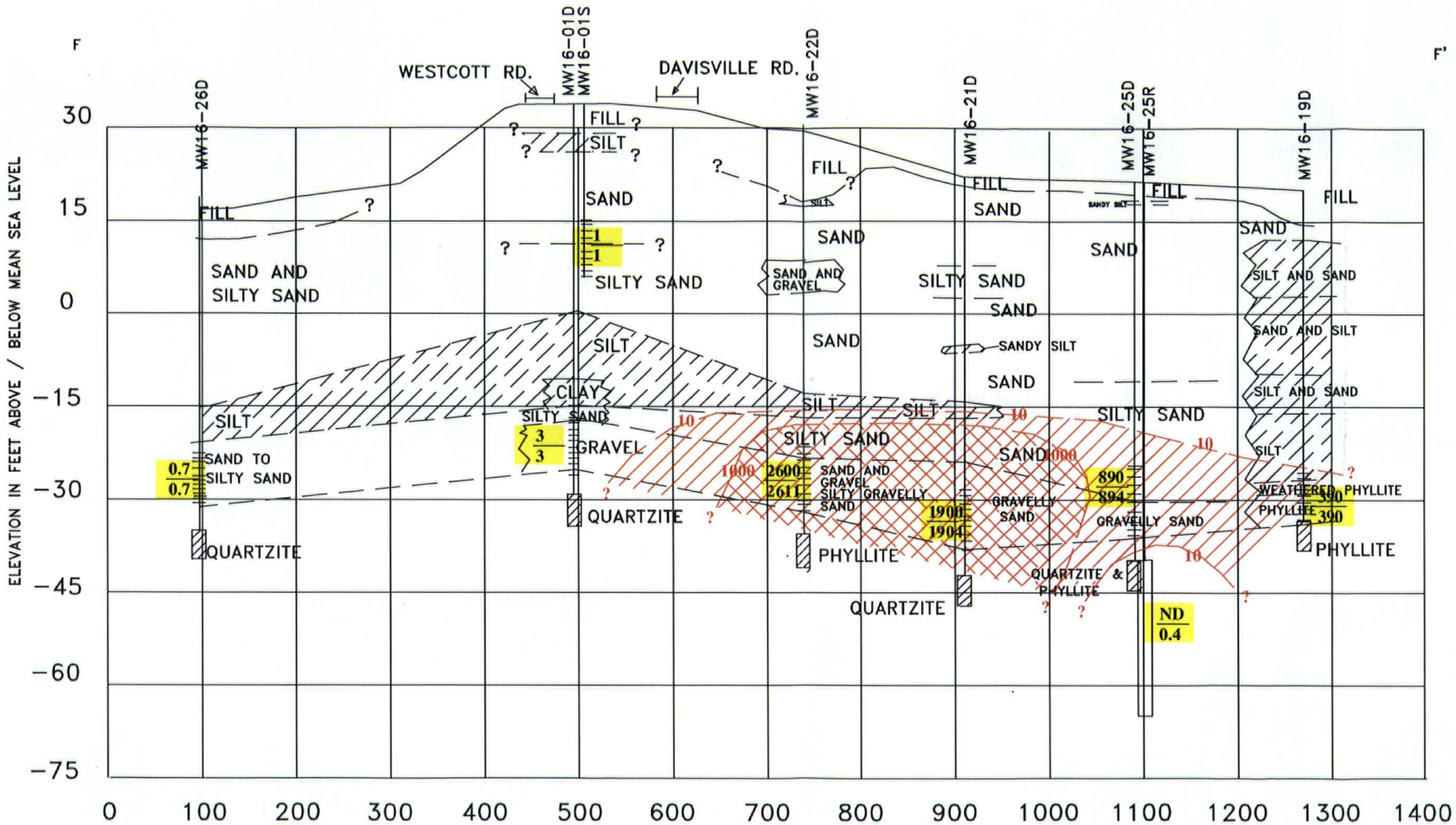
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER (MARCH 2001)
GEOLOGIC CROSS SECTION E–E'

FIGURE 4–25




15
0
100
SCALE IN FEET

NOTES: 1) HORIZONTAL DISTANCE MEASURED TO LEFT WELL OF PAIRS; CENTER WELL OF CLUSTERS

2) THE SUBSURFACE SECTIONS AND CONTOURS SHOWN REPRESENT OUR EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3) ROLLERBIT DRILLED AND CORED INTERVALS WITH BENTONITE PRIOR TO MONITORING WELL INSTALLATION

$$\frac{890}{890} = \frac{\text{TRICHLOROETHYLENE (UG/L)}}{\text{TOTAL CVOC (UG/L)}}$$

10 — INTERPRETIVE CONTOUR OF EQUAL TOTAL CVOC CONCENTRATION (UG/L)

LEGEND

- SCREENED INTERVAL OF MONITORING WELL
- ROLLERBIT DRILLED INTERVAL
- CORED INTERVAL

S — SHALLOW MONITORING WELL
D — DEEP MONITORING WELL
R — ROCK MONITORING WELL

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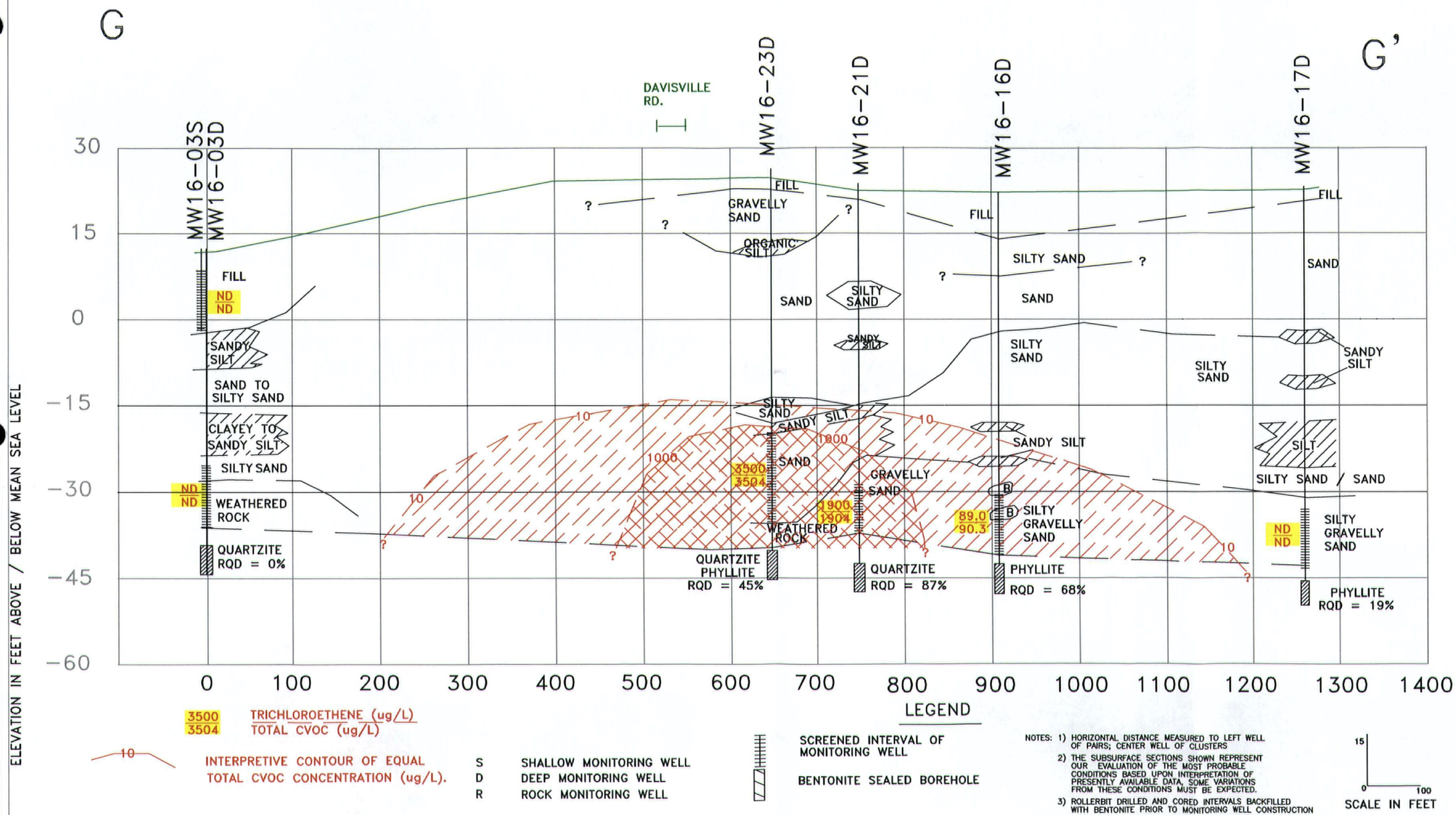
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER (MARCH 2001)
GEOLOGIC CROSS SECTION F-F'

FIGURE 4-26

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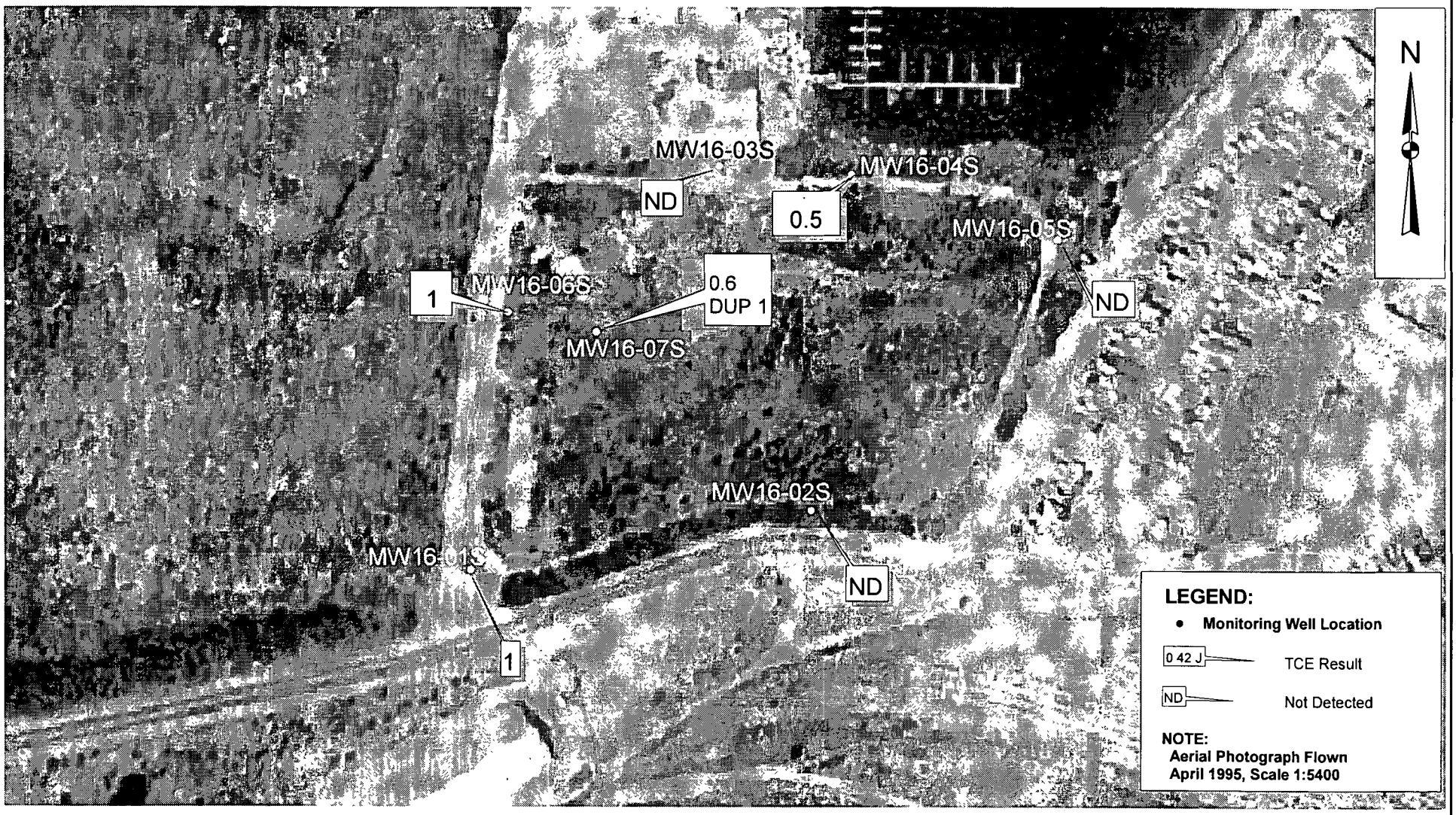
TRICHLOROETHYLENE AND TOTAL CVOC DETECTED (UG/L) IN GROUND WATER (MARCH 2001)
GEOLOGIC CROSS SECTION G-G'
FIGURE 4-27

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200 0 200 Feet

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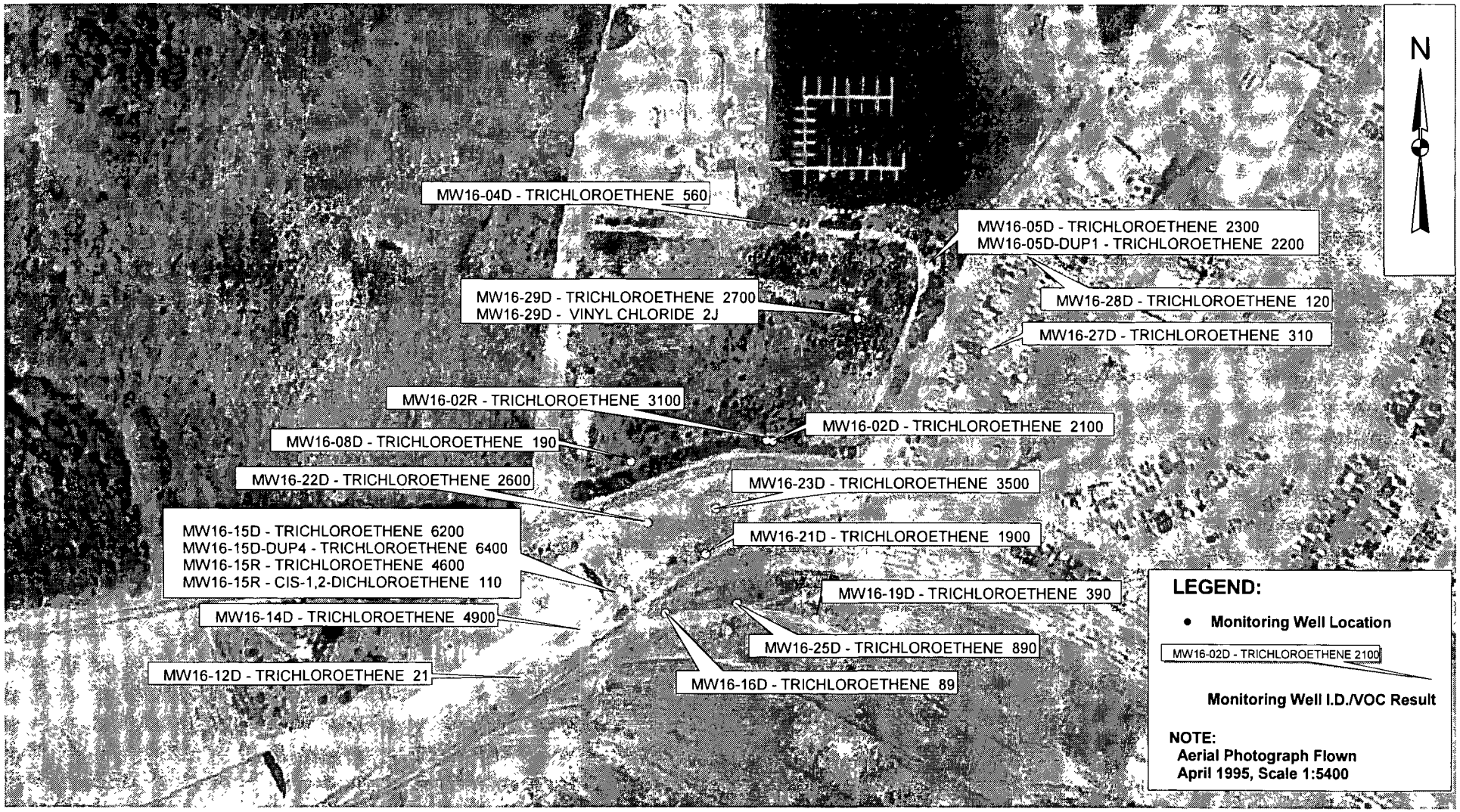
TRICHLOROETHENE (UG/L) DETECTED
IN SHALLOW GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-28

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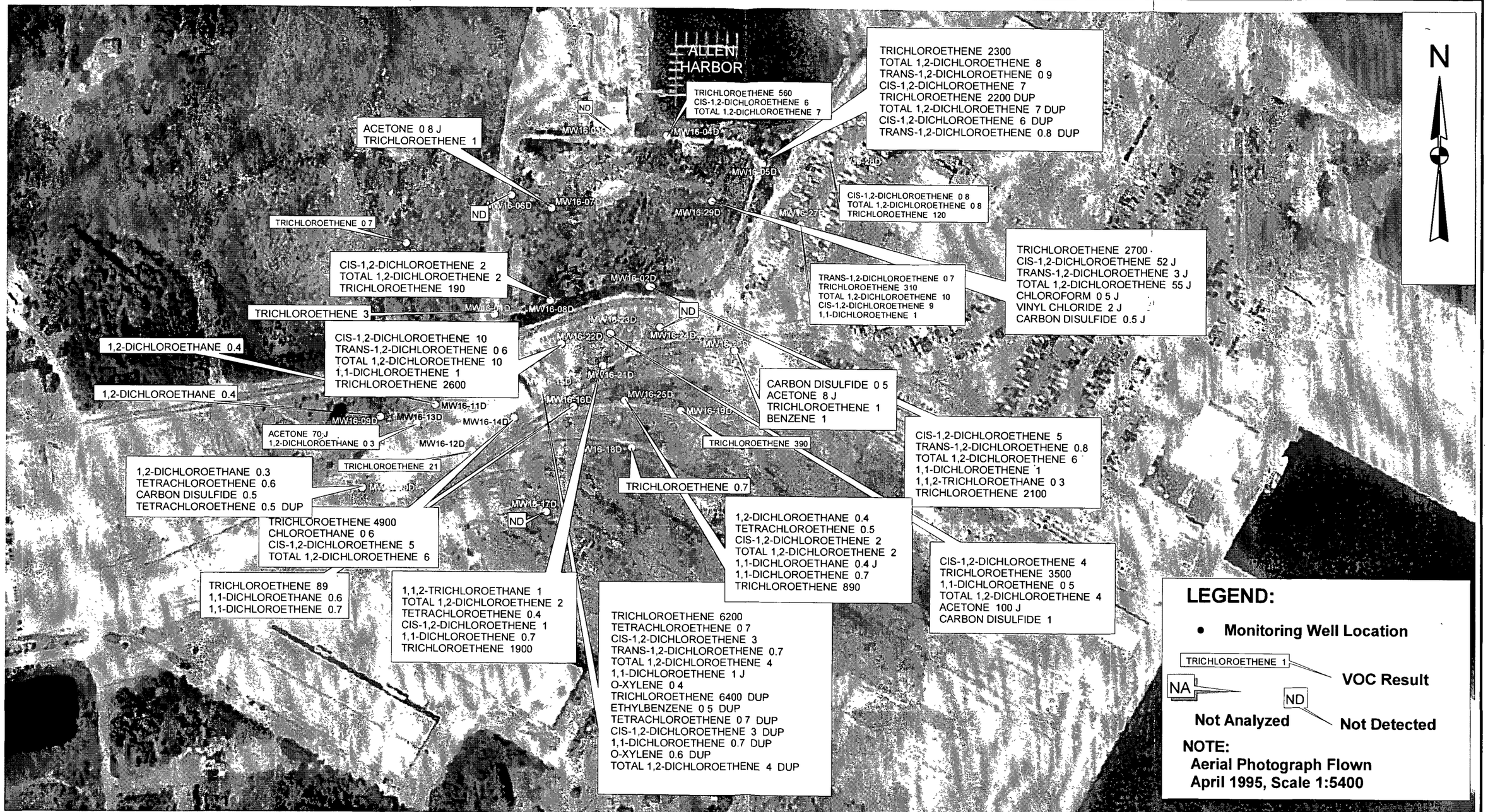
VOLATILE ORGANIC COMPOUNDS (UG/L) THAT MEET OR EXCEED THE PAL DETECTED IN GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-29

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200 0 200 400 Feet

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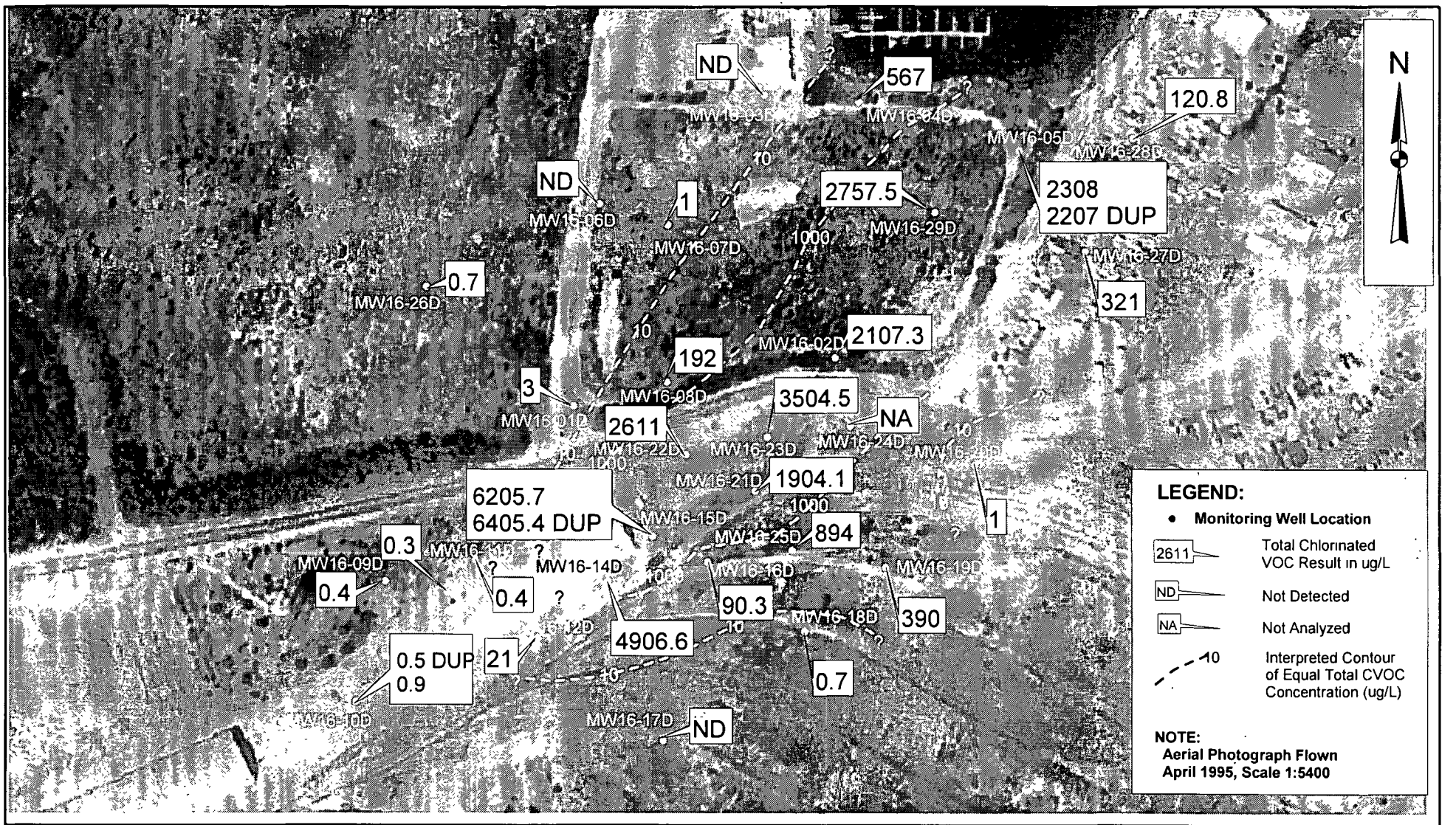
VOLATILE ORGANIC COMPOUNDS (UG/L) DETECTED IN DEEP GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-30

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200 0 200 Feet

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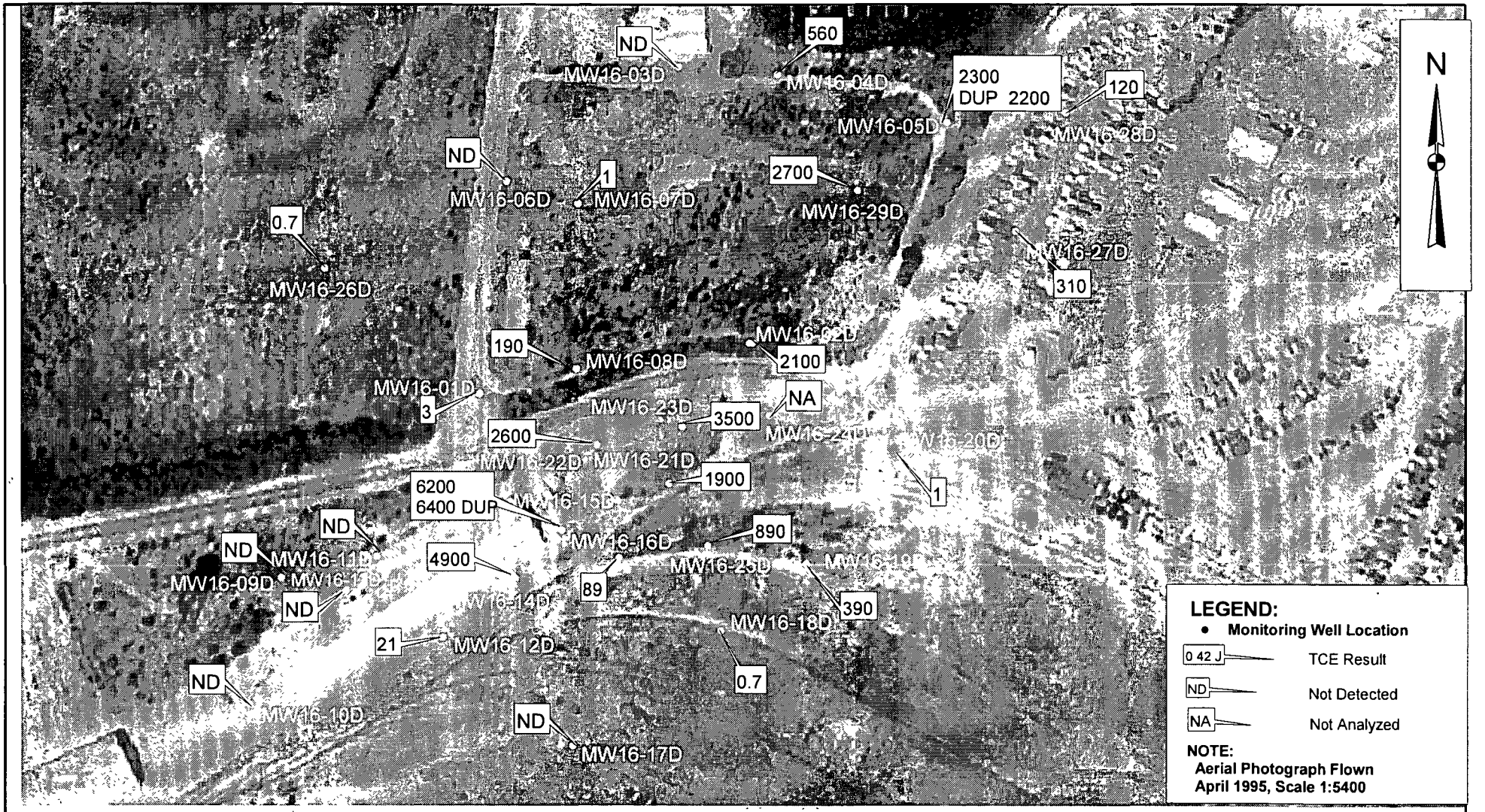
NORTH KINGSTOWN, RHODE ISLAND

TOTAL CVOC (UG/L) DETECTED IN DEEP GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-31

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200 0 200 Feet

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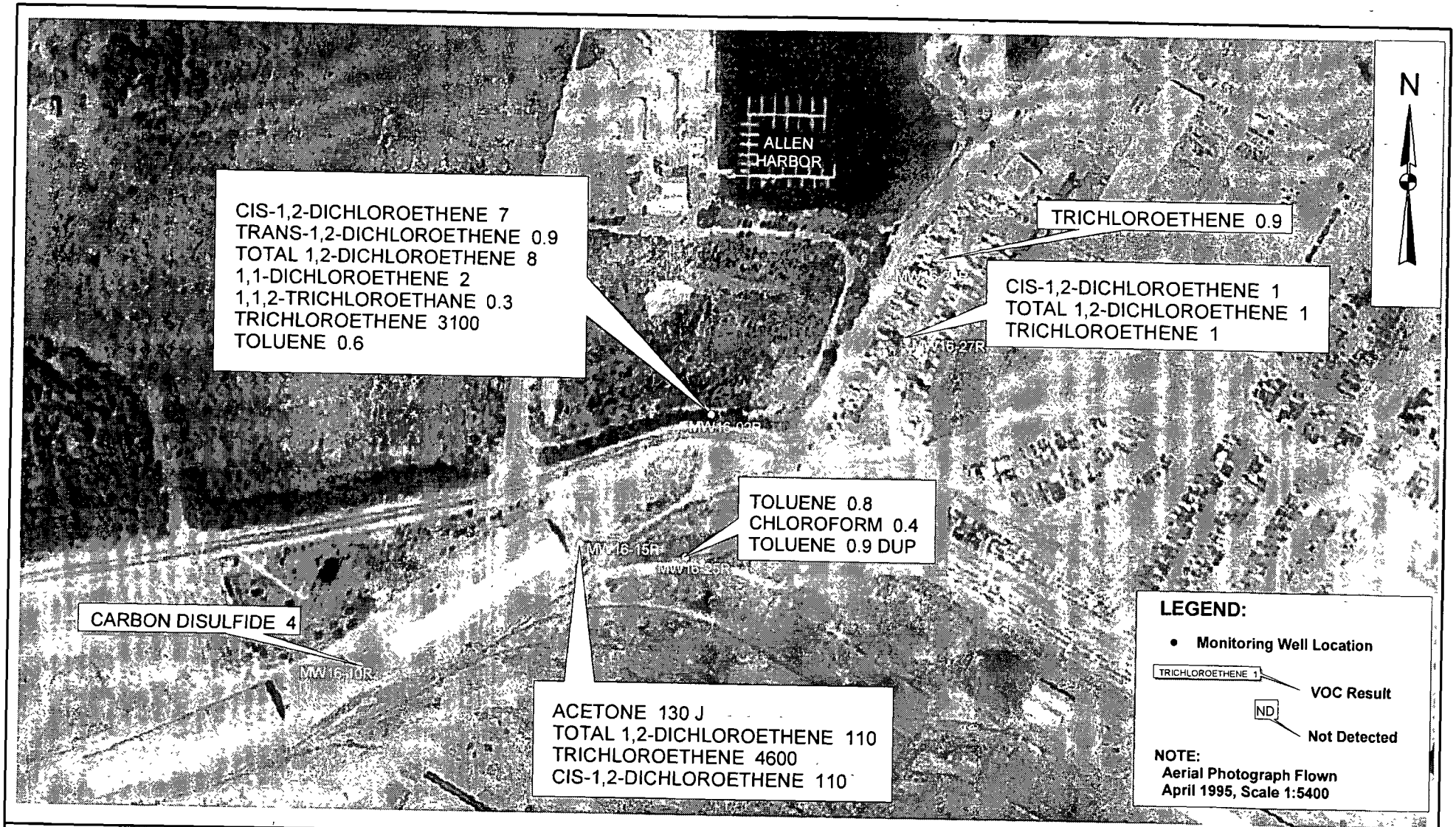
TRICHLOROETHENE (UG/L) DETECTED
IN DEEP GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-32

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200 0 200 Feet

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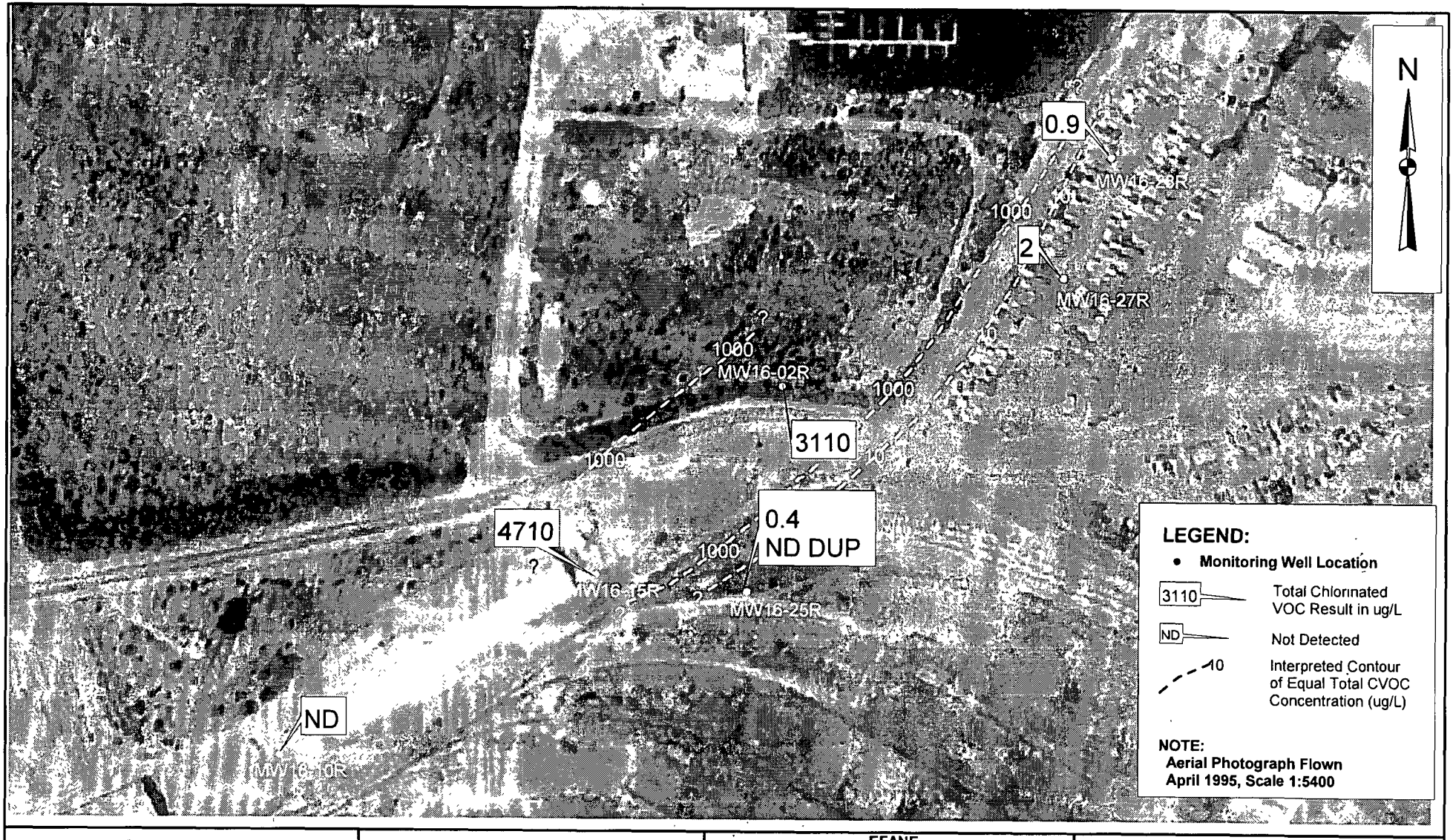
VOLATILE ORGANIC COMPOUNDS (UG/L) DETECTED IN BEDROCK GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-33

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200 0 200 Feet

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TOTAL CVOC (UG/L) DETECTED IN BEDROCK GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-34

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200 0 200 Feet

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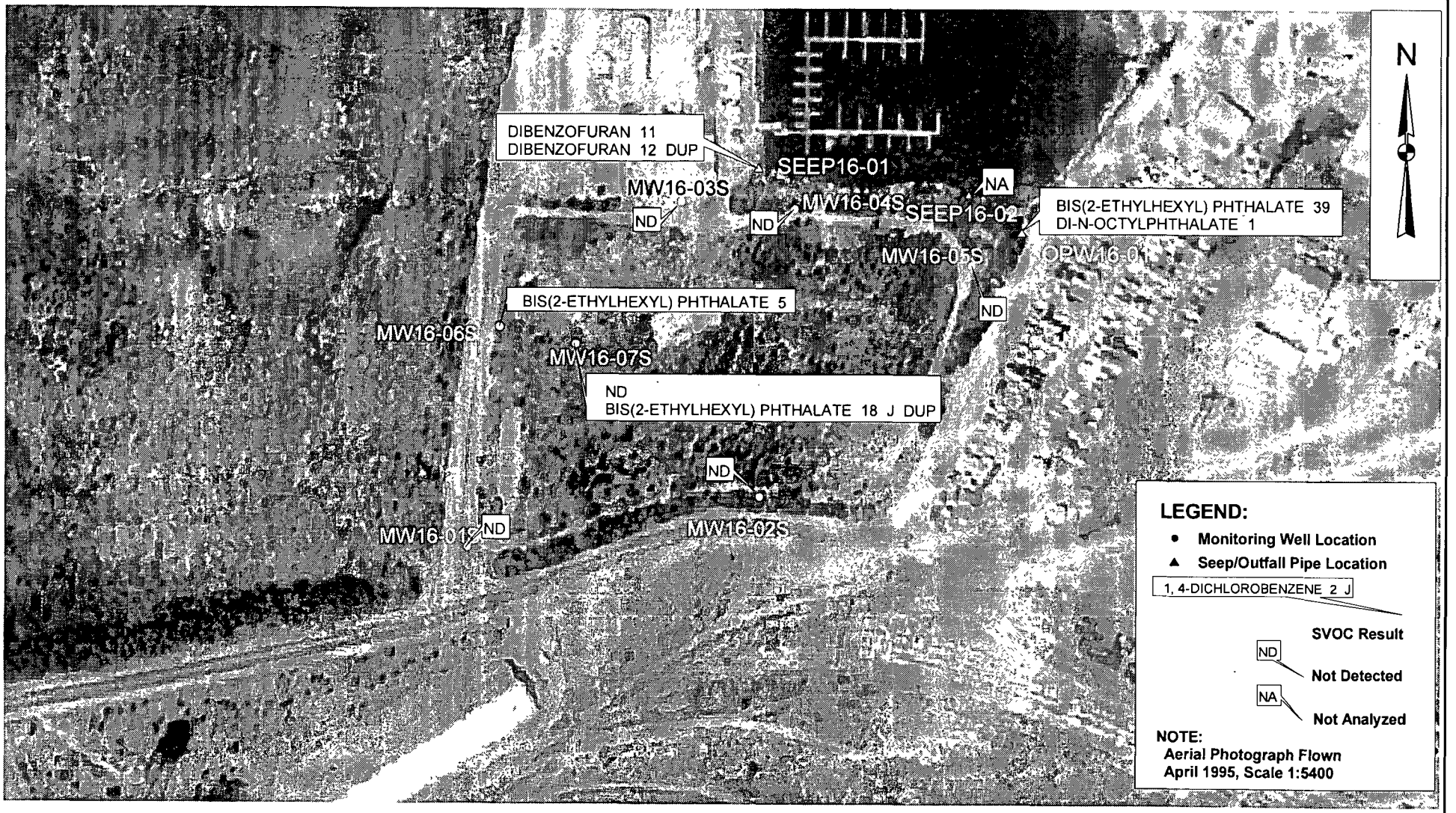
TRICHLOROETHENE (UG/L) DETECTED
IN BEDROCK GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-35

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200 0 200 Feet

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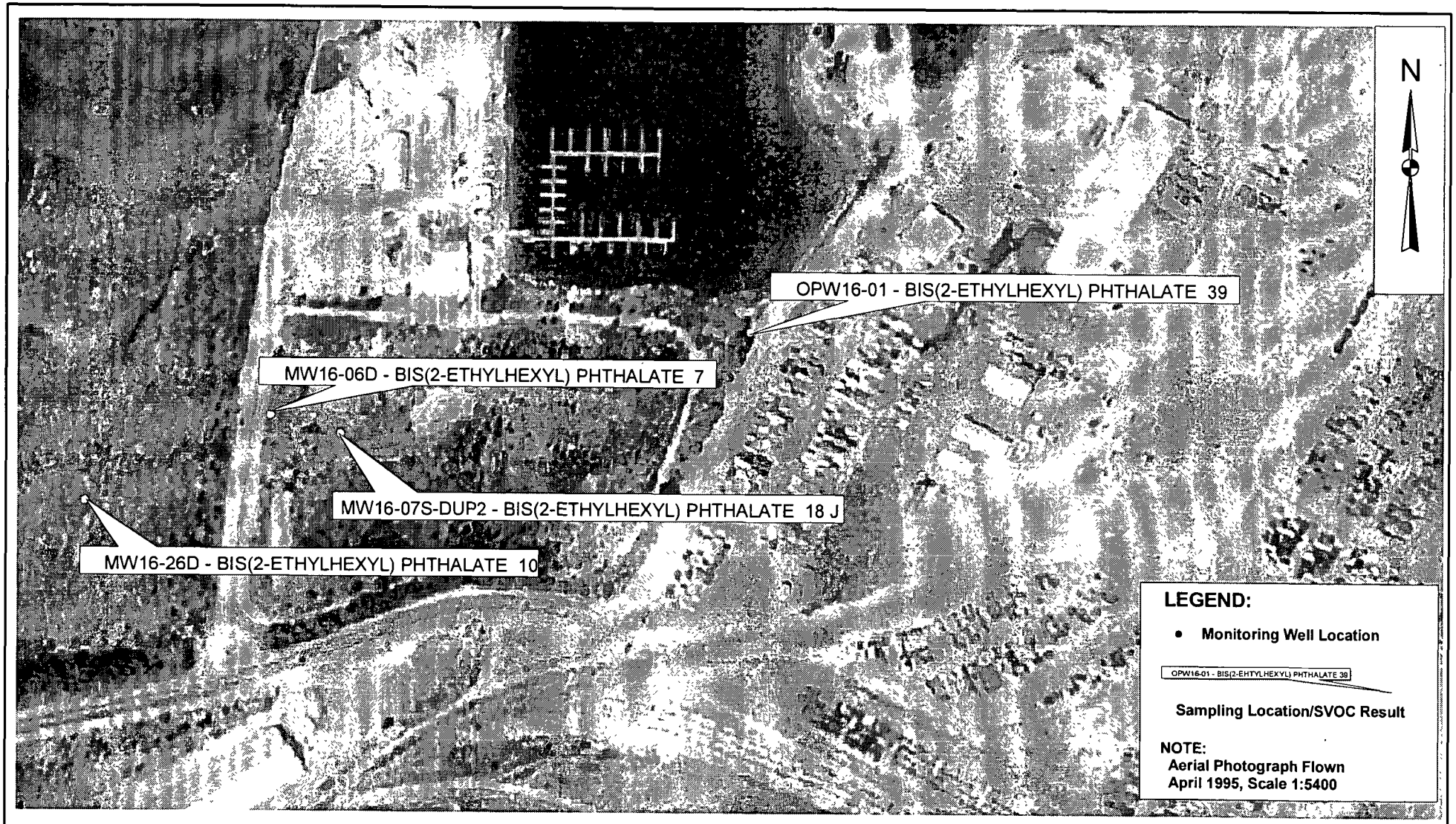
SEMIVOLATILE ORGANIC COMPOUNDS (UG/L) DETECTED IN SEEPS AND SHALLOW GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-36

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100 0 100 200 300 Feet

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SEMIVOLATILE ORGANIC COMPOUNDS (UG/L)
EXCEEDANCE OF RIDEM GA STANDARDS
DETECTED IN GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-37

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200 0 200 Feet

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NORTH KINGSTOWN, RHODE ISLAND

SEMIVOLATILE ORGANIC COMPOUNDS (UG/L) DETECTED IN DEEP GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-38

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

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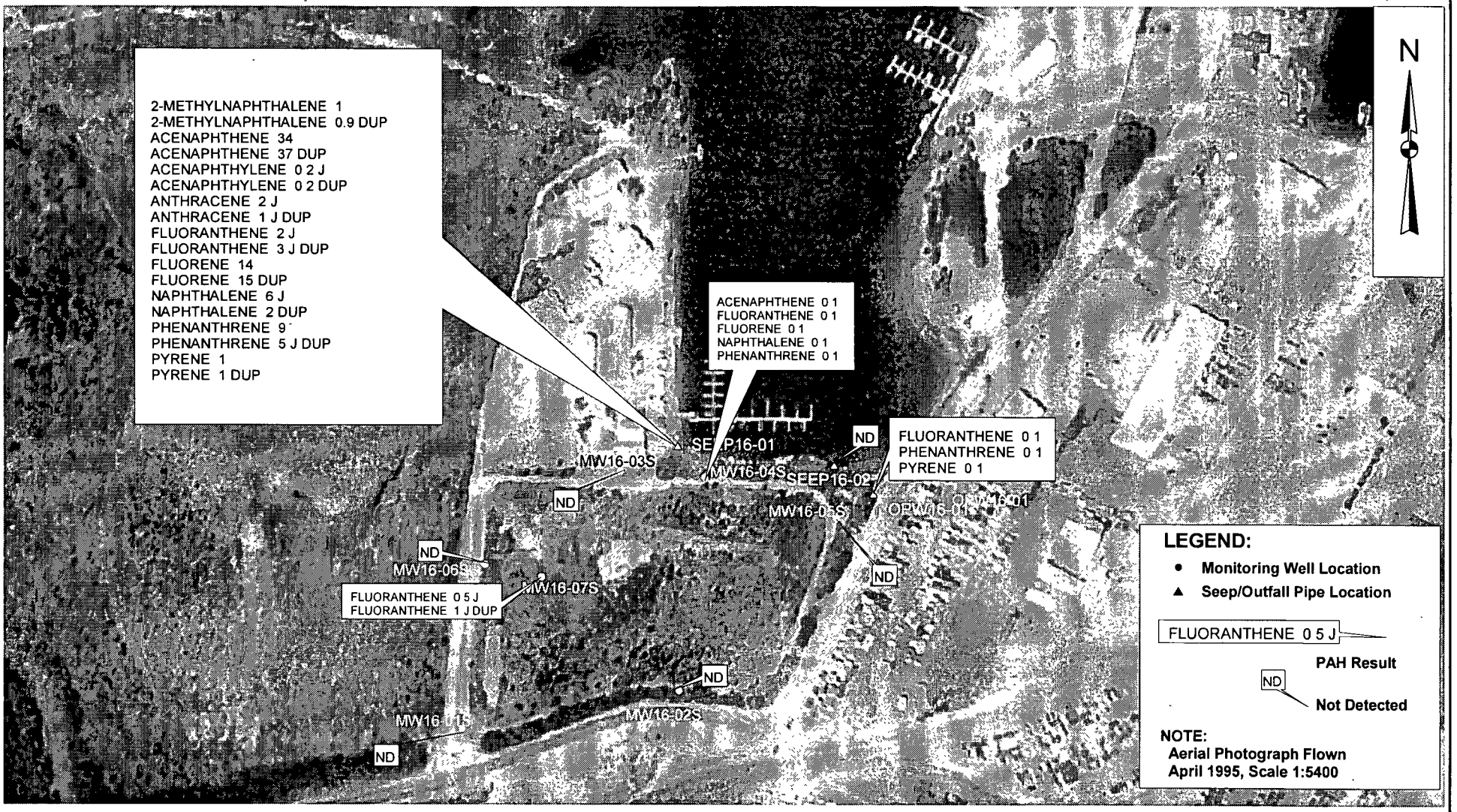
NORTH KINGSTOWN, RHODE ISLAND

SEMIVOLATILE ORGANIC COMPOUNDS (UG/L) DETECTED IN BEDROCK GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-39




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

80 0 80 160 240 Feet

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PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
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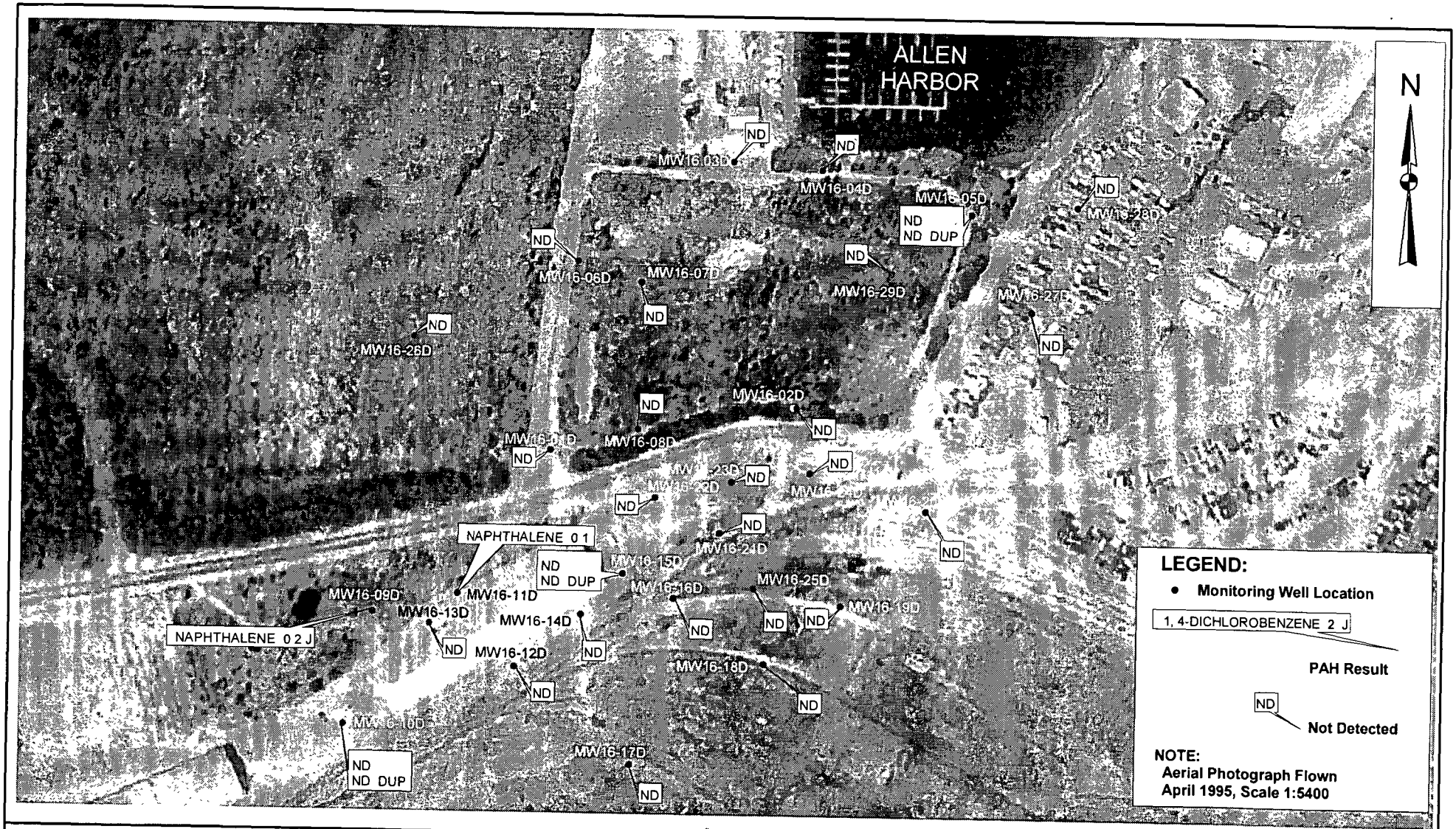
NORTH KINGSTOWN, RHODE ISLAND

PAH COMPOUNDS (UG/L)
DETECTED IN SEEPS AND SHALLOW
GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-40




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

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PAH COMPOUNDS
(UG/L) DETECTED IN DEEP
GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-41

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

80 0 80 160 240 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PAH COMPOUNDS (UG/L)
DETECTED IN BEDROCK
GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-42

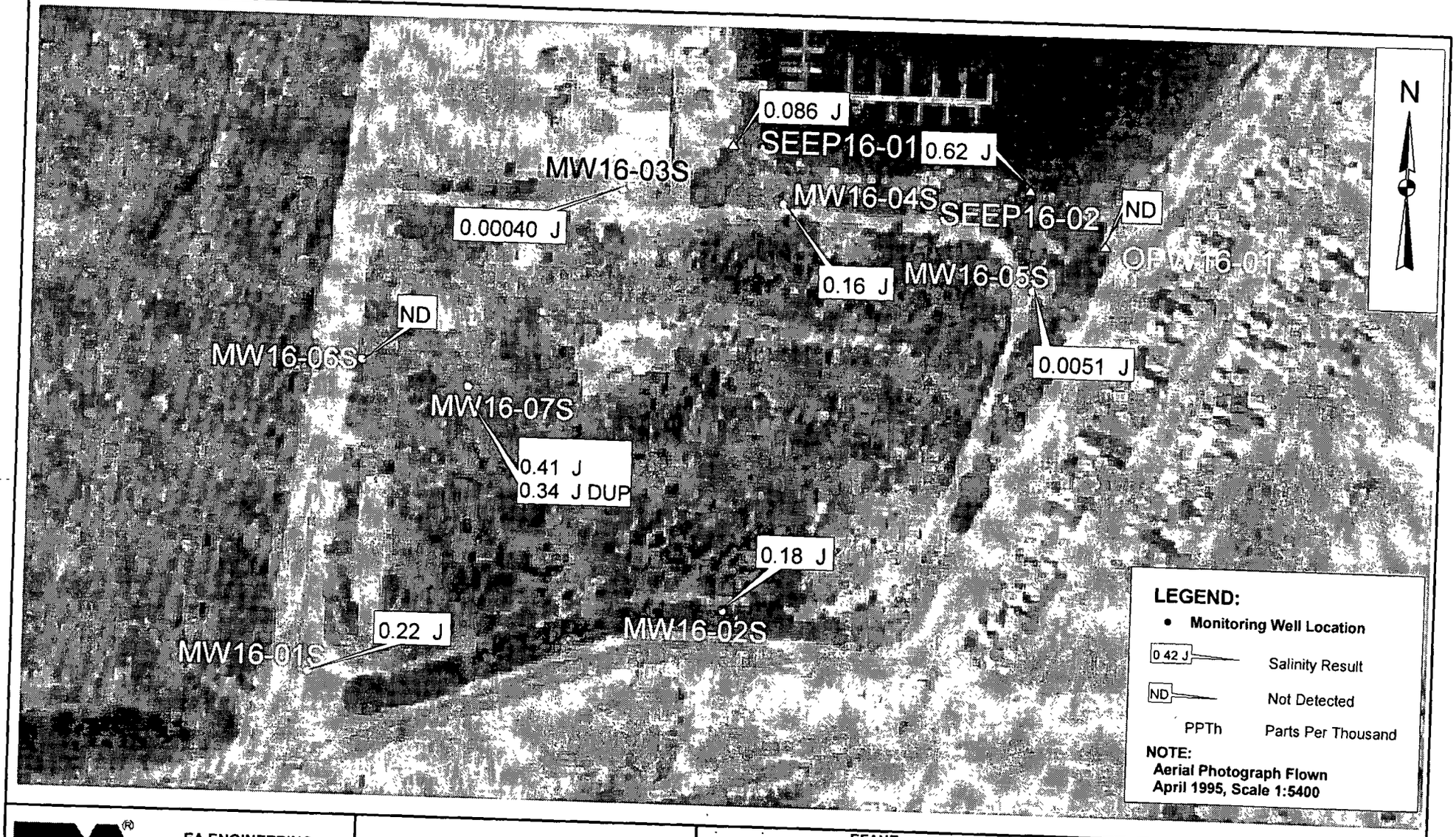
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

PESTICIDE (UG/L) DETECTED
IN GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-43




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

80 0 80 160 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

SALINITY (PPTh) DETECTED
IN SEEPS AND SHALLOW
GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-44

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 300 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

SALINITY (PPTh) DETECTED
IN DEEP GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-45

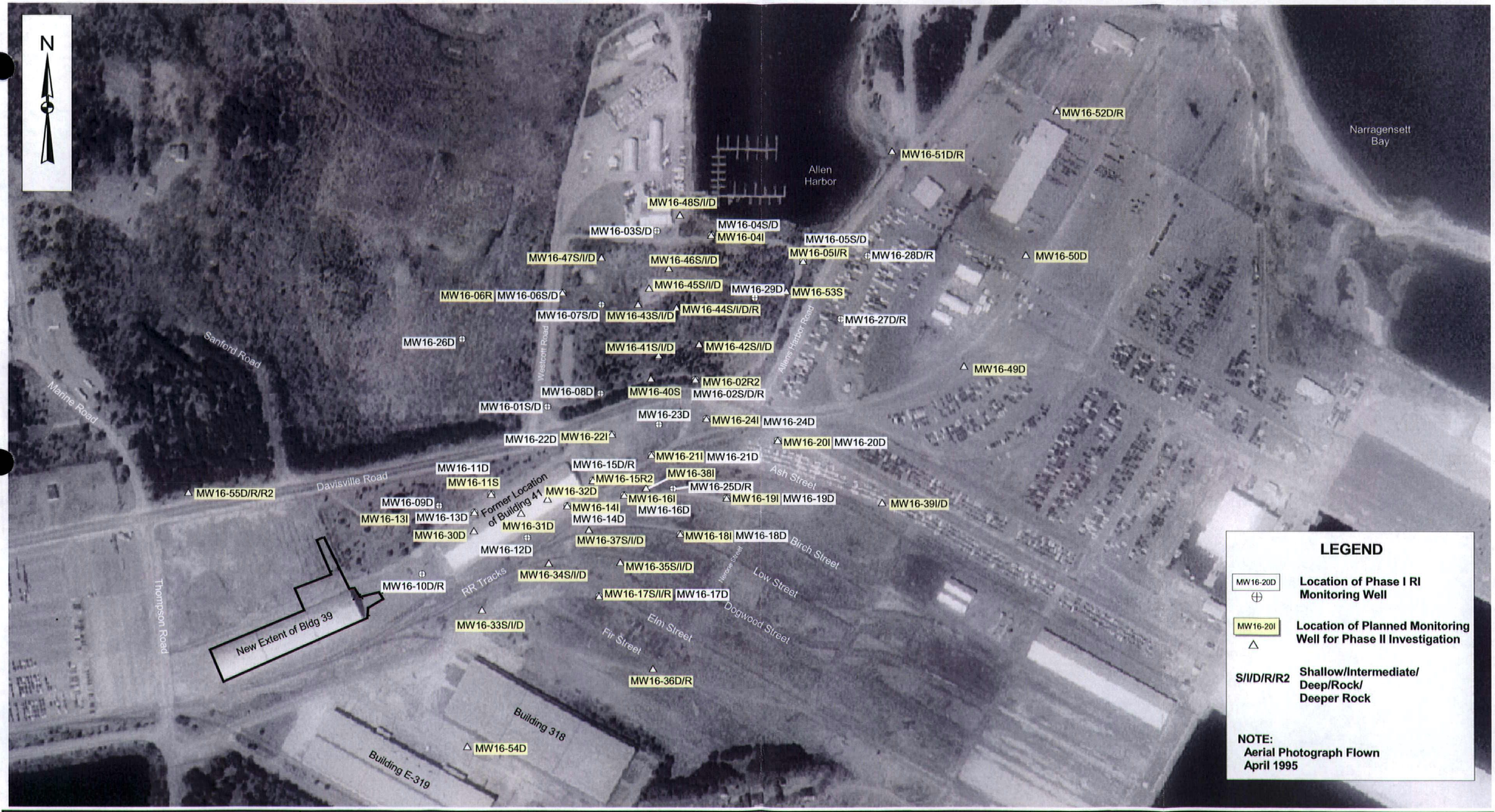
EA ENGINEERING, SCIENCE, AND TECHNOLOGY

200 0 200 Feet

EFANE
PHASE I REMEDIAL INVESTIGATION
IR PROGRAM SITE 16
NCBC DAVISVILLE
NORTH KINGSTOWN, RHODE ISLAND

SALINITY (PPTh) DETECTED IN BEDROCK GROUND-WATER SAMPLES
MARCH 2001

FIGURE 4-46




EA ENGINEERING, SCIENCE, AND TECHNOLOGY

100 0 100 200 300 400 500 Feet

**EFANE**
**IR Program Site 16**
**Phase I Remedial Investigation**
**Former NCBC Davisville Facility**
**North Kingstown, Rhode Island**

**MONITORING WELL LOCATION MAP FOR PHASE II INVESTIGATION**

FIGURE 5-1

# TABLE 2-1 SUMMARY OF STAGE I MEMBRANE INTERFACE DETECTOR RESPONSE INTERVALS

| Location Designation | MIP Depth Plan*/Actual (ft bg) | Water Table** (ft bg) | Membrane Interface Probe (MIP) Detector Response Depth Intervals | | | | | | Recommendations For Probe-Collected Ground-Water Sampling (ft bg) or Monitoring Well Installation |
|---|---|---|---|---|---|---|---|---|---|
| | | | Electron Capture Detector (ECD) (ft bg) | | | Photo Ionization Detector (PID) (ft bg) | | | |
| | | | Shallow | Mid | Deep | Shallow | Mid | Deep | |
| MIPI6-01 | 45 / 32 | 18.5 | 4.8–8.5 (trace) | 19–32+ (trace) | | | | | Install Monitoring Well Pair |
| MIPI6-02 | 42 / 23.7 | 16 | | 23.7+ (trace) | | | | | |
| MIPI6-03 | 40 / 42.3 | 12 | 2–17 (very low to low) | 24–42+ (very low to low) | | | | | 16 and 42 and Install Monitoring Well Pair |
| MIPI6-04 | 33 / 1–5 | | Location deleted; shallow probe refusal | | | Location deleted; shallow probe refusal | | | |
| MIPI6-05 | 37 / 35.9 | 3.5–9 | 3.5–12 (very low to low) | 36–36+ (very low to low) | | | | | |
| MIPI6-06 | 37 / 40.4 | 4–8 | 4–8.5 (very low to low) | 24–32 (very low to low) | 34–38 (very low to low) | | | | 28 and 36 |
| MIPI6-07 | 42 and 32 / 28.5 | 6 | | | | 8–28.5+ (mid; highest PID response at Site 16) | | | 15 and Install Monitoring Well Pair |
| MIPI6-08 | 43 / 34.1 | 3–8 | | | | | | | |
| MIPI6-09 | 52 / 42.2 | 2–3 | | 26–38 (trace) | | | | | 31 |
| MIPI6-10 | 57 / 32.7 | | | | | | 24–28 (trace) | | 26 |
| MIPI6-11 | 50 /41.9 | 2–10 | 6–17 (very low to low) | 20–29 (very low to low) | | 3–16 (trace) | 17–21 (trace) | | |
| MIPI6-12 | 48 / 49 | 3–10 | 6–8 (low) | 15–19 (very low) | 29–45 (very low), 47–49+ (low to mid) | 7–11 (very low to low) | | | 17 and 49 |
| MIPI6-13 | 45 / 38.7 | 4 | 6–12 (trace to very low) | | | 4–8 (trace) | | | |

NOTES:
* = Planned depth based upon the estimated depth to bedrock as interpreted from the Stage I seismic refraction geophysical results.
** = Interpreted from the MIP's temperature log.
ft bg = Feet below grade.
Blank cells are where there was no apparent response by the ECD or PID.

| Location Designation | MIP Depth Plan*/Actual (ft bg) | Water Table** (ft bg) | Membrane Interface Probe (MIP) Detector Response Depth Intervals | | | | | | Recommendations For Probe-Collected Ground-Water Sampling (ft bg) or Monitoring Well Installation |
|---|---|---|---|---|---|---|---|---|---|
| | | | Electron Capture Detector (ECD) (ft bg) | | | Photo Ionization Detector (PID) (ft bg) | | | |
| | | | Shallow | Mid | Deep | Shallow | Mid | Deep | |
| MIPI6-14b | 60 and 44–46 / 50 | 2–10 | 6–9 and 14–16 (very low) | 26–50+ (very low to low, but steady increase) | | | | | |
| MIPI6-15 | 56 / 46 | 1–8 | 6–17 (trace) | | 34–46+ (trace) | | | | 17 |
| MIPI6-16 | 65 / 47.2 | 2–6 | 17–33 (trace) | | 33–47+ (mid) centered around 38–43 | | | 37–47+ (trace) | Install Monitoring Well Pair |
| MIPI6-17 | 62 / 48.6 | 2–7 | 5–49+ (low) | | | | | | 12 and 49 |
| MIPI6-18 | 55 / – | | Location deleted; not accessible (too wet) | | | Location deleted; not accessible (too wet) | | | |
| MIPI6-19a | 65 and 31 / 46 | 0–2 | 2–46+ (very low to low, but, increasing trend), spikes at 17.5, 23–25,30–31,38–39,41,42, and 43 | | | 12 (trace) | 30 (trace) | 38+41 (trace) 42 (low) 43 (trace) | |
| MIPI6-20a | 43 / 28 | 2–4 | | 26–28+ (trace) | | | | | |
| MIPI6-21a | 75 / 51.4 | 2–8 | | 26–29 (trace) | 37–51 (very low, but increasing) | | | | Install Monitoring Well Pair |
| MIPI6-22d | 70 / 47 | 2–4 | | 27–34 (trace), 36–47+ (mid) | | | | 44.5, 45.5, 46–46.5 (trace) | 45.5 |
| MIPI6-23b | 55 /47 | 2–7 | | | | | | | |
| MIPI6-24a | 60 / 47 | 2–8 | | | 38–47+ (trace, but increasing) | | | | 47 |
| MIPI6-25 | 60 / 40.8 | 2–4 | 2–11 (trace to very low) | | | | | | |
| MIPI6-26 | 55 / 58 | 2–7 | 2–6 (low) | | 55–58+ (mid) | | | 57.5-58+ (trace) | 58 |
| MIPI6-27 | 60 / 47 | 5–8 | 4–7 (low) | 28–47+ (mid) | | 3–33 (trace) | | | Install Monitoring Well Pair |
| MIPI6-28b | 42 / 35.8 | 2–4 | | 28–34.5 (low) | | | | | Install Monitoring Well Pair |

| Location Designation | MIP Depth Plan*/Actual (ft bg) | Water Table** (ft bg) | Membrane Interface Probe (MIP) Detector Response Depth Intervals | | | | | | Recommendations For Probe-Collected Ground-Water Sampling (ft bg) or Monitoring Well Installation |
|---|---|---|---|---|---|---|---|---|---|
| | | | Electron Capture Detector (ECD) (ft bg) | | | Photo Ionization Detector (PID) (ft bg) | | | |
| | | | Shallow | Mid | Deep | Shallow | Mid | Deep | |
| MIPI6-29a | 43 / 46.5 | 2–4 | 2–3 | 28–46.5+ (very low to low) (increasing trend) | | | | | 46 |
| MIPI6-30a | 44 / 38 | 3 | 2–3 (trace) | 23–29 (trace) | 37+ (trace, but increasing trend) | | | | |

# TABLE 2-2A VOC (µg/L) AND SALINITY (ppth) DETECTED IN PROBE-COLLECTED GROUND-WATER SAMPLES (NOT VALIDATED)

| Location | MIP16-03 | MIP16-03 | MIP16-06 | MIP16-06 | MIP16-07 | MIP16-09 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 16 | 39 | 28 | 36 | 15 | 31 |
| Date Collected | 04/28/00 | 04/28/00 | 04/27/00 | 04/27/00 | 04/28/00 | 05/02/00 |
| Analyte | | | | | | |
| Salinity | 0 | 0.015 | 0.076 | 0.051 | 0.044 | 0 |
| 1,1,1-Trichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1,2,2-Tetrachloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1,2-Trichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1-Dichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1-Dichloroethene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,2-Dichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,2-Dichloropropane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 2-Butanone | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 2-Hexanone | 4 U | 4 U | 4 U | 4 U | 4 U | 4 U |
| 4-Methyl-2-Pentanone | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U |
| Acetone | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Benzene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Bromodichloromethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Bromoform | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Bromomethane | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| Carbon Disulfide | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Carbon Tetrachloride | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Chlorobenzene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Chloroethane | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| Chloroform | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Chloromethane | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| *cis*-1,2-Dichloroethene | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| *cis*-1,3-Dichloropropene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Dibromochloromethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Ethylbenzene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Methylene Chloride | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Styrene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Tetrachloroethene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Toluene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Total 1,2-Dichloroethene | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| *trans*-1,2-Dichloroethene | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| *trans*-1,3-Dichloropropene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Trichloroethene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.6 J | 14 |
| Vinyl Chloride | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| Xylenes (Total) | | 1.0 U | | | 1.0 U | 1.0 U |
| Total CVOC | ND | ND | ND | ND | 0.6 | 14 |

NOTES: VOC = Volatile organic compounds.
µg/L = Micrograms per liter.
ppth = Parts per thousand.
ft bgs = Feet below grade.
U = Undetected.
J = Estimated.
CVOC = Chlorinated VOC.
ND = Indicates not detected at or above the reporting limit.

| Location | MIP16-10 | MIP16-12 | MIP16-15 | MIP16-17 | MIP16-17 | MIP16-22 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 26 | 17 | 17 | 12 | 49 | 45.5 |
| Date Collected | 05/01/00 | 05/03/00 | 05/02/00 | 05/01/00 | 05/01/00 | 05/01/00 |
| Analyte | | | | | | |
| Salinity | 0 | 2.9 | 3.0 | 0.40 | 0.17 | 0.12 |
| 1,1,1-Trichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1,2,2-Tetrachloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1,2-Trichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1-Dichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1-Dichloroethene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,2-Dichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,2-Dichloropropane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 2-Butanone | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| 2-Hexanone | 4 U | 4 U | 4 U | 4 U | 4 U | 4 U |
| 4-Methyl-2-Pentanone | 3 U | 3 U | 3 U | 3 U | 3 U | 3 U |
| Acetone | 5 U | 5 U | 3 J | 5 U | 5 U | 5 U |
| Benzene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Bromodichloromethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Bromoform | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Bromomethane | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| Carbon Disulfide | 1.0 U | 1 | 6 | 1.0 U | 0.5 J | 1 |
| Carbon Tetrachloride | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Chlorobenzene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Chloroethane | 2.0 U | 2.0 U | 2 J | 2.0 U | 2.0 U | 2.0 U |
| Chloroform | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Chloromethane | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| *cis*-1,2-Dichloroethene | 2.0 U | 250 | 190 | 14 | 3 | 2 J |
| *cis*-1,3-Dichloropropene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Dibromochloromethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Ethylbenzene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Methylene Chloride | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Styrene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Tetrachloroethene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Toluene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Total 1,2-Dichloroethene | 2.0 U | 255 | 230 | 15 | 3 | 2 J |
| *trans*-1,2-Dichloroethene | 2.0 U | 5 | 40 | 1 J | 2.0 U | 2.0 U |
| *trans*-1,3-Dichloropropene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Trichloroethene | 12 | 6 | 1.0 U | 1.0 U | 470 | 12 |
| Vinyl Chloride | 2.0 U | 14 | 11 | 9 | 2.0 U | 2.0 U |
| Xylenes (Total) | 1.0 U | 1.0 U | 1.0 U | | 1.0 U | 1.0 U |
| Total CVOC | 12 | 275 | 243 | 24 | 473 | 14 |

| Location | MIP16-22 DUP | MIP16-24 | MIP16-26 | MIP16-26 DUP | MIP16-29 |
|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 45.5 | 47 | 58 | 58 | 33 |
| Date Collected | 05/01/00 | 05/01/00 | 05/03/00 | 05/03/00 | 05/04/00 |
| Analyte | | | | | |
| Salinity | 0.12 | 0.0043 | 0.059 | 0.063 | 0.018 |
| 1,1,1-Trichloroethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 1,1,2-Trichloroethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 1,1-Dichloroethene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 1,2-Dichloroethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 1,2-Dichloropropane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| 2-Butanone | 5 U | 50 U | 5 U | 5 U | 5 U |
| 2-Hexanone | 4 U | 40 U | 4 U | 4 U | 4 U |
| 4-Methyl-2-Pentanone | 3 U | 30 U | 3 U | 3 U | 3 U |
| Acetone | 5 U | 50 U | 5 U | 5 U | 5 U |
| Benzene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Bromodichloromethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Bromoform | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Bromomethane | 2.0 U | 20 U | 2.0 U | 2.0 U | 2.0 U |
| Carbon Disulfide | 0.5 J | 10 U | 1 U | 1 U | 1 |
| Carbon Tetrachloride | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Chlorobenzene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Chloroethane | 2.0 U | 20 U | 2 U | 2.0 U | 2.0 U |
| Chloroform | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Chloromethane | 2.0 U | 20 U | 2.0 U | 2.0 U | 2.0 U |
| *cis*-1,2-Dichloroethene | 2 J | 55 | 13 | 12 | 2.0 U |
| *cis*-1,3-Dichloropropene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Dibromochloromethane | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Ethylbenzene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Methylene Chloride | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Styrene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Tetrachloroethene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Toluene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Total 1,2-Dichloroethene | 2 J | 55 | 14 | 13 | 2.0 U |
| *trans*-1,2-Dichloroethene | 2.0 U | 20 U | 1 J | 1 J | 2.0 U |
| *trans*-1,3-Dichloropropene | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Trichloroethene | 14 | 5,300 | 240 | 200 | 1 U |
| Vinyl Chloride | 2.0 U | 20 U | 2.0 U | 2.0 U | 2.0 U |
| Xylenes (Total) | 1.0 U | 10 U | 1 U | 1 U | 1 U |
| Total CVOC | 16 | 5,386 | 244 | 213 | ND |

# TABLE 2-2B SVOC (µg/L) DETECTED IN PROBE COLLECTED GROUND-WATER SAMPLES (NOT VALIDATED)

| Location | MIP16-03 | MIP16-03 | MIP16-06 | MIP16-06 | MIP16-07 | MIP16-09 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 16 | 39 | 36 | 28 | 15 | 31 |
| Date Collected | 04/28/00 | 04/28/00 | 04/27/00 | 04/27/00 | 04/28/00 | 05/02/00 |
| Analyte | | | | | | |
| 1,2,4-Trichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,3-Dichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,4-Dichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,2'-Oxybis (1-Chloropropane) | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4,5-Trichlorophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2,4,6-Trichlorophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2,4-Dinitrotoluene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,6-Dinitrotoluene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chloronaphthalene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | 10 U | 10 U | 10 U | 10 U | 24 | 10 U |
| 2-Methylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Nitroaniline | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2-Nitrophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3-Nitroaniline | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4,6-Dinitro-2-Methylphenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4-Bromophenyl Phenyl Ether | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloro-3-Methylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloroaniline | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorophenyl Phenyl Ether | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Methylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Nitroaniline | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4-Nitrophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| Acenaphthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acenaphthylene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Anthracene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)Anthracene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)Pyrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |

NOTES:
SVOC = Semivolatile organic compounds.
µg/L = Micrograms per liter.
ft bgs = Feet below grade.
U = Undetected.

| Location | MIP16-03 | MIP16-03 | MIP16-06 | MIP16-06 | MIP16-07 | MIP16-09 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 16 | 39 | 36 | 28 | 15 | 31 |
| Date Collected | 04/28/00 | 04/28/00 | 04/27/00 | 04/27/00 | 04/28/00 | 05/02/00 |
| Analyte | | | | | | |
| Benzo(b)Fluoranthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(k)Fluoranthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo[g,h,i]Perylene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethoxy) Methane | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethyl) Ether | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Ethylhexyl) Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Butyl Benzyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Carbazole | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Chrysene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Di-n-Butyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Di-n-Octylphthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzo(a,h)Anthracene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzofuran | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Diethyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dimethyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluoranthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluorene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobutadiene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorocyclopentadiene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachloroethane | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Indeno(1,2,3-cd)Pyrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Isophorone | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| n-Nitroso-Di-n-Propylamine | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| n-Nitrosodiphenylamine | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Naphthalene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Nitrobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pentachlorophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| Phenanthrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Phenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pyrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |

| Location | MIP16-10 | MIP16-12 | MIP16-12 | MIP16-15 | MIP16-17 | MIP16-17 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 26 | 17 | 48 | 17 | 12 | 49 |
| Date Collected | 05/01/00 | 05/03/00 | 05/04/00 | 05/02/00 | 05/01/00 | 05/01/00 |
| Analyte | | | | | | |
| 1,2,4-Trichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,3-Dichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,4-Dichlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,2'-Oxybis (1-Chloropropane) | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4,5-Trichlorophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2,4,6-Trichlorophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2,4-Dinitrotoluene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,6-Dinitrotoluene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chloronaphthalene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Nitroaniline | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2-Nitrophenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3-Nitroaniline | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4,6-Dinitro-2-Methylphenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4-Bromophenyl Phenyl Ether | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloro-3-Methylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloroaniline | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorophenyl Phenyl Ether | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Methylphenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Nitroaniline | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4-Nitrophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| Acenaphthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acenaphthylene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Anthracene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)Anthracene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)Pyrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(b)Fluoranthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(k)Fluoranthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo[g,h,i]Perylene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethoxy) Methane | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethyl) Ether | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Ethylhexyl) Phthalate | 6 J | 7 J | 10 U | 10 U | 10 U | 13 |

NOTES:
J = Estimated.

| Location | MIP16-10 | MIP16-12 | MIP16-12 | MIP16-15 | MIP16-17 | MIP16-17 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 26 | 17 | 48 | 17 | 12 | 49 |
| Date Collected | 05/01/00 | 05/03/00 | 05/04/00 | 05/02/00 | 05/01/00 | 05/01/00 |
| Analyte | | | | | | |
| Butyl Benzyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Carbazole | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Chrysene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Di-n-Butyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Di-n-Octylphthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzo(a,h)Anthracene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzofuran | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Diethyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dimethyl Phthalate | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluoranthene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluorene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobutadiene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorocyclopentadiene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachloroethane | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Indeno(1,2,3-cd)Pyrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Isophorone | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| n-Nitroso-Di-n-Propylamine | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| n-Nitrosodiphenylamine | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Naphthalene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Nitrobenzene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pentachlorophenol | 25 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| Phenanthrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Phenol | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pyrene | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U |

| Location | MIP16-22 | MIP16-22 DUP | MIP16-24 | MIP16-26 | MIP16-26 DUP | MIP16-29 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 45.5 | 45.5 | 47 | 58 | 58 | 33 |
| Date Collected | 05/01/00 | 05/01/00 | 05/01/00 | 05/03/00 | 05/03/00 | 05/04/00 |
| Analyte | | | | | | |
| 1,2,4-Trichlorobenzene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,2-Dichlorobenzene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,3-Dichlorobenzene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 1,4-Dichlorobenzene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,2'-Oxybis (1-Chloropropane) | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4,5-Trichlorophenol | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2,4,6-Trichlorophenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dichlorophenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dimethylphenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,4-Dinitrophenol | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2,4-Dinitrotoluene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2,6-Dinitrotoluene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chloronaphthalene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Chlorophenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylnaphthalene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Methylphenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 2-Nitroaniline | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 2-Nitrophenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3,3'-Dichlorobenzidine | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 3-Nitroaniline | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4,6-Dinitro-2-Methylphenol | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4-Bromophenyl Phenyl Ether | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloro-3-Methylphenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chloroaniline | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Chlorophenyl Phenyl Ether | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Methylphenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| 4-Nitroaniline | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| 4-Nitrophenol | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| Acenaphthene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Acenaphthylene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Anthracene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)Anthracene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(a)Pyrene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(b)Fluoranthene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo(k)Fluoranthene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Benzo[g,h,i]Perylene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethoxy) Methane | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Chloroethyl) Ether | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| bis(2-Ethylhexyl) Phthalate | 11 U | 10 U | 6 J | 5 J | 10 U | 10 U |
| Butyl Benzyl Phthalate | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Carbazole | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |

| Location | MIP16-22 | MIP16-22 DUP | MIP16-24 | MIP16-26 | MIP16-26 DUP | MIP16-29 |
|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 45.5 | 45.5 | 47 | 58 | 58 | 33 |
| Date Collected | 05/01/00 | 05/01/00 | 05/01/00 | 05/03/00 | 05/03/00 | 05/04/00 |
| Analyte | | | | | | |
| Chrysene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Di-n-Butyl Phthalate | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Di-n-Octylphthalate | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzo(a,h)Anthracene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dibenzofuran | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Diethyl Phthalate | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Dimethyl Phthalate | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluoranthene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Fluorene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobenzene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorobutadiene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachlorocyclopentadiene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Hexachloroethane | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Indeno(1,2,3-cd)Pyrene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Isophorone | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| n-Nitroso-Di-n-Propylamine | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| n-Nitrosodiphenylamine | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Naphthalene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Nitrobenzene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pentachlorophenol | 28 U | 25 U | 25 U | 25 U | 25 U | 25 U |
| Phenanthrene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Phenol | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |
| Pyrene | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U |

# TABLE 2-2C PAH DETECTED IN GROUND WATER FROM PROBE COLLECTED SAMPLES (NOT VALIDATED) (µg/L)

| Location | MIP16-03 | MIP16-03 | MIP16-06 | MIP16-06 | MIP16-07 | MIP16-09 | MIP16-10 | MIP16-12 | MIP16-12 |
|---|---|---|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 16 | 39 | 36 | 28 | 15 | 31 | 26 | 17 | 48 |
| Date Collected | 04/28/00 | 04/28/00 | 04/27/00 | 04/27/00 | 04/28/00 | 05/02/00 | 05/01/00 | 05/03/00 | 05/04/00 |
| Analyte | | | | | | | | | |
| 2-Methylnaphthalene | 0.2U | 0.2U | 0.2U | 0.2U | 21. | 0.2U | 0.2U | 0.2U | 0.2U |
| Acenaphthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.8 | 0.2U | 0.2U | 0.2U | 0.2U |
| Acenaphthylene | 0.2U | 0.2U | 0.2U | 0.2U | 0.7 | 0.2U | 0.2U | 0.2U | 0.2U |
| Anthracene | 0.2U | 0.2U | 0.2U | 0.2U | 0.3 | 0.2U | 0.2U | 0.2U | 0.2U |
| Benzo(a)Anthracene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Benzo(a)Pyrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Benzo(b)Fluoranthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Benzo(k)Fluoranthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Benzo[g,h,i]Perylene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Chrysene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Dibenzo(a,h)Anthracene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Fluoranthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.1J | 0.2U | 0.2U | 0.2U | 0.2U |
| Fluorene | 0.2U | 0.2U | 0.2U | 0.2U | 1 | 0.2U | 0.2U | 0.2U | 0.2U |
| Indeno(1,2,3-cd)Pyrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Naphthalene | 0.2U | 0.2U | 0.2U | 0.2U | 0.6 | 0.2U | 0.2U | 0.2U | 0.2U |
| Phenanthrene | 0.2U | 0.2U | 0.2U | 0.2U | 2 | 0.2U | 0.2U | 0.2U | 0.2U |
| Pyrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2 | 0.2U | 0.2U | 0.2U | 0.2U |

NOTES:
PAH = Polycyclic aromatic hydrocarbon.
µg/L = Micrograms per liter.
ft bgs = Feet below ground surface.
U = Undetected.
J = Estimated.

| Location | MIP16-15 | MIP16-17 | MIP16-17 | MIP16-24 | MIP16-22 | MIP16-22 DUP | MIP16-26 | MIP16-26 DUP | MIP16-29 |
|---|---|---|---|---|---|---|---|---|---|
| Depth of Sample (ft bgs) | 17 | 12 | 49 | 47 | 46 | 45.5 | 58 | 58 | 33 |
| Date Collected | 05/02/00 | 05/01/00 | 05/01/00 | 05/01/00 | 05/01/00 | 05/01/00 | 05/03/00 | 05/03/00 | 05/04/00 |
| Analyte | | | | | | | | | |
| 2-Methylnaphthalene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Acenaphthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.4 |
| Acenaphthylene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Anthracene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.4 |
| Benzo(a)Anthracene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.4 |
| Benzo(a)Pyrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2 |
| Benzo(b)Fluoranthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2 |
| Benzo(k)Fluoranthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.1J |
| Benzo[g,h,i]Perylene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Chrysene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.6 |
| Dibenzo(a,h)Anthracene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Fluoranthene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 2 |
| Fluorene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2J |
| Indeno(1,2,3-cd)Pyrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Naphthalene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U |
| Phenanthrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.4 |
| Pyrene | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 0.2U | 2 |

# TABLE 2-3 SUMMARY COMPARISON OF MEMBRANE INTERFACE PROBE (MIP) RESPONSES AND PROBE-COLLECTED GROUND-WATER SAMPLE VOC/SVOC RESULTS

| | | | | | Probe-Collected Ground-Water Sample Results (Not Validated) (µg/L) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | VOC Results | | | | | | | | | | SVOC/PAH Results | | | | | | | | | | |
| MIP Designation | Depth of Ground-Water Probe (ft bgs) | Total Depth of MIP Probing (ft bgs) | ECD Response in Probe Collected Ground-Water Interval | PID Response in Probe Collected Ground-Water Interval (ft bgs) | *cis*-1,2-Dichloroethene | *trans*-1,2-Dichloroethene | Trichloroethene | Vinyl Chloride | Total CVOC | Acenaphthene | Acenaphthylene | Anthracene | Benzo(a) Anthracene | Benzo(a)pyrene | Benzo(b) Fluoranthene | Benzo(k) Fluoranthene | Chrysene | Fluoranthene | Fluorene | Napthalene | Phenanthrene | Pyrene | 2-Methy Naphalene | BEHP |
| MIP16-03 | 15–19 | 42 | very low | NSR | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MIP16-03 | 39 | | low | NSR | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MIP16-06 | 28 | 40 | very low-low | NSR | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | 36 | | very low-low | NSR | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MIP16-07 | 15 | 28 | NSR | mid | ND | ND | **0.6J** | ND | 0.6 | **0.8** | **0.7** | **0.3** | ND | ND | ND | ND | ND | **0.1J** | **1** | **0.6** | **2** | **0.2** | **21** | ND |
| MIP16-09 | 31 | 42 | trace | NSR | ND | ND | **14** | ND | **14** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

NOTES:
VOC = Volatile organic compound.
SVOC = Semivolatile organic compound.
µg/L = Micrograms per liter.
PAH = Polycyclic aromatic hydrocarbons.
ft bgs = Feet below ground surface.
ECD = Electron capture detector.
PID = Photo ionization detector.
CVOC = Chlorinated VOC.
BEHP = bis(2)ethyhexylphthalate.
NSR = No significant response (no significant response was recorded by the PID).
ND = Not detected.
Bolded data = Data above the detection limits.
J = Estimated.
The complete analytical program for probe collected samples included: VOC, SVOC, PAH, and Salinity; however, the this table is comprised of only those VOC and SVOC detected in at least one ground-water sample. NOTE: These data are not validated.

| | | | | | Probe-Collected Ground-Water Sample Results (Not Validated) (µg/L) | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | VOC Results | | | | | | | | | | SVOC/PAH Results | | | | | | | | | |
| MIP Designation | Depth of Ground-Water Probe (ft bgs) | Total Depth of MIP Probing (ft bgs) | ECD Response in Probe Collected Ground-Water Interval | PID Response in Probe Collected Ground-Water Interval (ft bgs) | *cis*-1,2-Dichloroethene | *trans*-1,2-Dichloroethene | Trichloroethene | Vinyl Chloride | Total CVOC | Acenaphthene | Acenaphthylene | Anthracene | Benzo(a) Anthracene | Benzo(a)pyrene | Benzo(b) Fluoranthene | Benzo(k) Fluoranthene | Chrysene | Fluoranthene | Fluorene | Napthalene | Phenanthrene | Pyrene | 2-Methy Naphalene | BEHP |
| MIP16-10 | 26 | 33 | NSR | trace | ND | ND | **12** | ND | **12** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **6J** |
| MIP16-12 | 17 | 49 | very low | NSR | **250** | **5** | **6** | **14** | **275** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **7J** |
| MIP16-15 | 17 | 46 | trace | NSR | **190** | **53** | ND | **11** | **254** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MIP16-17 | 12 | 49 | trace | NSR | **14** | **1J** | ND | **9** | **24** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| | 49 | | low | NSR | **3** | **3** | **470** | ND | **476** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **13** |
| MIP16-22 | 45.5 | 41 | very low-low | trace | **2** | **2** | **12** | ND | **16** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MIP16-24 | 47 | 47 | NSR | NSR | **86** | **86** | **5300** | ND | **5472** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| MIP16-26 | 58 | 61 | mid | trace | **13** | **1** | **270** | ND | **284** | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | **5J** |
| MIP16-29 | 33 | 46 | trace | NSR | ND | ND | ND | ND | ND | **0.4** | ND | **0.4** | **0.4** | **0.2** | **0.2** | **0.1J** | **0.6** | **2** | **0.2J** | ND | **0.4** | **2** | ND | ND |

# TABLE 2-4 MONITORING WELL LOCATION RATIONALE

| Monitoring Well ID | Rationale |
|---|---|
| MW16-01S/D | Assess the upgradient edge of the EBS Review Item 28 area. |
| MW16-02S/D | Assess the area of the highest Stage I MIP ECD response located near the southeast corner of the Stage I RI area. |
| MW16-02R | CVOC plume characterization in the upper 25 ft of competent bedrock in the Stage I RI area beneath the highest Stage I MIP ECD response. |
| MW16-03S/D | Assess the area just south of Building E-107 as recommended from the Stage I MIP screening results. |
| MW16-04S/D | Assess the area between the former creosote dip tank and fire fighting training areas and the shoreline of Allen Harbor. |
| MW16-05S/D | Assess the area in the northeast corner of the Stage I RI area as recommended from the Stage I MIP screening results. |
| MW16-06S/D | Assess the western boundary of the extended former creosote dip tank area. |
| MW16-07S/D | Assess the extended former creosote dip tank area where the highest Stage I MIP PID response occurred. |
| MW16-08D | Assess northwestern plume extent within the Stage I RI area and north of the MIP16-S01 location. |
| MW16-09D | Assess potential for CVOC plume presence northwest of Building 41. |
| MW16-10D/R | Assess area upgradient of Building 41. |
| MW16-11D | Assess area downgradient of EBS Review Item 81. |
| MW16-12D | Assess potential for CVOC plume presence along south side of Building 41. |
| MW16-13D | Assess area adjacent to the Building 41 boiler room and former solvent recovery still location. |
| MW16-14D | Assess south side of Building 41 where a deep MIP ECD mid-level response was recorded (MIP16-S17). |
| MW16-15D/R | Assess east end of Building 41 where a deep MIP ECD high-level response was recorded (MIP16-S05). |
| MW16-16D | Assess area east from MW16-15D/R where a deep MIP ECD mid-level response was recorded (MIP16-S09). |
| MW16-17D | Assess southern CVOC plume extent. |
| MW16-18D | Assess southeastern CVOC plume edge where there were no significant MIP responses (MIP16-S19). |
| MW16-19D | Assess eastern CVOC plume edge where there were no significant MIP responses (MIP16-S18). |
| MW16-20D | Assess eastern CVOC plume edge where there were no significant MIP responses (MIP16-S20). |
| MW16-21D | CVOC plume characterization where a deep MIP ECD low-level response was recorded (MIP16-S02). |
| MW16-22D | CVOC plume characterization where a deep MIP ECD mid-level response was recorded (MIP16-S01). |
| MW16-23D | CVOC plume characterization where a deep MIP ECD high-level response was recorded (MIP16-S03). |
| MW16-24D | CVOC plume characterization where a deep MIP ECD trace-level response was recorded (MIP16-S04). |
| MW16-25D/R | Assess area east from MW16-15D/R where a deep MIP ECD high-level response was recorded (MIP16-S11). |
| MW16-26D | Assess the old borrow pit area, west and cross to up gradient of the EBS Review Item 28 area. |
| MW16-27D/R | Assess eastern edge of CVOC plume. |
| MW16-28D/R | Assess northeastern extent of CVOC plume. |
| MW16-29D | Assess CVOC plume character in the area between the MW16-02 and MW16-05 well pair locations. |

NOTES:
EBS = Environmental baseline survey.
MIP = Membrane interface probe.
ECD = Electron capture detector.
CVOC = Chlorinated volatile organic compounds.
PID = Photo ionization detector.
RI = Remedial investigation.

# TABLE 2-5 MONITORING WELL DATA

| Well Number | Date Installed | Rhode Island Grid Coordinates | | Ground Elevation | PVC Elevation | Screen or Open Borehole Depth (ft bgs) | | Screen Elevation (MSL) | | Depth of Pump Intake (ft bgs) | Elevation of Pump Intake (ft MSL) | Depth to Top of Weathered Rock (ft bgs) | Depth to Top of Competent Bedrock (ft bgs) | Elevation to Top of Weather Bedrock (ft MSL) | Elevation to Top of Competent Bedrock (ft MSL) | Bedrock Core Data | | | | | | Geologic Unit Screened |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northing | Easting | | | Top | Bottom | Top | Bottom | | | | | | | Depth to Top of Core | Depth to Bottom of Core | Elevation of Top of Core | Elevation of Bottom of Core | % Recovery | % RQD | |
| MW16-01S | 12/20/00 | 194083 | 522727 | 33.9 | 35 9 | 17 5 | 27 5 | 16 4 | 6.4 | 25.5 | 8.4 | | | | | | | | | | | Sand (10) |
| MW16-01D | 05/16/00 | 194077 | 522730 | 33.9 | 36.04 | 48.5 | 58.5 | -14 6 | -24.6 | 56 | -22.1 | | 57.2 | | -23.3 | 62 5 | 67 5 | -28.6 | -33.6 | 99 | 63 | Silt and Sand (3), sandy cobbly gravel (5.7), rock (1.3) |
| MW16-02S | 05/23/00 | 194169 | 523216 | 20 9 | 23.72 | 5 | 15 | 15.9 | 5 9 | 13 5 | 7.4 | | | | | | | | | | | Sand (10) |
| MW16-02D | 05/25/00 | 194168 | 523223 | 20 9 | 23.05 | 56 5 | 66.5 | -35 6 | -45.6 | 58.5 | -37 6 | | 66 7 | | -45 8 | 71.0 | 75 3 | -50.1 | -54.4 | 88 | 41 | Gravelly sand (1.5), sand (1), sandy silt (1), gravelly sand (6.5) |
| MW16-02R | 02/01/01 | 194170 | 523209 | 21.2 | 22 99 | 70 | 95 | -48 8 | -73.8 | 80 | -58.8 | | | | | | | | | | | Quartzite (6), phyllite (19) |
| MW16-03S | 06/12/00 | 194663 | 523084 | 11.2 | 14 14 | 3 | 13 | 8.2 | -1 8 | 8 | 3.2 | | | | | | | | | | | Silty Sand (9), sandy silt (1) |
| MW16-03D | 06/01/00 | 194663 | 523090 | 11.1 | 13.47 | 38.5 | 48.5 | -27.4 | -37.4 | 43 | -31.9 | 37.5 | 48.5 | -26.4 | -37 4 | 51 5 | 56 5 | -40.4 | -45.4 | 100 | 0 | Weathered bedrock (10) |
| MW16-04S | 06/14/00 | 194651 | 523274 | 10.3 | 9 92 | 3 | 13 | 7 3 | -2.7 | 11.5 | -1.2 | | | | | | | | | | | Fill (5.2), boulder (4 8) |
| MW16-04D | 06/13/00 | 194649 | 523268 | 10.4 | 11.91 | 43 | 53 | -32 6 | -42 6 | 50 | -39.6 | 51.5 | 53.0 | -41.1 | -42 6 | 56 0 | 61 0 | -45 6 | -50.6 | 92 | 63 | Silty sand (1), sand (3), boulder (2), silty gravelly sand (2.5), weathered bedrock (1 5) |
| MW16-05S | 12/20/00 | 194558 | 523570 | 13.8 | 15.78 | 8 | 18 | 5.8 | -4.2 | 16 | -2.2 | | | | | | | | | | | Fill (2.5), silty sand (1), sandy silt (2.5), sand (0 5), sandy silt (1), sand (2.5) |
| MW16-05D | 05/26/00 | 194563 | 523571 | 13.7 | 16.2 | 42 | 52 | -28 3 | -38.3 | 46 | -32.3 | 62.0 | 62.5 | -48 3 | -48 8 | 65 5 | 70.5 | -51.8 | -56 8 | 99 | 88 | Sand (2.5), sandy silt (1), sand (0.5), sandy silt (1 5), sand (1.5), silty sand (1), silty gravelly sand (2) |
| MW16-06S | 06/21/00 | 194453 | 522780 | 25.2 | 27.43 | 7 | 17 | 18 2 | 8.2 | 16 | 9.2 | | | | | | | | | | | Sand (1), silty sand (2), sandy silt (1 25), gravel (0 25), sandy silt (2 5), silt (2), gravel (1) |
| MW16-06D | 06/22/00 | 194458 | 522780 | 25.2 | 27.75 | 38.5 | 44.5 | -13 3 | -19.3 | 41.5 | -16.3 | | 44.5 | | -19 3 | 47 5 | 52.5 | -22.3 | -27.3 | 98 | 79 | silty gravelly sand (3.5), gravelly sandy silt (2.5) |
| MW16-07S | 06/19/00 | 194425 | 522907 | 19.6 | 22.27 | 7 | 17 | 12.6 | 2 6 | 12 | 7.6 | | | | | | | | | | | Fill and/or reworked soil (9 5), sandy silt (0.5) |
| MW16-07D | 06/16/00 | 194418 | 522908 | 19.5 | 22.37 | 27.5 | 37.5 | -8.0 | -18.0 | 35 | -15.5 | 28 0 | 38.0 | -8.5 | -18 5 | 41 0 | 46 0 | -21.5 | -26 5 | 98 | 78 | Silt (0.5), weathered rock (sandy silt with rock fragments) (2), weathered rock (silty sandy gravel) (2), weathered rock (sandy silt and gravel) (5.5) |
| MW16-08D | 02/05/01 | 194122 | 522905 | 28 0 | 30.39 | 40 | 55 | -12 1 | -27.1 | 42 | -14.1 | | 55.1 | | -27 2 | 58 5 | 63.5 | -30 6 | -35.6 | 95 | 88 | Sand to silty sand (8), silty sand and gravel (6), sand and gravel (1) |
| MW16-09D | 12/06/01 | 193747 | 522373 | 34.4 | 33 9 | 57.0 | 67.0 | -22.7 | -32.7 | 61.8 | -27.5 | | 64.8 | | -32 4 | 68.1 | 73.1 | -33.8 | -38.8 | 97 | 90 | Gravel (2), sandy silt and gravel (3), gravelly sand (4.75), bedrock (0.25) |
| MW16-10D | 12/06/01 | 193519 | 522317 | 31.6 | 31.4 | 48.5 | 58 5 | -16 9 | -26.9 | 52.5 | -20.9 | 50 0 | 59.0 | -18 4 | -27 4 | 62 0 | 67.0 | -30.4 | -35 4 | 93 | 91 | Silt (1 5), weathered rock (silt with rock fragments) (4), rock (1), weathered rock (silty sand and gravel) (3 5) |
| MW16-10R | 12/15/01 | 193517 | 522316 | 31.6 | 31.38 | 66 | 91 | -34.4 | -59.4 | 69.5 | -37.9 | | | | | | | | | | | Phyllite (8), quartzite (17) |
| MW16-11D | 12/08/01 | 193786 | 522545 | 29.8 | 29 57 | 53.5 | 63.5 | -23 7 | -33.7 | 58 | -28 2 | | 62.4 | | -32.6 | 66.0 | 70.8 | -36.2 | -41.0 | 93 | 95 | Silty sand and gravel (4.5), gravel (2), sand (2.5), rock (1) |
| MW16-12D | 12/20/01 | 193640 | 522663 | 29 2 | 31.55 | 52 | 62 | -22.8 | -32 8 | 57 | -27.8 | | 62.0 | | -32.8 | 66.0 | 71.0 | -36.8 | -41.8 | 95 | 88 | Sandy silt (2), sand (4), silty sand and gravel (2), sand (1), sandy gravel (1) |
| MW16-13D | 01/17/01 | 193725 | 522489 | 30 0 | 29.4 | 57 | 67 | -27.0 | -37 0 | 62 | -32 0 | | 66.8 | | -36 8 | 70.0 | 75.0 | -40.0 | -45.0 | 98 | 78 | Sand (1), sand and gravel (4), gravelly sand (1.25), sand and gravel (0.75), sandy gravel (2.75), rock (0 25) |
| MW16-14D | 01/30/01 | 193747 | 522795 | 30 0 | 29 7 | 52 | 62 | -22 0 | -32.0 | 60 5 | -30.5 | | 62.7 | | -32.7 | 66 0 | 71 0 | -36.0 | -41.0 | 88 | 60 | Gravelly sand (4), boulder (1 5), gravelly sand (4.5) |
| MW16-15D | 01/17/01 | 193832 | 522879 | 29.3 | 28 87 | 46 | 56 | -16.7 | -26 7 | 52 | -22.7 | | 56.3 | | -27.0 | 61 0 | 66 0 | -31 7 | -36 7 | 98 | 60 | Silty sand (1), sand and gravel (9) |
| MW16-15R | 01/26/01 | 193835 | 522881 | 29 3 | 28.64 | 60 5 | 86 | -31 2 | -56 7 | 62 5 | -33.2 | | | | | | | | | | | Quartzite (25.5) |
| MW16-16D | 01/09/01 | 193783 | 522982 | 23.4 | 25 51 | 54 | 64 | -30.6 | -40 6 | 59 | -35 6 | 61.0 | 64.0 | -37.6 | -40 6 | 67.0 | 72 0 | -43.6 | -48 6 | 95 | 68 | Boulder (0 5), silty gravelly sand (1), boulder (2.5), silty sand (3), weathered rock (3) |
| MW16-17D | 01/04/01 | 193445 | 522898 | 23.9 | 26 41 | 57 | 67 | -33 1 | -43 1 | 64 5 | -40 6 | | 66 0 | | -42 1 | 70 0 | 75.0 | -46.1 | -51.1 | 78 | 19 | Boulder (1), sand (0 5), gravel (1.5), silty sand (1), boulder (1), silty sand (4), phyllite (1) |
| MW16-18D | 01/04/01 | 193652 | 523165 | 21.6 | 23.85 | 42 5 | 52.5 | -21.0 | -31.0 | 47 5 | -26.0 | | 52 5 | | -31.0 | 56 0 | 61.0 | -34 5 | -39.5 | 95 | 46 | Gravelly sand (10) |
| MW16-19D | 01/11/01 | 193773 | 523318 | 20 0 | 22.59 | 45.5 | 54 5 | -25 5 | -34 5 | 47 | -27 0 | 46.5 | 48 8 | -26 5 | -28.7 | 55.0 | 60.0 | -35.0 | -40.0 | 98 | 86 | Silt (1), weathered phyllite (3), phyllite (5) |
| MW16-20D | 01/09/01 | 193965 | 523488 | 18 0 | 17 66 | 39.5 | 49.5 | -21 5 | -31.5 | 44.5 | -26 5 | 48 0 | 48.8 | -30 0 | -30 8 | 52 0 | 57.0 | -34.0 | -39.0 | 100 | 93 | Sand & silt (4.5),gravelly sand and silt (4), weathered rock (1 5) |
| MW16-21D | 01/08/01 | 193916 | 523072 | 22.6 | 22 22 | 51 | 61 | -28 5 | -38.5 | 54 | -31.5 | | 60 8 | | -38 3 | 65 0 | 70 0 | -42.5 | -47 5 | 98 | 87 | Sand to gravelly sand (10) |
| MW16-22D | 01/16/01 | 193985 | 522942 | 30 0 | 29 73 | 52 | 62 | -22.0 | -32.0 | 58 | -28 0 | | 62.0 | | -32 0 | 66 0 | 71.0 | -36.0 | -41.0 | 99 | 40 | Silty sand (1), sand and gravelly sand (3.5), sandy silt (0.5), silty gravelly sand (5) |
| MW16-23D | 01/12/01 | 194018 | 523095 | 25 5 | 25.32 | 50 | 65 | -24 5 | -39 5 | 52 | -26 5 | 60 5 | 64 9 | -35 0 | -39.4 | 69 0 | 74 0 | -43.5 | -48 5 | 98 | 45 | Sand (5.5), weathered phyllite (gravelly sand) (4.5) |

NOTES.
ft bgs = Feet below ground surface.
MSL = Mean sea level.
RQD = Rock quality designation.

| Well Number | Date Installed | Rhode Island Grid Coordinates | | Ground Elevation | PVC Elevation | Screen or Open Borehole Depth (ft bgs) | | Screen Elevation (MSL) | | Depth of Pump Intake (ft bgs) | Elevation of Pump Intake (ft MSL) | Depth to Top of Weathered Rock (ft bgs) | Depth to Top of Competent Bedrock (ft bgs) | Elevation to Top of Weather Bedrock (ft MSL) | Elevation to Top of Competent Bedrock (ft MSL) | Bedrock Core Data | | | | | | Geologic Unit Screened |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Northing | Easting | | | Top | Bottom | Top | Bottom | | | | | | | Depth to Top of Core | Depth to Bottom of Core | Elevation of Top of Core | Elevation of Bottom of Core | % Recovery | % RQD | |
| MW16-24D | 01/22/01 | 194038 | 523252 | 21.3 | 20.96 | 50 | 62 | -28.8 | -40.8 | 51 | -29.8 | 58.5 | 62.4 | -37.3 | -41.2 | 65.0 | 70 0 | -43.8 | -48.8 | 93 | 67 | Sand (2.5), sandy gravel (5.5), sand (0.5), weathered phyllite (3.5) |
| MW16-25D | 01/12/01 | 193805 | 523142 | 21.8 | 24 42 | 46 | 58 | -24.3 | -36.3 | 47 | -25.3 | 58.0 | 58.3 | -36.3 | -36 5 | 61.0 | 66 0 | -39.3 | -44 3 | 87 | 20 | Silty sand (4), sand (2), gravelly sand (6) |
| MW16-25R | 01/18/01 | 193806 | 523149 | 21 6 | 23 01 | 61 | 86 | -39 4 | -64.4 | 80 | -58 4 | | | | | | | | | | | Phyllite (16 5), quartzite (8 5) (based on drill cuttings) |
| MW16-26D | 01/25/01 | 194302 | 522450 | 16.8 | 19.2 | 40 | 49 | -23.3 | -32.3 | 44 5 | -27.8 | | 49 0 | | -32.3 | 53 0 | 58.0 | -36.3 | -41.3 | 97 | 88 | Silty sand (1), sand (5 5), gravelly sand and silt (2.5) |
| MW16-27D | 12/12/00 | 194369 | 523694 | 13 2 | 12.96 | 54 | 64 | -40 8 | -50 8 | 55 5 | -42 3 | | 64.0 | | -50.8 | 66.0 | 71.0 | -52.8 | -57.8 | 100 | 92 | Layers of sand and silty gravel (2), boulder (3), gravelly sand (2), silty gravelly sand (3) |
| MW16-27R | 12/18/00 | 194364 | 523705 | 13 2 | 12.9 | 66 5 | 92 | -53 3 | -78.8 | 79 | -65 8 | | 61.5 | | -48.3 | | | | | | | Quartzite (25.5) (based on drill cuttings) |
| MW16-28D | 12/13/00 | 194581 | 523783 | 12 4 | 12 02 | 54.5 | 64.5 | -42.1 | -52.1 | 57 | -44.6 | | 65 0 | | -52.6 | 69 0 | 74 0 | -56.6 | -61 6 | 97 | 93 | Gravelly sand (10) |
| MW16-28R | 12/21/00 | 194578 | 523789 | 12.5 | 12.02 | 68 | 93 | -55.6 | -80.6 | 82 5 | -70 1 | | 65.0 | | -52.6 | | | | | | | Quartzite (8), phyllite (17) (based on drill cuttings) |
| MW16-29D | 01/31/01 | 194442 | 523411 | 14 4 | 16 12 | 44.5 | 54 5 | -30 1 | -40.1 | 51 | -36.6 | | 54 4 | | -40.0 | 57 0 | 62 0 | -42.6 | -47.6 | 62 | 16 | Silty sand (3.5), sand to gravelly sand (6.5) |
| RMW-01S | 11/19/91 | 194213 | 521792 | 34.2 | 34.87 | 0 | 0 | 34 2 | 34.2 | | | | | | | | | | | | | |
| RMW-01D | 11/91 | 194215 | 521788 | 34 1 | 35.23 | 0 | 0 | 34.1 | 34 1 | | | | | | | | | | | | | |
| RMW-01I | 11/91 | 194216 | 521783 | 33 8 | 34.66 | 0 | 0 | 33 8 | 33.8 | | | | | | | | | | | | | |
| RMW-02S | 11/21/91 | 194155 | 522497 | 20 5 | 0 | 0 | 0 | 0.0 | 0.0 | | | | | | | | | | | | | |
| RMW-02D | 11/91 | 194152 | 522500 | 20.4 | 0 | 0 | 0 | 0 0 | 0.0 | | | | | | | | | | | | | |
| RMW-03S | 11/26/91 | 194871 | 522500 | 11 8 | 13 49 | 0 | 0 | 11.8 | 11 8 | | | | | | | | | | | | | |
| RMW-03D | 01/00/00 | 194875 | 522488 | 11 6 | 13.64 | 0 | 0 | 11 6 | 11.6 | | | | | | | | | | | | | |

# TABLE 2-6 SUMMARY OF SAMPLING AND ANALYTICAL PROGRAM

| Sample Media | U.S. EPA Method (SW8460) | No. Field Samples | Number of QC Samples | | | | Total Number of Samples |
|---|---|---|---|---|---|---|---|
| | | | Duplicate | Rinsate | MS/MSD | Trip Blank | |
| Ground-Water (probe-collected samples) | TCL VOC (detection limit < 1 µg/L) 8260 | 8 | 1 | 2 | 1/1 | 4 | 17 |
| | TCL SVOC (8270) | 8 | 1 | 2 | 1/1 | | 13 |
| | TCL PAH (8310) | 8 | 1 | 2 | 1/1 | | 13 |
| | TCL Pesticides/PCB (8082) | 6 | 1 | 2 | 1/1 | | 11 |
| | TAL Inorganics (6010/7000) Filtered and Unfiltered | 12 | 2 | 4 | 1/1 | | 20 |
| | Salinity (SM 2520B) | 8 | 1 | | | | 9 |
| Surface and Subsurface Soil Pairs (8) | TCL VOC (8260) | 16 | 2 | 3 | 1/1 | | 23 |
| | TCL SVOC (8270) | 16 | 2 | 3 | 1/1 | | 23 |
| | TCL PAH (8310) | 16 | 2 | 3 | 1/1 | | 23 |
| | TCL Pesticides/PCB (8082) | 16 | 2 | 3 | 1/1 | | 23 |
| | TAL Inorganics (6010/7000) | 16 | 2 | 3 | 1/1 | | 23 |
| | TOC (9060) | 16 | 2 | 3 | | | 21 |
| | pH | 16 | | | | | 16 |
| | Grain Size | 16 | | | | | 16 |
| Subsurface Soil from Monitoring Well Screened Intervals | TCL VOC (8260) | 14 | 2 | 3 | 1/1 | | 21 |
| | TCL SVOC (8270) | 14 | 2 | 3 | 1/1 | | 21 |
| | TCL PAH (8310) | 14 | 2 | 3 | 1/1 | | 21 |
| | TCL Pesticides/PCB (8082) | 14 | 2 | 3 | 1/1 | | 21 |
| | TAL Inorganics (6010/7000) | 14 | 2 | 3 | 1/1 | | 21 |
| | TOC (9060) | 14 | 2 | 3 | | | 19 |
| | pH | 14 | | | | | 14 |
| | Grain Size | 14 | | | | | 14 |

NOTES:
EPA = U.S. Environmental Protection Agency.
QC = Quality control.
MS/MSD = Matrix spike/matrix spike duplicate.
TCL = Target Compound List.
VOC = Volatile organic compound.
µg/L = Micrograms per liter.
SVOC = Semivolatile organic compound.
PAH = Polycyclic aromatic hydrocarbons.
PCB = Polychlorinated biphenyl.
TAL = Target Analyte List.
TOC = Total organic compound.

| Sample Media | U.S. EPA Method (SW8460) | No. Field Samples | Number of QC Samples | | | | Total Number of Samples |
|---|---|---|---|---|---|---|---|
| | | | Duplicate | Rinsate | MS/MSD | Trip Blank | |
| Sediment and Seep (3 each) | TCL VOC (8260) | 6 | 2 | | 1/1 | 3 | 13 |
| | TCL SVOC (8270) | 6 | 2 | | 1/1 | | 10 |
| | TCL PAH (8310) | 6 | 2 | | 1/1 | | 10 |
| | TCL Pesticides/PCB (8082) | 6 | 2 | | 1/1 | | 10 |
| | TAL Inorganics | | | | | | |
| | Sediment | 3 | 1 | | 1/1 | | 6 |
| | Seep (filtered and unfiltered) | 6 | 2 | | 1/1 | | 10 |
| | Salinity (seep only) | 3 | 1 | | | | 4 |
| | TOC (sediment only) | 3 | 1 | | | | 4 |
| | SEM/AVS (sediment only) | 3 | 1 | | | | 4 |
| | pH | 6 | | | | | 6 |
| | Grain Size (sediment only) | 3 | | | | | 3 |
| Ground-Water (monitoring wells) | TCL VOC (detection limit, <1 µg/L) 8260 | 42 | 5 | | 2/2 | 25 | 76 |
| | TCL SVOC (8270) | 42 | 5 | | 2/2 | | 51 |
| | TCL PAH (8270 SIM) | 42 | 5 | | 2/2 | | 51 |
| | TCL Pesticides/PCB (8082) | 42 | 5 | | 2/2 | | 51 |
| | TAL Inorganics (6010/7000) | 42 | 5 | | 2/2 | | 51 |
| | Salinity (SM 2520B) | 42 | 5 | | | | 47 |
| Surface and Subsurface Soil Pairs (8) | Dioxin (8290) | 16 | 2 | 2 | 1/1 | | 22 |
| Subsurface soil from screened interval of 5 monitoring wells (located adjacent to MIP16-S01, MIP16-S03, MIP16-S05, MIP16-S08, MIP16-S17; Plus 2 intervals from soil boring adjacent to MIP16-S21 at 20–22 ft bgs and 32–34 ft bgs) | TCL VOC (8260) | 7 | 1 | 1 | 1/1 | 6 | 17 |
| | TCL SVOC (8270) | 7 | 1 | 1 | 1/1 | | 11 |
| | TCL PAH (8270 SIM) | 7 | 1 | 1 | 1/1 | | 11 |
| | TCL Pesticides/PCB (8082) | 7 | 1 | 1 | 1/1 | | 11 |
| | TAL Inorganics (6010/7000) | 7 | 1 | 1 | 1/1 | | 11 |
| | TOC (9060) | 7 | 1 | 1 | | | 9 |
| | pH | 7 | | | | | 7 |
| | Grainsize | 7 | | | | | 7 |

NOTES:
SEM/AVS = Simultaneously extracted metals/acid volatile sulfide.
MIP = Membrane interface probe.
ft bgs = Feet below ground surface.

# TABLE 2-7 SUMMARY OF WELL DEVELOPMENT GROUND-WATER QUALITY FIELD DATA

| Well Number | Date | Total Gallons Pumped | Elapsed Time (hour:min) | Temp (°C) | Conductivity (mS/cm) | pH | Turbidity (NTU) | Dissolved Oxygen (mg/L) | Eh (mg/L) | Salinity (mg/L) | Depth To Water (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW16-01S | 2/07/01 | 115 | 2:00 | 14.68 | 0.537 | 5.48 | 2.1 | 10.38 | 317.9 | 0.26 | 23.60 |
| MW16-01D | 6/28/00 | 36.0 | 3:00 | 14.38 | 0.120 | 6.54 | 22.0 | 0.05 | NR | NR | 22.49 |
| MW16-02S | 6/29/00 | 11 | 0:55 | 14.20 | 0.541 | 7.87 | 1.0 | 3.68 | NR | NR | 11.85 |
| MW16-02D | 6/29/01 | 144 | 3:10 | 1384 | 0.123 | 6.14 | 7.11 | 0.25 | NR | NR | 12.97 |
| MW16-02R | 2/08/01 | 110 | 3:00 | 13.34 | 0.151 | 6.76 | 24.8 | 0.07 | -405.1 | 0.07 | 16.65 |
| MW16-03S | 6/30/00 | 63.5 | 2:15 | 14.56 | 0.208 | 6.02 | 1.14 | 1.27 | NR | NR | 5.94 |
| MW16-03D | 6/30/00 | 36 | 3:30 | 14.21 | 0.220 | 6.52 | 3.0 | 1.42 | NR | NR | 9.34 |
| MW16-04S* | 7/05/00 | Bailed | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| MW16-04D | 7/05/00 | 34 | 2:45 | 13.23 | 0.379 | 6.65 | 8.0 | 0.17 | NR | NR | 7.65 |
| MW16-05S* | 2/07/01 | 32 | 1:00 | 10.14 | 0.278 | 6.31 | Offscale | 7.77 | 12.67 | 0.15 | NR |
| MW16-05D | 7/05/00 | 336 | 2:45 | 14.39 | 0.134 | 6.23 | 14.13 | 0.13 | NR | NR | 13.05 |
| MW16-06S | 6/30/00 | 27 | 2:15 | 15.13 | 0.000 | 5.73 | 1.0 | 5.95 | NR | NR | 16.18 |
| MW16-06D | 6/29/00 | 53 | 3:00 | 15.37 | 0.247 | 6.60 | 17.9 | 0.15 | NR | NR | 15.06 |
| MW16-07S | 6/29/00 | 27 | 2:15 | 13.65 | 0.574 | 6.43 | 3.0 | 0.30 | NR | NR | 11.08 |
| MW16-07D | 7/05/00 | 117 | 3:00 | 13.16 | 0.136 | 6.84 | 48.7 | 0.26 | NR | NR | 14.69 |
| MW16-08D | 2/07/01 | 360 | 2:00 | 13.19 | 0.271 | 6.28 | 0.00 | 0.18 | -200.2 | 0.13 | 18.4 |
| MW16-09D | 2/02/01 | 175 | 2:55 | 13.18 | 0.311 | 6.85 | NR | 0.11 | -68.6 | 0.15 | 22.50 |
| MW16-10D | 1/31/01 | 115 | 1:55 | 15.68 | 0.394 | 6.72 | 6 | 0.31 | 12.6 | 0.19 | 21.60 |

NOTES:
* = Well bailed.
°C = Degrees Celsius.
ft BTOC = Ft below top of casing.
mg/L = Milligrams per liter.
mS/cm = Millisiemens/centimeter.
MV = Millivolts.
NM = Not measured.
NR = No reading.
NTU = Nephelometric Turbidity Units.
Equipment used: Hydrolab Quanta (pH, Temp, Conductivity, Salinity, Dissolved Oxygen), Grundfos Redi-flow pump, and HF Scientific DRT 15CE (Turbidity).

| Well Number | Date | Total Gallons Pumped | Elapsed Time (hour:min) | Temp (°C) | Conductivity (mS/cm) | pH | Turbidity (NTU) | Dissolved Oxygen (mg/L) | Eh (mg/L) | Salinity (mg/L) | Depth To Water (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| MW16-10R# | 1/31/01 | 60 | 1:10 | 14.80 | 0.317 | 9.43 | NR | 0.04 | -718.7 | 0.15 | 44.50 |
| MW16-11D | 2/06/01 | 190 | 2:00 | 13.18 | 0.174 | 6.91 | 3.2 | 0.06 | -72.6 | 0.08 | 20.20 |
| MW16-12D | 2/08/01 | 145 | 2:25 | 12.98 | 0.170 | 6.74 | 2.84 | 0.15 | -546.6 | 0.08 | 19.28 |
| MW16-13D | 2/04/01 | 180 | 3:00 | 13.06 | 0.216 | 6.99 | 170 | 0.01 | -536.8 | 0.10 | 20.10 |
| MW16-14D | 2/05/01 | 160 | 2:50 | 13.78 | 0.149 | 6.41 | 3.3 | 0.09 | -387.4 | 0.07 | 28.10 |
| MW16-15D | 2/01/01 | 345 | 1:35 | 14.15 | 0.170 | 6.41 | 0.55 | 0.70 | -219.2 | 0.08 | 20.48 |
| MW16-15R | 2/01/01 | 400 | 2:55 | 14.75 | 0.279 | 7.74 | 131 | 0.08 | -207.2 | 0.08 | 80.85 |
| MW16-16D | 2/05/01 | 190 | 2:10 | 13.30 | 0.134 | 6.50 | 2.52 | 0.03 | -2.2 | 0.06 | NR |
| MW16-17D | 2/06/01 | 247 | 2:00 | 14.27 | 0.155 | 6.67 | 3.8 | 0.04 | -95.6 | 0.07 | NR |
| MW16-18D | 2/07/01 | 125 | 2:00 | 13.49 | 0.149 | 6.52 | 1.60 | 0.10 | -489.6 | 0.07 | 21.26 |
| MW16-19D | 2/07/01 | 680 | 2:55 | 13.06 | 0.121 | 6.41 | NR | 0.02 | -389.7 | 0.06 | NR |
| MW16-20D | 2/07/01 | 525 | 2:55 | 15.41 | 0.221 | 6.85 | 2.1 | 0.06 | -510.1 | 0.10 | NR |
| MW16-21D | 2/02/01 | NR | 2:10 | 14.29 | 0.198 | 6.89 | 1.09 | 0.08 | -331.9 | 0.09 | 15.93 |
| MW16-22D | 2/01/01 | 405 | 2:10 | 14.60 | 0.148 | 6.52 | 0.25 | 0.43 | -191.6 | 0.07 | 18.40 |
| MW16-23D | 2/01/01 | 36 | 2:55 | 14.54 | 0.161 | 7.33 | 22 | 0.79 | -99.6 | 0.08 | 15.40 |
| MW16-24D | 2/02/01 | NR | 2:10 | 14.59 | 0.150 | 6.96 | 4.6 | 0.08 | -457.3 | 0.07 | 12.25 |
| MW16-25D | 1/31/01 | 120 | 2:10 | 14.03 | 0.132 | 6.43 | 7.14 | 0.06 | -524.9 | 0.06 | 16.25 |
| MW16-25R | 1/31/01 | 120 | 2:00 | 13.18 | 0.142 | 6.62 | 8 | 0.11 | -489.2 | 0 07 | 14.20 |
| MW16-26D | 2/01/01 | 55 | 2:05 | 12.03 | 0.190 | 6.88 | 3 | 0.10 | -519.7 | 0.09 | 21.30 |
| MW16-27D | 1/30/01 | 127 | 2:07 | 14.75 | 0.250 | 6.56 | 3.2 | 0.09 | -45.6 | 0.12 | 11.15 |
| MW16-27R | 1/30/01 | 110 | 2:08 | 14.33 | 4.87 | 7.19 | 3.2 | 4.90 | -40.3 | 2.68 | 12.30 |
| MW16-28D | 1/31/01 | 225 | 1:30 | 15.55 | 0.644 | 6.59 | 5.1 | 0.09 | -772.8 | 5 | 8.91 |
| MW16-28R | 2/08/01 | ~250 | 3:51 | 14.98 | 5.227 | 8.77 | 2.2 | 0.11 | -361.2 | 2.86 | 32.96 |
| MW16-29D | 2/07/01 | NR | 2:00 | 12.13 | 0.223 | 6.48 | 0.00 | 13.82 | -358.5 | 0.11 | 16.38 |

NOTES:
# = Well ran dry; last reading taken used.

# TABLE 2-8 SUMMARY OF STAGE II MIP RESPONSE INTERVALS

| MIP Designation | Est Depth to Rock and MIP Refusal (ft bg) | Water Table* (ft bg) | MIP Detector Response Depth Intervals Electron Capture Detector (ECD) (ft bg) | |
|---|---|---|---|---|
| | | | Shallow | Deep |
| **West of Westcott Road** | | | | |
| MIP16-W-01 | NA / 33 | | NSR | |
| MIP16-W-02 | 58 / 49 | 10–14 | NSR | |
| MIP16-W-03 | 47 / 47 | | NSR | |
| MIP16-W-04 | 34 /35 | 8–10 | NSR | |
| **East of Allens Harbor Road** | | | | |
| MIP16-E-01 | 50 / 50 | | 2–6 low | |
| MIP16-E-02 | 51 / 46 | | NSR | |
| MIP16-E-03 | 52 / 53 | | | 53 trace? |
| MIP16-E-04 | 59 / 48.5 | 5–8 | | 40–42 v. low |
| MIP16-E-05 | 56 / 41.5 | 5–8 | | 29–37 v. low |
| **South of Davisville Road** | | | | |
| MIP16-S-01 | 66 / 62 | 16–20 | | 42.5–48 mid<br>58.5–62+ mid |
| MIP16-S-02 | NA / 48 | 8–12 | | 36–44 low |
| MIP16-S-03 | 52 / 53 | 14–16 | | 48–51 high |
| MIP16-S-04 | 69 / 38 | 9–12 | | 38+ trace? |
| MIP16-S-05 | 62 / 54 | 10–16 | | 48–54+ high |
| MIP16-S-06 | 47 / 28 | | NSR | |
| MIP16-S-07 | 70 / 52 | 17 | NSR | |
| MIP16-S-08 | NA / 43 | 14–16 | 1–5 low | 25+ trace? |
| MIP16-S-09 | 48 / 56 | 10–14 | | 40–54 mid |
| MIP16-S-10 | 60 / 52 | 8–11 | | 28–50 mid |
| MIP16-S-11 | 53 / 47.5 | 7–11 | | 35–36 low,<br>47–47.5+ high |
| MIP16-S-12 | 62 / 38 | | NSR | |
| MIP16-S-13 | NA / 38 | 15–17 | NSR | |
| MIP16-S-14 | NA / 44 | 13–15 | NSR | |
| MIP16-S-15 | 70 / 48 | 13–16 | NSR | |
| MIP16-S-16 | 67 / 48 | 12–16 | NSR | |
| MIP16-S-17 | 52 / 47 | 11–13 | | 39–44 low,<br>44–47+ mid |
| MIP16-S-18 | 46 / 49 | 8–10 | | 37–42 low,<br>49+ trace? |
| MIP16-S-19 | NA / 45 | 9–12 | NSR | |
| | | | | |
| MIP16-S-20 | 46 / 24 | 6–8 | NSR | |
| MIP16-S-21 | NA / 42 | 11 | | 16–22 low-mid,<br>28–34 mid |
| MIP16-S-22 | NA / 41 | | | 24.5–30 trace? |

NOTES:
MIP = Membrane interface probe.
NSR = No significant response (no significant response was recorded by the photo ionization detector [PID]).
NA = Not available (i.e., not along a seismic refraction geophysical line from which an interpreted depth could be obtained.
* = Water table interpreted from temperature log.

# TABLE 2-9 SUMMARY OF GROUND-WATER QUALITY FIELD PARAMETERS MEASURED PRIOR TO SAMPLING (MARCH 2001)

| Well Number | Date | Time | Temp (°C) | pH | Conductivity (mS/cm) | Dissolved Oxygen (mg/L) | Turbidity (NTU) | Salinity (%) | Eh (mV) | Depth To Water (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|
| MW16-01S | 3/29/01 | 0855 | 11.67 | 5.54 | 0.578 | 9.44 | 8.6 | 0.28 | 250.3 | 20.35 |
| MW16-01D | 3/29/01 | 0928 | 11.37 | 6.39 | 0.283 | 0.28 | 60 | 0.14 | 106.5 | 20.52 |
| MW16-02S | 3/29/01 | 0950 | 7.25 | 6.32 | 0.480 | 9.23 | 0 | 0.2 | 211.1 | 10.80 |
| MW16-02D | 3/29/01 | 0955 | 12.00 | 6.55 | 0.127 | 0.32 | 3.6 | 0.06 | 232.0 | 11.62 |
| MW16-02R | 3/29/01 | 0935 | 10.51 | 6.80 | 0.159 | 0.47 | 55 | 0.08 | -4.7 | 11.70 |
| MW16-03S | 3/21/01 | 1550 | 4.84 | 6.24 | 0.167 | 0.33 | 10 | 0.08 | 247.6 | 4.70 |
| MW16-03D | 3/22/01 | 1405 | 9.19 | 5.83 | 0.209 | 3.57 | 4.9 | 0.10 | 172.1 | 5.55 |
| MW16-04S | 3/21/01 | 1510 | 5.11 | 6.87 | 0.536 | 1.14 | 75 | 0.27 | -38.4 | *# |
| MW16-04D | 3/22/01 | 1435 | 10.73 | 6.61 | 0.305 | 0.10 | 14 | 0.15 | 64.3 | 7.3 |
| MW16-05S | 3/21/01 | 1553 | 6.00 | 6.01 | 0.229 | 1.12 | 26.7 | 0.11 | 45.5 | 13.35 |
| MW16-05D | 3/22/01 | 1430 | 10.72 | 6.25 | 0.122 | 0.40 | 0 | 0.06 | 185.2 | 12.72 |
| MW16-06S | 3/22/01 | 1025 | 9.47 | 5.83 | 0.099 | 7.18 | 2.0 | 0.05 | 159.2 | 13.90 |
| MW16-06D | 3/22/01 | 1030 | 11.52 | 6.70 | 0.215 | 0.82 | 3.0 | 0.10 | 11.2 | 13.40 |
| MW16-07S | 3/23/01 | 1035 | 7.40 | 6.54 | 0.800 | 0.12 | 29 | 0.39 | -52.6 | 7.70 |
| MW16-07D | 3/23/01 | 1030 | 10.16 | 6.87 | 0.313 | 0.25 | 130 | 0.15 | -90.3 | 8.20 |
| MW16-08D | 3/28/01 | 1350 | 11.59 | 5.97 | 0.312 | 0.36 | 2.9 | 0.15 | 144.7 | 15.80 |
| MW16-09D | 3/26/01 | 1205 | 10.94 | 6.88 | 0.178 | 0.18 | 45 | 0.08 | 221.8 | 17.70 |
| MW16-10D | 3/26/01 | 1125 | 12.45 | 6.84 | 0.359 | 0.45 | 70 | 0.17 | 17.5 | 14.56 |
| MW16-10R | 3/26/01 | 1427 | 12.28 | 8.78 | 0.141 | 0.04 | 30 | 0.07 | -285.9 | 44.05# |

NOTE:
Equipment used: YSI 6-Series (pH, Temp, Conductivity, Salinity, Dissolved Oxygen), dedicated bladder pump, and Lamotte Turbidimeter.

°C = Degrees Celsius.
ft BTOC = Feet below top of casing.
mg/L = Milligrams per liter.
mS/cm = Millisiemens/centimeter.
MV = Millivolts.
NTU = Nephlometric Turbidity Units.
# = Well purged dry, readings are last set.
* = Water level below top of bladder pump.

| Well Number | Date | Time | Temp (°C) | pH | Conductivity (mS/cm) | Dissolved Oxygen (mg/L) | Turbidity (NTU) | Salinity (%) | Eh (mV) | Depth To Water (ft BTOC) |
|---|---|---|---|---|---|---|---|---|---|---|
| MW16-11D | 3/26/01 | 1210 | 12.00 | 7.00 | 0.163 | 0.21 | 70 | 0.08 | 2.0 | 12.80 |
| MW16-12D | 3/23/01 | 1055 | 11.60 | 6.60 | 0.161 | 0.23 | 13 | 0.08 | 139.3 | 15.49 |
| MW16-13D | 3/26/01 | 1145 | 12.12 | 6.96 | 0.181 | 0.21 | 180 | 0.09 | -97.6 | 12.6 |
| MW16-14D | 3/23/01 | 1110 | 12.49 | 6.61 | 0.149 | 0.19 | 80 | 0.07 | 203.2 | 14.40 |
| MW16-15D | 3/27/01 | 1030 | 12.58 | 6.20 | 0.138 | 1.00 | 17 | 0.07 | 93.9 | 16.50 |
| MW16-15R | 3/27/01 | 1100 | 9.99 | 6.84 | 0.181 | 0.53 | 7 | 0.09 | -57.1 | 16.40 |
| MW16-16D | 3/26/01 | 1510 | 11.70 | 6.35 | 0.118 | 0.47 | 3.2 | 0.06 | 69.9 | 10.60 |
| MW16-17D | 3/28/01 | 1500 | 12.46 | 7.34 | 0.156 | 1.12 | 180 | 0.07 | 50.1 | 11.1 |
| MW16-18D | 3/28/01 | 1525 | 12.25 | 6.57 | 0.131 | 0.56 | 120 | 0.06 | 30.9 | 10.42 |
| MW16-19D | 3/28/01 | 1425 | 12.43 | 6.36 | 0.123 | 2.78 | 1.9 | 0.06 | 60.2 | 9.44 |
| MW16-20D | 3/28/01 | 0955 | 12.67 | 7.03 | 0.184 | 0.32 | 11 | 0.09 | -12.2 | 7.10 |
| MW16-21D | 3/28/01 | 0950 | 12.55 | 6.07 | 0.130 | 0.23 | 80 | 0.06 | -16.6 | 8.42 |
| MW16-22D | 3/28/01 | 1005 | 13.28 | 6.54 | 0.147 | 0.19 | 4.2 | 0.07 | 322.8 | 14.99 |
| MW16-23D | 3/28/01 | 0940 | 13.21 | 8.20 | 0.205 | 0.61 | 110 | 0.10 | -65.5 | 11.90 |
| MW16-24D | 3/28/01 | 1010 | 13.56 | 6.76 | 0.177 | 0.70 | 4 | 0.08 | -30.5 | 8.55 |
| MW16-25D | 3/27/01 | 1000 | 11.26 | 6.42 | 0.124 | 0.17 | 6.6 | 0.06 | -42.4 | 10.30 |
| MW16-25R | 3/27/01 | 1040 | 11.07 | 7.32 | 0.159 | 0.21 | 21 | 0.08 | 256.3 | 9.92 |
| MW16-26D | 3/21/01 | 1200 | 9.50 | 6.50 | 0.273 | 0.20 | 11 | 0.13 | -192.3 | 5.15 |
| MW16-27D | 3/27/01 | 1510 | 13.10 | 6.63 | 0.272 | 0.34 | 20 | 0.13 | 104.2 | 9.01 |
| MW16-27R | 3/27/01 | 1510 | 11.70 | 7.19 | 6.112 | 0.22 | 1 | 3.34 | -10.2 | 8.10 |
| MW16-28D | 3/27/01 | 14.35 | 14.00 | 6.83 | 0.918 | 0.23 | 10 | 0.45 | 280.5 | 8.70 |
| MW16-28R | 3/27/01 | 1415 | 12.84 | 6.86 | 11.82 | 0.59 | 75 | 6.77 | 20.6 | 9.50 |
| MW16-29D | 3/21/01 | 1039 | 9.67 | 6.47 | 0.322 | 0.55 | 0.8 | 0.15 | -111.3 | 11.56 |

# TABLE 3-1 SUMMARY OF DEPTH TO GROUND-WATER MEASUREMENTS

| Well Number | Stickup* (ft bgs) | Elev. Top of Riser (MSL) | Depth to Ground Water (ft bgs) | | | Elevation of Ground Water Surface (MSL) | | |
|---|---|---|---|---|---|---|---|---|
| | | | 10/4/00[a] | 3/29/01 | 5/2/01 | 10/4/00[a] | 3/29/01 | 5/2/01 |
| MW16-01S | 2.00 | 35.90 | 22.95 | 20.32 | 20.26 | 12.95 | 15.58 | 15.64 |
| MW16-01D | 2.11 | 36.04 | 22.64 | 20.38 | 20.40 | 13.40 | 15.66 | 15.64 |
| MW16-02S | 2.84 | 23.72 | 12.74 | 10.42 | 10.27 | 10.98 | 13.30 | 13.45 |
| MW16-02D | 2.11 | 23.05 | 13.22 | 11.48 | 11.55 | 9.83 | 11.57 | 11.50 |
| MW16-02R | 1.82 | 22.99 | NI | 11.53 | 11.61 | NI | 11.46 | 11.38 |
| MW16-03S[b] | 2.90 | 14.14 | 5.89 | 4.32 | 5.17 | 8.25 | 9.82 | 8.97 |
| MW16-03D[b] | 2.39 | 13.47 | 7.01 | 6.61 | 6.85 | 6.46 | 6.86 | 6.62 |
| MW16-04S[b] | -0.38 | 9.92 | 4.33 | 2.99 | 3.90 | 5.59 | 6.93 | 6.02 |
| MW16-04D[b] | 1.48 | 11.91 | 7.59 | 7.55 | 8.18 | 4.32 | 4.36 | 3.73 |
| MW16-05S[b] | 2 | 15.78 | NI | 12.57 | 11.56 | NI | 3.21 | 4.22 |
| MW16-05D[b] | -0.49 | 13.20 | 13.01 | 13.11 | 13.54 | 0.19 | 0.09 | -0.34 |
| MW16-06S | 2.23 | 27.43 | 15.98 | 13.06 | 13.87 | 11.45 | 14.37 | 13.56 |
| MW16-06D | 2.56 | 27.75 | 15.70 | 13.07 | 13.62 | 12.05 | 14.68 | 14.13 |
| MW16-07S | 2.67 | 22.27 | 10.87 | 8.12 | 8.90 | 11.40 | 14.15 | 13.37 |
| MW16-07D | 2.91 | 22.37 | 10.93 | 8.31 | 8.97 | 11.44 | 14.06 | 13.40 |
| MW16-08D | 2.44 | 30.39 | NI | 15.77 | 15.78 | NI | 14.62 | 14.61 |
| MW16-09D | 2.28 | 34.61 | NI | 17.04 | 16.43 | NI | 17.57 | 18.18 |
| MW16-10D | -0.36 | 31.33 | NI | 13.94 | 13.20 | NI | 17.39 | 18.13 |
| MW16-10R | -0.18 | 31.35 | NI | 14.10[c] | 13.40 | NI | 17.25[c] | 17.95 |
| MW16-11D | -0.22 | 29.45 | NI | 12.26 | 11.88 | NI | 17.19 | 17.57 |
| MW16-12D | 2.33 | 31.36 | NI | 15.04 | 14.51 | NI | 16.32 | 16.85 |
| MW16-13D | -0.67 | 29.32 | NI | 12.02 | 11.52 | NI | 17.30 | 17.80 |
| MW16-14D | -0.35 | 29.53 | NI | 13.60 | 13.20 | NI | 15.93 | 16.33 |
| MW16-15D | 2.50 | 31.79 | NI | 16.27 | 15.95 | NI | 15.52 | 15.84 |
| MW16-15R | 1.35 | 30.60 | NI | 15.11 | 14.78 | NI | 15.49 | 15.82 |
| MW16-16D | 2.13 | 25.51 | NI | 10.39 | 10.06 | NI | 15.12 | 15.45 |
| MW16-17D | 2.48 | 26.41 | NI | 10.33 | 9.96 | NI | 16.08 | 16.45 |
| MW16-18D | 2.30 | 23.85 | NI | 10.21 | 9.82 | NI | 13.64 | 14.03 |
| MW16-19D | 2.55 | 22.59 | NI | 9.48 | 9.13 | NI | 13.11 | 13.46 |
| MW16-20D | -0.35 | 17.49 | NI | 6.47 | 6.15 | NI | 11.02 | 11.34 |
| MW16-21D | -0.33 | 22.22 | NI | 8.23 | 7.98 | NI | 13.99 | 14.24 |
| MW16-22D | -0.31 | 29.73 | NI | 14.99 | 14.80 | NI | 14.74 | 14.93 |
| MW16-23D | -0.16 | 25.32 | NI | 11.71 | 11.54 | NI | 13.61 | 13.78 |
| MW16-24D | -0.29 | 20.96 | NI | 8.51 | 8.39 | NI | 12.45 | 12.57 |
| MW16-25D | 2.67 | 24.42 | NI | 10.42 | 10.08 | NI | 14.00 | 14.34 |
| MW16-25R | 1.41 | 23.01 | NI | 9.50 | 9.11 | NI | 13.51 | 13.90 |
| MW16-26D | 2.45 | 19.20 | NI | 3.64 | 4.26 | NI | 15.56 | 14.94 |
| MW16-27D | -0.27 | 12.96 | NI | 8.49 | 8.86 | NI | 4.47 | 4.10 |
| MW16-27R | -0.27 | 12.90 | NI | 7.70 | 7.87 | NI | 5.20 | 5.03 |
| MW16-28D[b] | -0.40 | 12.02 | NI | 8.58 | 9.10 | NI | 3.44 | 2.92 |
| MW16-28R[b] | -0.43 | 12.02 | NI | 8.62 | 9.12 | NI | 3.40 | 2.90 |
| MW16-29D | 1.68 | 16.12 | NI | 10.99 | 12.46 | NI | 5.13 | 3.66 |

| Well Number | Stickup* (ft bgs) | Elev. Top of Riser (MSL) | Depth to Ground Water (ft bgs) | | | Elevation of Ground Water Surface (MSL) | | |
|---|---|---|---|---|---|---|---|---|
| | | | 10/4/00[a] | 3/29/01 | 5/2/01 | 10/4/00[a] | 3/29/01 | 5/2/01 |
| RMW-01S | 0.67 | 34.87 | NM | NM | 16.74 | NM | NM | 18.13 |
| RMW-01D | 1.17 | 35.23 | NM | NM | 17.32 | NM | NM | 17.91 |
| RMW-01I | 0.86 | 34.66 | NM | NM | 16.66 | NM | NM | 18.00 |
| RMW-03S | 1.72 | 13.49 | NM | NM | 2.30 | NM | NM | 11.19 |
| RMW-03D | 2.01 | 13.64 | NM | NM | 2.18 | NM | NM | 11.46 |
| RMW-02S | 1.70 | 25.50 | NM | NM | 6.23 | NM | NM | 19.27 |
| RMW-02D | 1.90 | 25.55 | NM | NM | 6.22 | NM | NM | 19.33 |
| PGU-Z3-03S | NM | 15.41 | NM | NM | 10.73 | NM | NM | 4.68 |
| PGU-Z3-03D | NM | 15.19 | NM | NM | 10.02 | NM | NM | 5.17 |
| PGU-Z3-07D | NM | 31.89 | NM | NM | 11.67 | NM | NM | 20.22 |
| PGU-Z3-07S | NM | 31.66 | NM | NM | 11.40 | NM | NM | 20.26 |
| PGU-Z3-08D | NM | 40.49 | NM | NM | 21.12 | NM | NM | 19.37 |
| PGU-Z3-09D | NM | 20.21 | NM | NM | 8.87 | NM | NM | 11.34 |
| PGU-Z3-09S | NM | 20.31 | NM | NM | 7.60 | NM | NM | 12.71 |
| PGU-Z3-10D | NM | 42.79 | NM | NM | 24.32 | NM | NM | 18.47 |
| PGU-Z3-10S | NM | 42.80 | NM | NM | 23.94 | NM | NM | 18.86 |
| PGU-Z4-02 | NM | 31.44 | NM | NM | 13.62 | NM | NM | 17.82 |
| EA-110D | 2.10 | 40.15 | NM | NM | 21.60 | NM | NM | 18.55 |
| EA-110R | 2.20 | 39.71 | NM | NM | 21.20 | NM | NM | 18.51 |
| MW01-11D | -0.30 | 38.98 | NM | NM | 19.10 | NM | NM | 19.88 |
| MW01-13D | 1.60 | 26.29 | NM | NM | 11.69 | NM | NM | 14.60 |
| MW01-13R | 1.80 | 26.74 | NM | NM | 11.03 | NM | NM | 15.71 |
| MW01-13S | 1.30 | 25.99 | NM | NM | 13.45 | NM | NM | 12.54 |
| MW01-14D | 1.40 | 37.62 | NM | NM | 20.92 | NM | NM | 16.70 |
| MW01-14S | 1.20 | 37.38 | NM | NM | 21.65 | NM | NM | 15.73 |
| MW01-15D | -0.40 | 32.39 | NM | NM | 11.67 | NM | NM | 20.72 |
| MW01-15R | -0.50 | 32.88 | NM | NM | 11.98 | NM | NM | 20.90 |
| MW02-03D | 1.70 | 41.23 | NM | NM | 21.85 | NM | NM | 19.38 |
| MW02-03R | 1.80 | 41.11 | NM | NM | 21.10 | NM | NM | 20.01 |
| MW02-03S | 3.10 | 42.61 | NM | NM | 23.22 | NM | NM | 19.39 |
| MW02-11D | 2.00 | 40.04 | NM | NM | 18.72 | NM | NM | 21.32 |
| MW02-11S | 2.20 | 40.22 | NM | NM | 19.05 | NM | NM | 21.17 |
| MW-Z3-02 | -0.50 | 36.67 | NM | NM | 19.21 | NM | NM | 17.46 |
| MW-Z3-03 | 1.90 | 40.00 | NM | NM | 17.95 | NM | NM | 22.05 |
| MW-Z4-01 | 1.90 | 40.77 | NM | NM | 21.53 | NM | NM | 19.24 |
| MW-Z4-02 | 2.20 | 34.18 | NM | NM | 15.98 | NM | NM | 18.20 |

NOTE:
ft bgs = Feet below ground surface.
MSL = Mean sea level.
NI = Not installed.
Stickup* = Negative number denotes a flush-mounted well, riser below grade.
NM = Not measured.
(a) = Measured from top of casing (prior to bladder pump installation).
(b) = Well tidally influenced.
(c) = Measurement taken soon after well development, still recovering.

# TABLE 3-2 SUMMARY OF VERTICAL HYDRAULIC GRADIENTS

| Well Cluster | Date | Vertical Distance* | Head Difference** | Gradient*** |
|---|---|---|---|---|
| MW16-01S/D | 10/04/00 | 32.52 | 0.45 | 1.38E-02 |
| | 03/29/01 | 35.15 | 0.08 | 2.28E-03 |
| | 05/02/01 | 35.21 | 0.00 | 0.00E+00 |
| MW16-02S/D | 10/04/00 | 51.54 | -1.15 | -2.23E-02 |
| | 03/29/01 | 53.86 | -1.73 | -3.21E-02 |
| | 05/02/01 | 54.01 | -1.95 | -3.61E-02 |
| MW16-03S/D | 10/04/00 | 40.67 | -1.79 | -4.40E-02 |
| | 03/29/01 | 42.24 | -2.96 | -7.01E-02 |
| | 05/02/01 | 41.39 | -0.24 | -5.80E-03 |
| MW16-04S/D | 10/04/00 | 43.16 | -1.27 | -2.94E-02 |
| | 03/29/01 | 44.5 | -2.57 | -5.78E-02 |
| | 05/02/01 | 43.59 | -2.29 | -5.25E-02 |
| MW16-05S/D | 05/02/01 | 37.53 | -1.56 | -4.16E-02 |
| MW16-06S/D | 10/04/00 | 27.76 | 0.60 | 2.16E-02 |
| | 03/29/01 | 30.68 | 0.31 | 1.01E-02 |
| | 05/02/01 | 29.87 | 0.57 | 1.91E-02 |
| MW16-07S/D | 10/04/00 | 24.44 | 0.04 | 1.64E-03 |
| | 03/29/01 | 27.19 | -0.09 | -3.31E-03 |
| | 05/02/01 | 26.41 | 0.03 | 1.14E-03 |
| MW16-02D/R | 03/29/01 | 72.9 | -0.11 | -1.51E-03 |
| | 05/02/01 | 72.83 | -0.12 | -1.65E-03 |
| MW16-10D/R | 05/02/01 | 62.15 | -0.22 | -3.54E-03 |
| MW16-15D/R | 03/29/01 | 56.55 | 0.93 | 1.64E-02 |
| | 05/02/01 | 56.87 | 0.94 | 1.65E-02 |
| MW16-25D/R | 03/29/01 | 65.9 | -0.49 | -7.44E-03 |
| | 05/02/01 | 66.24 | -0.44 | -6.64E-03 |
| MW16-27D/R | 03/29/01 | 70.55 | 0.73 | 1.03E-02 |
| | 05/02/01 | 70.18 | 0.93 | 1.33E-02 |
| MW16-28D/R | 03/29/01 | 71.49 | -0.04 | -5.60E-04 |
| | 05/02/01 | 70.97 | -0.02 | -2.82E-04 |

NOTES:
* = Distance between the water level in the shallower monitoring well and the middle of the screened interval in the deeper monitoring well.
** = Difference in the depth of water in shallower monitoring well and deeper monitoring well.
*** = Positive value indicates an upward component of ground-water flow to the shallower interval from the deeper interval. Negative value indicates a downward component of ground-water flow from the shallower interval to the deeper interval. Zero value indicates no apparent vertical component of ground-water flow between the two depth intervals.

# TABLE 3-3 SUMMARY OF HYDRAULIC CONDUCTIVITY ESTIMATED FROM SLUG TEST DATA

| Well ID | K Value (ft per day) | Description of Material Screened (thickness in ft) |
|---|---|---|
| **Shallow Overburden Interval** | | |
| MW16-04S | 10.86 | Fill (5.2), boulder (4.8) |
| MW16-03S | 14.61 | Silty Sand (9), sandy silt (1) |
| MW16-05S | 38.31 | Fill (2.5), silty sand (1), sandy silt (2.5), sand (0.5), sandy silt (1), sand (2.5) |
| **Deep Overburden Screened Interval** | | |
| MW16-19D | 0.8733 | Silt (1), weathered phyllite (3), phyllite (5) |
| MW16-18D | 0.9265 | Gravelly sand (10) |
| MW16-20D | 1.275 | Sand & silt (4.5),gravelly sand and silt (4), weathered rock (1.5) |
| MW16-17D | 1.327 | Boulder (1), sand (0.5), gravel (1.5), silty sand (1), boulder (1), silty sand (4), phyllite (1) |
| MW16-26D | 1.394 | Silty sand (1), sand (5.5), gravelly sand and silt (2.5) |
| MW16-09D | 1.441 | Gravel (2), sandy silt and gravel (3), gravelly sand (4.75), bedrock (0.25) |
| MW16-03D | 1.72 | Weathered bedrock (10) |
| MW16-14D | 1.84 | Gravelly sand (4), boulder (1.5), gravelly sand (4.5) |
| MW16-01D | 2.593 | Silt and Sand (3), Sandy cobbly gravel (5.7), rock (1.3) |
| MW16-10D | 2.701 | Silt (1.5), weathered rock (silt with rock fragments) (4), rock (1), weathered rock (silty sand and gravel) (3.5) |
| MW16-13D | 3.097 | Sand (1), sand and gravel (4), gravelly sand (1.25), sand and gravel (0.75), sandy gravel (2.75), rock (0.25) |
| MW16-21D | 3.582 | Sand to gravelly sand (10) |
| MW16-23D | 3.633 | Sand (5.5), weathered phyllite (gravelly sand) (4.5) |
| MW16-11D | 3.665 | Silty sand and gravel (4.5), gravel (2), sand (2.5), rock (1) |
| MW16-25D | 4.48 | Silty sand (4), sand (2), gravelly sand (6) |
| MW16-28D | 4.662 | Gravelly sand (10) |
| MW16-29D | 4.827 | Silty sand (3.5), sand to gravelly sand (6.5) |
| MW16-07D | 9.075 | Silt (0.5), weathered rock (sandy silt with rock fragments) (2), weathered rock (silty sandy gravel)(2), weathered rock (sandy silt and gravel) (5.5) |
| MW16-04D | 10.52 | Silty Sand (1), sand (3), boulder (2), silty gravelly sand (2.5), weathered bedrock (1.5) |
| MW16-16D | 12.41 | Boulder (0.5), silty gravelly sand (1), boulder (2.5), silty sand (3), weathered rock (3) |
| MW16-15D | 12.77 | Silty sand (1), sand and gravel (9) |
| MW16-12D | 17.76 | Sandy silt (2), sand (4), silty sand and gravel (2), sand (1), sandy gravel (1) |
| MW16-05D | 19.43 | Sand (2.5), sandy silt (1), sand (0.5), sandy silt (1.5), sand (1.5), silty sand (1), silty gravelly sand (2) |
| MW16-24D | 23.74 | Sand (2.5), sandy gravel (5.5), sand (0.5), weathered phyllite (3.5) |
| MW16-27D | 38.37 | Layers of sand and silty gravel (2), boulder (3), gravelly sand (2), silty gravelly sand (3) |
| MW16-08D | 41.53 | Sand to silty sand (8), silty sand and gravel (6), sand and gravel (1) |
| MW16-02D | 76.1 | Gravelly Sand (1.5), sand (1), sandy silt (1), gravelly sand (6.5) |
| MW16-22D | 96.36 | Silty sand (1), sand and gravelly sand (3.5), sandy silt (0.5), silty gravelly sand (5) |
| MW16-06D | 319.1 | silty gravelly sand (3.5), gravelly sandy silt (2.5) |

NOTE:
K Value = Hydraulic conductivity calculated from the rising portion of slug test.

# TABLE 4-1 BACKGROUND INORGANICS CONCENTRATIONS IN GROUND WATER

| Parameter | Background Value (µg/L) |
|---|---|
| Aluminum | 5,315 |
| Antimony | 6 |
| Arsenic | 6.4 |
| Barium | 80.5 |
| Beryllium | 1.3 |
| Cadmium | 3 |
| Calcium | 13,302 |
| Chromium | 214 |
| Cobalt | 24.9 |
| Copper | 25.8 |
| Iron | 25,500 |
| Lead | 4.8 |
| Magnesium | 5,126 |
| Manganese | 3,292 |
| Mercury | ND (0.2) |
| Nickel | 154 |
| Potassium | 3,843 |
| Selenium | 2.2 |
| Silver | 1 |
| Sodium | 12,346 |
| Thallium | 4.1 |
| Vanadium | 24.4 |
| Zinc | 89.9 |

NOTE:
Data is from Stone & Websters Final Background Inorganics Ground-Water Study Report dated September 1996 and finalized (December 1996) Table 7-4.
µg/L = Micrograms per liter.
ND = Indicates not detected at or above the reporting limit.

# TABLE 4-2 VOLATILE ORGANIC COMPOUND (VOC) DETECTED IN SOIL SAMPLES (µg/kg)

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-01D | MW16-01S | MW16-02D |
|---|---|---|---|---|---|
| Sample Date | | | 5/15/00 | 5/17/00 | 5/22/00 |
| Sample Depth in ft bgs | | | 48–50 | 19–21 | 64–66 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 R | < 10 UJ | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 7 EB | < 10 UJ | < 10 UJ |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 U | < 5 U | < 5 U |
| Carbon Disulfide | | | < 5 U | < 5 U | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 U | < 5 UJ | < 5 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |

NOTES:

µg/kg = Micrograms per kilogram.
ft bgs = Feet below ground surface.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
R = The data are unusable (compound may or may not be present).
EB = The compound was analyzed for and detected in the associated equipment blank as well as the sample.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-01D | MW16-01S | MW16-02D |
|---|---|---|---|---|---|
| Sample Date | | | 5/15/00 | 5/17/00 | 5/22/00 |
| Sample Depth in ft bgs | | | 48–50 | 19–21 | 64–66 |
| Chemical Name | | | | | |
| Trichloroethene | 13,000 | 520,000 | 6 | < 5 U | 19 |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | 11,000 | 1,900 | 1,100 |
| Total CVOC | | | 6 | ND | 19 |
| Total BTEX | | | ND | ND | ND |

NOTES:
CVOC = Chlorinated volatile organic compounds.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
ND = Indicates not detected at or above the reporting limit.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-02S | MW16-03D DUP | MW16-03D |
|---|---|---|---|---|---|
| Sample Date | | | 5/24/00 | 6/1/00 | 6/1/00 |
| Sample Depth in ft bgs | | | 10–12 | 46.5–48.5 | 46.5–48.5 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | < 10 UJ | < 10 UJ | 7 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 U | < 5 U | < 5 U |
| Carbon Disulfide | | | < 5 U | < 5 UJ | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 U | < 5 UJ | < 5 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Trichloroethene | 13,000 | 520,000 | 6 | < 5 U | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | 890 | 2000 | 2600 |
| Total CVOC | | | 6 | ND | ND |
| Total BTEX | | | ND | ND | ND |

NOTES:
J = Estimated value below sample qualification limit.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-03S | MW16-04D | MW16-04S |
|---|---|---|---|---|---|
| Sample Date | | | 6/12/00 | 6/13/00 | 6/14/00 |
| Sample Depth in ft bgs | | | 03–05 | 52–52 | 03–05 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 5 UJ | < 5 UJ |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 U | < 10 U | 7 J |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 UJ |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 8 EB | 7 EB | 10 EB |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 U | < 5 UJ | < 5 UJ |
| Carbon Disulfide | | | < 5 UJ | < 5 UJ | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 U | < 5 U | < 5 UJ |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 UJ | < 5 U |
| Trichloroethene | 13,000 | 520,000 | < 5 U | 76 | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | 3,600 | 3,500 | 3,300 |
| Total CVOC | | | ND | 76 | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-05D | MW16-05S | MW16-06D |
|---|---|---|---|---|---|
| Sample Date | | | 5/25/00 | 5/30/00 | 6/22/00 |
| Sample Depth in ft bgs | | | 54–56 | 05–07 | 40–42 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 5 U | < 5 UJ |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | < 10 U | < 10 U | 24 EB |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 U | < 5 U | < 5 UJ |
| Carbon Disulfide | | | < 5 U | < 5 U | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 UJ | < 5 UJ | < 5 UJ |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | < 5 UJ | 4 J |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Trichloroethene | 13,000 | 520,000 | 800 | < 5 U | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | 2,400 | 1,800 | 2,500 |
| Total CVOC | | | 800 | ND | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-06S | MW16-07D | MW16-07S DUP |
|---|---|---|---|---|---|
| Sample Date | | | 6/21/00 | 6/15/00 | 6/19/00 |
| Sample Depth in ft bgs | | | 10–12 | 36–38 | 05–07 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 UJ | < 5 UJ | < 330 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 UJ | < 330 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 UJ | < 330 U* |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 UJ | < 330 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 UJ | < 330 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 U | < 10 UJ | < 660 UJ |
| 2-Hexanone | | | < 10 U | < 10 UJ | < 660 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 UJ | < 660 U |
| Acetone | 7,800,000 | 10,000,000 | 27 EB | 40 EB | 450 EB |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 UJ | < 330 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 UJ | < 330 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 UJ | < 330 U |
| Bromomethane | 800 | 2,900,000 | < 5 UJ | < 5 UJ | < 330 U |
| Carbon Disulfide | | | < 5 U | < 5 UJ | < 330 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 UJ | < 330 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| Chloroethane | | | < 5 U | < 5 UJ | < 330 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 UJ | < 330 U |
| Chloromethane | | | < 5 UJ | < 5 UJ | < 330 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 UJ | < 330 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 UJ | < 330 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| m,p-Xylenes | | | < 5 U | < 5 UJ | < 330 U |
| Methylene Chloride | 45,000 | 760,000 | 4 J | < 5 UJ | 190 J |
| o-Xylene | | | < 5 U | < 5 R | < 330 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 UJ | < 330 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 UJ | < 330 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 UJ | < 330 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 UJ | < 330 U |
| Trichloroethene | 13,000 | 520,000 | < 5 U | < 5 UJ | < 330 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 UJ | < 660 U* |
| Total Organic Carbon | | | 3,500 | 2,400 | 2,600 |
| Total CVOC | | | ND | ND | ND |
| Total BTEX | | | ND | ND | ND |

NOTES:
* = Meets or exceeds residential criteria.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-07S | MW16-13D | MW16-14D |
|---|---|---|---|---|---|
| Sample Date | | | 6/19/00 | 1/16/01 | 1/30/01 |
| Sample Depth in ft bgs | | | 05–07 | 58–60 | 57.5–59.5 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 340 U | < 5 U | < 220 UJ |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 340 U | < 5 U | < 220 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 340 U* | < 5 U | < 220 U* |
| 1,2-Dichloroethane | 900 | 63,000 | < 340 U | < 5 U | < 220 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 340 U | < 5 U | < 220 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 670 UJ | < 10 U | < 430 U |
| 2-Hexanone | | | < 670 U | < 10 U | < 430 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 670 U | < 10 U | < 430 UJ |
| Acetone | 7,800,000 | 10,000,000 | 490 EB | < 10 U | < 430 UJ |
| Benzene | 2,500 | 200,000 | < 340 U | < 5 U | < 220 U |
| Bromodichloromethane | 10,000 | 92,000 | < 340 U | < 5 U | < 220 U |
| Bromoform | 81,000 | 720,000 | < 340 U | < 5 U | < 220 U |
| Bromomethane | 800 | 2,900,000 | < 340 U | < 5 U | < 220 U |
| Carbon Disulfide | | | < 340 U | < 5 U | < 220 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 340 U | < 5 U | < 220 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| Chloroethane | | | < 340 U | < 5 U | < 220 U |
| Chloroform | 1,200 | 940,000 | < 340 U | < 5 U | < 220 U |
| Chloromethane | | | < 340 U | < 5 U | < 220 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| *cis*-1,3-Dichloropropene | | | < 340 U | < 5 U | < 220 U |
| Dibromochloromethane | 7,600 | 68,000 | < 340 U | < 5 U | < 220 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| m,p-Xylenes | | | < 340 U | < 5 U | < 220 U |
| Methylene Chloride | 45,000 | 760,000 | 230 J | < 5 UJ | < 220 U |
| o-Xylene | | | < 340 U | < 5 U | < 220 U |
| Styrene | 13,000 | 190,000 | < 340 U | < 5 U | < 220 U |
| Tetrachloroethene | 12,000 | 110,000 | < 340 U | < 5 U | < 220 U |
| Toluene | 190,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 340 U | < 5 U | < 220 U |
| *trans*-1,3-Dichloropropene | | | < 340 U | < 5 U | < 220 U |
| Trichloroethene | 13,000 | 520,000 | < 340 U | < 5 U | 5,400 |
| Vinyl Chloride | 20 | 3,000 | < 670 U* | < 10 U | < 430 U* |
| Total Organic Carbon | | | 1,800 | | |
| Total CVOC | | | ND | ND | 5,400 |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-15R | MW16-22D DUP | MW16-22D |
|---|---|---|---|---|---|
| Sample Date | | | 1/22/01 | 1/16/01 | 1/16/01 |
| Sample Depth in ft bgs | | | 49–51 | 59–61 | 59–61 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 5 UJ | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 UJ | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 UJ | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 UJ | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 UJ | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 UJ | < 10 UJ | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 UJ | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 UJ | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 14 J | < 10 UJ | 5 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 UJ | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 UJ | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 UJ | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 U | < 5 UJ | < 5 U |
| Carbon Disulfide | | | < 5 U | < 5 UJ | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 UJ | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| Chloroethane | | | < 5 U | < 5 UJ | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 UJ | < 5 U |
| Chloromethane | | | < 5 U | < 5 UJ | < 5 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 UJ | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 UJ | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 UJ | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 U | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 UJ | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 UJ | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 UJ | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 UJ | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 UJ | < 5 U |
| Trichloroethene | 13,000 | 520,000 | 1,200 | 760 J | 1,300 |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 UJ | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | 1,200 | 760 | 1,300 |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-23D | SB16-21 | SB16-21 DUP |
|---|---|---|---|---|---|
| Sample Date | | | 1/10/01 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 54–56 | 00–02 | 0–2 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 5 U | < 5 UJ |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 UJ | < 10 U | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 UJ | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | < 10 UJ | 56 J | 22 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 U | < 5 UJ | < 5 UJ |
| Carbon Disulfide | | | < 5 U | < 5 U | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 U | < 5 UJ | < 5 UJ |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 U | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 UJ | < 5 U |
| Trichloroethene | 13,000 | 520,000 | 800 | < 5 U | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | 800 | ND | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-21 | SB16-22 | SB16-22 |
|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/27/00 | 6/27/00 |
| Sample Depth in ft bgs | | | 08–10 | 00–02 | 06–08 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 UJ | < 5 UJ | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 UJ |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 18 J | 16 J | 25 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| Carbon Disulfide | | | < 5 U | < 5 U | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 UJ | < 5 UJ | < 5 UJ |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 UJ |
| Trichloroethene | 13,000 | 520,000 | < 5 U | < 5 U | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | ND | ND | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-23 | SB16-23 | SB16-24 |
|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 00–02 | 03–05 | 07–09 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 U | < 8 UJ | < 5 UJ |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 8 UJ | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 8 UJ | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 8 UJ | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 8 UJ | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 10 U | < 16 UJ | < 10 U |
| 2-Hexanone | | | < 10 UJ | < 16 UJ | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 16 UJ | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 19 J | 22 J | 8 |
| Benzene | 2,500 | 200,000 | < 5 U | 8 J | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 8 UJ | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 8 UJ | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 UJ | < 8 UJ | < 5 UJ |
| Carbon Disulfide | | | < 5 U | < 8 UJ | 11 |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 8 UJ | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| Chloroethane | | | < 5 U | < 8 UJ | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 8 UJ | < 5 U |
| Chloromethane | | | < 5 UJ | < 8 UJ | < 5 UJ |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 8 UJ | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 8 UJ | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| m,p-Xylenes | | | < 5 U | < 8 UJ | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | < 8 UJ | 7 J |
| o-Xylene | | | < 5 U | < 8 UJ | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 8 UJ | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 8 UJ | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 8 UJ | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 UJ | < 8 UJ | < 5 U |
| Trichloroethene | 13,000 | 520,000 | < 5 U | < 8 UJ | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 16 UJ | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | ND | ND | ND |
| Total BTEX | | | ND | 8 | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-24 | SB16-25 | SB16-25 |
|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 00–02 | 07–09 | 00–02 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 UJ | < 5 U | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | 10 | < 10 UJ | < 10 UJ |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 UJ |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 UJ | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 20 | 8 J | 15 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| Carbon Disulfide | | | < 5 U | 4 | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 UJ | < 5 U | < 5 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | 4 J | < 5 UJ | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Trichloroethene | 13,000 | 520,000 | < 5 U | < 5 U | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | ND | ND | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-26 | SB16-26 | SB16-27 DUP |
|---|---|---|---|---|---|
| Sample Date | | | 6/23/00 | 6/23/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 00–02 | 02–04 | 02–04 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 UJ | < 5 UJ | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | 11 | 10 | < 10 U |
| 2-Hexanone | | | < 10 U | < 10 U | < 10 UJ |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 35 EB | 22 EB | 7 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 5 UJ | < 5 UJ | < 5 UJ |
| Carbon Disulfide | | | < 5 U | < 5 U | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| Chloroethane | | | < 5 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 5 U |
| Chloromethane | | | < 5 UJ | < 5 UJ | < 5 UJ |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 5 UJ | 3 J | < 5 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 5 UJ |
| Trichloroethene | 13,000 | 520,000 | < 5 U | < 5 U | < 5 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | ND | ND | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-27 | SB16-27 | SB16-28 |
|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/26/00 | 6/27/00 |
| Sample Depth in ft bgs | | | 00–02 | 02–04 | 00–02 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 5 UJ | < 5 UJ | < 6 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 5 U | < 5 U | < 6 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 5 U | < 5 U | < 6 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 5 U | < 5 U | < 6 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 5 U | < 5 U | < 6 U |
| 2-Butanone | 10,000,000 | 10,000,000 | 12 | 12 | < 11 U |
| 2-Hexanone | | | < 10 U | < 10 U | < 11 UJ |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 10 U | < 10 U | < 11 U |
| Acetone | 7,800,000 | 10,000,000 | 25 | 30 J | 24 J |
| Benzene | 2,500 | 200,000 | < 5 U | < 5 U | < 6 U |
| Bromodichloromethane | 10,000 | 92,000 | < 5 U | < 5 U | < 6 U |
| Bromoform | 81,000 | 720,000 | < 5 U | < 5 U | < 6 U |
| Bromomethane | 800 | 2,900,000 | < 5 UJ | < 5 UJ | < 6 UJ |
| Carbon Disulfide | | | < 5 U | < 5 U | < 6 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 5 U | < 5 U | < 6 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| Chloroethane | | | < 5 UJ | < 5 U | < 6 UJ |
| Chloroform | 1,200 | 940,000 | < 5 U | < 5 U | < 6 U |
| Chloromethane | | | < 5 U | < 5 UJ | < 6 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| *cis*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 6 U |
| Dibromochloromethane | 7,600 | 68,000 | < 5 U | < 5 U | < 6 U |
| Ethylbenzene | 71,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| m,p-Xylenes | | | < 5 U | < 5 U | < 6 U |
| Methylene Chloride | 45,000 | 760,000 | 4 J | 4 J | < 6 UJ |
| o-Xylene | | | < 5 U | < 5 U | < 6 U |
| Styrene | 13,000 | 190,000 | < 5 U | < 5 U | < 6 U |
| Tetrachloroethene | 12,000 | 110,000 | < 5 U | < 5 U | < 6 U |
| Toluene | 190,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 5 U | < 5 U | < 6 U |
| *trans*-1,3-Dichloropropene | | | < 5 U | < 5 U | < 6 UJ |
| Trichloroethene | 13,000 | 520,000 | < 5 U | < 5 U | < 6 U |
| Vinyl Chloride | 20 | 3,000 | < 10 U | < 10 U | < 11 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | ND | ND | ND |
| Total BTEX | | | ND | ND | ND |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-28 | SB16-29 | SB16-29 |
|---|---|---|---|---|---|
| Sample Date | | | 6/27/00 | 1/17/01 | 1/17/01 |
| Sample Depth in ft bgs | | | 04–06 | 32–34 | 20–22 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 540,000 | 10,000,000 | < 320 U | < 5 U | < 5 U |
| 1,1,2,2-Tetrachloroethane | 1,300 | 29,000 | < 320 UJ | < 5 U | < 5 U |
| 1,1,2-Trichloroethane | 3,600 | 100,000 | < 320 U | < 5 U | < 5 U |
| 1,1-Dichloroethane | 920,000 | 10,000,000 | < 320 U | < 5 U | < 5 U |
| 1,1-Dichloroethene | 200 | 9,500 | < 320 U* | < 5 U | < 5 U |
| 1,2-Dichloroethane | 900 | 63,000 | < 320 U | < 5 U | < 5 U |
| 1,2-Dichloropropane | 1,900 | 84,000 | < 320 U | < 5 U | < 5 U |
| 2-Butanone | 10,000,000 | 10,000,000 | < 630 U | < 10 U | < 10 U |
| 2-Hexanone | | | < 630 U | < 10 U | < 10 U |
| 4-Methyl-2-Pentanone | 1,200,000 | 10,000,000 | < 630 UJ | < 10 U | < 10 U |
| Acetone | 7,800,000 | 10,000,000 | 570 J | < 10 U | 38 |
| Benzene | 2,500 | 200,000 | 34 J | < 5 U | < 5 U |
| Bromodichloromethane | 10,000 | 92,000 | < 320 U | < 5 U | < 5 U |
| Bromoform | 81,000 | 720,000 | < 320 U | < 5 U | < 5 U |
| Bromomethane | 800 | 2,900,000 | < 320 U | < 5 U | < 5 U |
| Carbon Disulfide | | | < 320 U | < 5 U | < 5 U |
| Carbon Tetrachloride | 1,500 | 44,000 | < 320 U | < 5 U | < 5 U |
| Chlorobenzene | 210,000 | 10,000,000 | < 320 U | < 5 U | < 5 U |
| Chloroethane | | | < 320 U | < 5 U | < 5 U |
| Chloroform | 1,200 | 940,000 | < 320 U | < 5 U | < 5 U |
| Chloromethane | | | < 320 U | < 5 U | < 5 U |
| *cis*-1,2-Dichloroethene | 630,000 | 10,000,000 | < 320 U | < 5 U | < 5 U |
| *cis*-1,3-Dichloropropene | | | < 320 U | < 5 U | < 5 U |
| Dibromochloromethane | 7,600 | 68,000 | < 320 U | < 5 U | < 5 U |
| Ethylbenzene | 71,000 | 10,000,000 | 350 | < 5 U | < 5 U |
| m,p-Xylenes | | | 620 | < 5 U | < 5 U |
| Methylene Chloride | 45,000 | 760,000 | < 320 U | < 5 UJ | 3 J |
| o-Xylene | | | 290 | < 5 U | < 5 U |
| Styrene | 13,000 | 190,000 | < 320 U | < 5 U | < 5 U |
| Tetrachloroethene | 12,000 | 110,000 | < 320 U | < 5 U | < 5 U |
| Toluene | 190,000 | 10,000,000 | 170 | < 5 U | < 5 U |
| *trans*-1,2-Dichloroethene | 1,100,000 | 10,000,000 | < 320 U | < 5 U | < 5 U |
| *trans*-1,3-Dichloropropene | | | < 320 U | < 5 U | < 5 U |
| Trichloroethene | 13,000 | 520,000 | < 320 U | 280 J | 55 |
| Vinyl Chloride | 20 | 3,000 | < 630 U* | < 10 U | < 10 U |
| Total Organic Carbon | | | | | |
| Total CVOC | | | ND | 280 | 55 |
| Total BTEX | | | 1464 | ND | ND |

# TABLE 4-3 SEMIVOLATILE ORGANIC COMPOUND DETECTED IN SOIL SAMPLES (µg/kg)

| Location ID | Residential | Industrial/Commercial | MW16-01D | MW16-01S | MW16-02D |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 48–50 | 19–21 | 64–66 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 400 UJ | < 400 UJ | < 400 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 400 UJ | < 400 UJ | < 400 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 980 UJ | < 980 UJ | < 980 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 400 UJ | < 400 UJ | < 400 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 400 UJ | < 400 UJ | < 400 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 980 UJ | < 980 UJ | < 980 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 400 UJ | < 400 UJ | < 400 U |
| 2,6-Dinitrotoluene | | | < 400 UJ | < 400 UJ | < 400 U |
| 2-Chloronaphthalene | | | < 400 UJ | < 400 UJ | < 400 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| 2-Methylphenol | | | < 400 UJ | < 400 UJ | < 400 U |
| 2-Nitroaniline | | | < 980 UJ | < 980 UJ | < 980 U |
| 2-Nitrophenol | | | < 400 UJ | < 400 UJ | < 400 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 400 UJ | < 400 UJ | < 400 U |
| 3-Nitroaniline | | | < 980 UJ | < 980 UJ | < 980 U |
| 4,6-Dinitro-2-Methylphenol | | | < 980 UJ | < 980 UJ | < 980 U |
| 4-Bromophenyl Phenyl Ether | | | < 400 UJ | < 400 UJ | < 400 U |
| 4-Chloro-3-Methylphenol | | | < 400 UJ | < 400 UJ | < 400 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 400 UJ | < 400 UJ | < 400 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 400 UJ | < 400 UJ | < 400 U |
| 4-Methylphenol | | | < 400 UJ | < 400 UJ | < 400 U |
| 4-Nitroaniline | | | < 980 UJ | < 980 UJ | < 980 U |
| 4-Nitrophenol | | | < 980 UJ | < 980 UJ | < 980 U |
| bis(2-Chloroethoxy) Methane | | | < 400 UJ | < 400 UJ | < 400 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 400 UJ | < 400 UJ | < 400 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 400 UJ | < 400 UJ | < 400 U |
| Butyl Benzyl Phthalate | | | < 400 UJ | < 400 UJ | < 400 U |
| Carbazole | | | < 400 UJ | < 400 UJ | < 400 U |
| Di-n-Butyl Phthalate | | | < 400 UJ | < 400 UJ | < 400 U |
| Di-n-Octylphthalate | | | < 400 UJ | < 400 UJ | < 400 U |
| Dibenzofuran | | | < 400 UJ | < 400 UJ | < 400 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |
| Hexachlorobenzene | 400 | 3,600 | < 400 UJ | < 400 UJ | < 400 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 400 UJ | < 400 UJ | < 400 U |
| Hexachlorocyclopentadiene | | | < 400 UJ | < 400 UJ | < 400 UJ |
| Hexachloroethane | 46,000 | 410,000 | < 400 UJ | < 400 UJ | < 400 U |
| Isophorone | | | < 400 UJ | < 400 UJ | < 400 U |

NOTES:

µg/kg = Micrograms per kilogram.
ft bgs = Feet below ground surface.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).

| Location ID | Residential | Industrial/Commercial | MW16-01D | MW16-01S | MW16-02D |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 48–50 | 19–21 | 64–66 |
| Chemical Name | | | | | |
| n-Nitroso-Di-n-Propylamine | | | < 400 UJ | < 400 UJ | < 400 U |
| n-Nitrosodiphenylamine | | | < 400 UJ | < 400 UJ | < 400 U |
| Nitrobenzene | | | < 400 UJ | < 400 UJ | < 400 U |
| Pentachlorophenol | 5,300 | 48,000 | < 980 UJ | < 980 UJ | < 980 U |
| Phenol | 6,000,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 400 U |

| Location ID | Residential | Industrial/Commercial | MW16-02S | MW16-03D DUP | MW16-03D |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 10–2 | 46.5–48.5 | 46.5–48.5 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 400 U | < 360 U | < 330 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 400 U | < 360 U | < 330 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 400 U | < 360 UJ | < 330 UJ |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 400 U | < 360 UJ | < 330 UJ |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 400 UJ | < 360 U | < 330 U |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 980 U | < 900 U | < 820 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 400 U | < 360 UJ | < 330 UJ |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 400 U | < 360 UJ | < 330 UJ |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 400 U | < 360 U | < 330 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 980 UJ | < 900 UJ | < 820 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 400 UJ | < 360 U | < 330 U |
| 2,6-Dinitrotoluene | | | < 400 U | < 360 U | < 330 U |
| 2-Chloronaphthalene | | | < 400 U | < 360 U | < 330 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 400 U | < 360 UJ | < 330 UJ |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 400 U | < 360 UJ | < 330 UJ |
| 2-Methylphenol | | | < 400 U | < 360 U | < 330 U |
| 2-Nitroaniline | | | < 980 U | < 900 U | < 820 U |
| 2-Nitrophenol | | | < 400 U | < 360 U | < 330 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 400 UJ | < 360 UJ | < 330 UJ |
| 3-Nitroaniline | | | < 980 UJ | < 900 U | < 820 UJ |
| 4,6-Dinitro-2-Methylphenol | | | < 980 U | < 900 UJ | < 820 UJ |
| 4-Bromophenyl Phenyl Ether | | | < 400 U | < 360 U | < 330 U |
| 4-Chloro-3-Methylphenol | | | < 400 UJ | < 360 U | < 330 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 400 UJ | < 360 UJ | < 330 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 400 U | < 360 UJ | < 330 UJ |
| 4-Methylphenol | | | < 400 U | < 360 UJ | < 330 UJ |
| 4-Nitroaniline | | | < 980 UJ | < 900 UJ | < 820 UJ |
| 4-Nitrophenol | | | < 980 UJ | < 900 U | < 820 U |
| bis(2-Chloroethoxy) Methane | | | < 400 U | < 360 U | < 330 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 400 U | < 360 UJ | < 330 UJ |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 400 U | < 360 U | < 330 U |
| Butyl Benzyl Phthalate | | | < 400 U | < 360 U | < 330 U |
| Carbazole | | | < 400 U | < 360 U | < 330 U |
| Di-n-Butyl Phthalate | | | < 400 U | < 360 U | < 330 U |
| Di-n-Octylphthalate | | | < 400 U | < 360 U | < 330 U |
| Dibenzofuran | | | < 400 U | < 360 U | < 330 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 400 UJ | < 360 U | < 330 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 400 U | < 360 U | < 330 U |
| Hexachlorobenzene | 400 | 3,600 | < 400 U | < 360 UJ | < 330 UJ |
| Hexachlorobutadiene | 8,200 | 73,000 | < 400 U | < 360 U | < 330 UJ |
| Hexachlorocyclopentadiene | | | < 400 UJ | < 360 U | < 330 UJ |
| Hexachloroethane | 46,000 | 410,000 | < 400 U | < 360 U | < 330 UJ |
| Isophorone | | | < 400 UJ | < 360 UJ | < 330 UJ |
| n-Nitroso-Di-n-Propylamine | | | < 400 U | < 360 U | < 330 U |
| n-Nitrosodiphenylamine | | | < 400 U | < 360 U | < 330 U |
| Nitrobenzene | | | < 400 U | < 360 U | < 330 U |
| Pentachlorophenol | 5,300 | 48,000 | < 980 U | < 900 U | < 820 U |
| Phenol | 6,000,000 | 10,000,000 | < 400 U | < 360 UJ | < 330 UJ |

| Location ID | Residential | Industrial/Commercial | MW16-03S | MW16-04D | MW16-04S |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 03–05 | 52–52 | 03–05 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 400 UJ | < 400 UJ | < 360 UJ |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 400 U | < 400 U | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 400 UJ | < 400 UJ | < 360 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 980 U | < 980 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 400 U | < 400 U | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 400 U | < 400 U | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 980 UJ | < 980 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 400 U | < 400 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 400 U | < 400 U | < 360 U |
| 2-Chloronaphthalene | | | < 400 U | < 400 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| 2-Methylphenol | | | < 400 U | < 400 U | < 360 U |
| 2-Nitroaniline | | | < 980 U | < 980 U | < 900 U |
| 2-Nitrophenol | | | < 400 U | < 400 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 400 U | < 400 U | < 360 U |
| 3-Nitroaniline | | | < 980 U | < 980 U | < 900 U |
| 4,6-Dinitro-2-Methylphenol | | | < 980 U | < 980 U | < 900 U |
| 4-Bromophenyl Phenyl Ether | | | < 400 U | < 400 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 400 U | < 400 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 400 UJ | < 400 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 400 U | < 400 U | < 360 U |
| 4-Methylphenol | | | < 400 U | < 400 U | < 360 U |
| 4-Nitroaniline | | | < 980 U | < 980 U | < 900 U |
| 4-Nitrophenol | | | < 980 UJ | < 980 UJ | < 900 UJ |
| bis(2-Chloroethoxy) Methane | | | < 400 U | < 400 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 400 U | < 400 U | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 400 U | < 400 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 400 U | < 400 U | < 360 U |
| Carbazole | | | < 400 U | < 400 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 400 U | < 400 U | < 360 U |
| Di-n-Octylphthalate | | | < 400 R | < 400 R | < 360 R |
| Dibenzofuran | | | < 400 U | < 400 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 400 U | < 400 U | < 360 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 400 U | < 400 U | < 360 U |
| Hexachlorocyclopentadiene | | | < 400 UJ | < 400 UJ | < 360 UJ |
| Hexachloroethane | 46,000 | 410,000 | < 400 U | < 400 U | < 360 U |
| Isophorone | | | < 400 U | < 400 U | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 400 U | < 400 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 400 U | < 400 U | < 360 U |
| Nitrobenzene | | | < 400 U | < 400 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 980 U | < 980 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 400 U | < 400 U | < 360 U |

NOTES: R = The data are unusable (compound may or may not be present).

| Location ID | Residential | Industrial/Commercial | MW16-05D | MW16-05S | MW16-06D |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 54–56 | 05–07 | 40–42 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 UJ | < 400 UJ | < 360 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 UJ | < 400 UJ | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 U | < 400 U | < 360 U |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 980 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 UJ | < 400 UJ | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 UJ | < 400 UJ | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 980 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 400 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 400 U | < 360 U |
| 2-Chloronaphthalene | | | < 360 U | < 400 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 UJ | < 400 UJ | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 UJ | < 400 UJ | < 360 U |
| 2-Methylphenol | | | < 360 U | < 400 U | < 360 U |
| 2-Nitroaniline | | | < 900 U | < 980 U | < 900 U |
| 2-Nitrophenol | | | < 360 U | < 400 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 UJ | < 400 UJ | < 360 U |
| 3-Nitroaniline | | | < 900 U | < 980 U | < 900 U |
| 4,6-Dinitro-2-Methylphenol | | | < 900 UJ | < 980 UJ | < 900 U |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 400 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 400 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 400 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 UJ | < 400 UJ | < 360 U |
| 4-Methylphenol | | | < 360 UJ | < 400 UJ | < 360 U |
| 4-Nitroaniline | | | < 900 UJ | < 980 UJ | < 900 UJ |
| 4-Nitrophenol | | | < 900 U | < 980 U | < 900 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 400 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 UJ | < 400 UJ | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 400 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 400 U | < 360 U |
| Carbazole | | | < 360 U | < 400 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 400 U | < 360 U |
| Di-n-Octylphthalate | | | < 360 U | < 400 U | < 360 U |
| Dibenzofuran | | | < 360 U | < 400 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 UJ | < 400 UJ | < 360 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 400 U | < 360 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 400 U | < 360 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 400 U | < 360 U |
| Isophorone | | | < 360 UJ | < 400 UJ | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 400 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 400 U | < 360 U |
| Nitrobenzene | | | < 360 U | < 400 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 980 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 UJ | < 400 UJ | < 360 U |

| Location ID | Residential | Industrial/Commercial | MW16-06S | MW16-07D | MW16-07S DUP |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 10–12 | 36–38 | 05–07 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 U | < 360 UJ | < 360 UJ |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 360 U | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 U | < 360 UJ | < 360 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 900 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 900 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 360 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 360 U | < 360 U |
| 2-Chloronaphthalene | | | < 360 U | < 360 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 U | < 360 U | 8,000 |
| 2-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 2-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 2-Nitrophenol | | | < 360 U | < 360 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 360 UJ | < 360 U |
| 3-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 4,6-Dinitro-2-Methylphenol | | | < 900 U | < 900 U | < 900 U |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 360 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Nitroaniline | | | < 900 UJ | < 900 U | < 900 U |
| 4-Nitrophenol | | | < 900 U | < 900 UJ | < 900 UJ |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 360 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 360 U | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Carbazole | | | < 360 U | < 360 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Di-n-Octylphthalate | | | < 360 U | < 360 R | < 360 R |
| Dibenzofuran | | | < 360 U | < 360 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 360 U | < 360 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 360 UJ | < 360 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 360 UJ | < 360 UJ |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Isophorone | | | < 360 U | < 360 U | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 360 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 360 U | < 360 U |
| Nitrobenzene | | | < 360 U | < 360 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 900 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |

| Location ID | Residential | Industrial/Commercial | MW16-07S | MW16-13D | MW16-14D |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 05–07 | 58–60 | 57.5–59.5 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 UJ | < 360 U | < 360 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 360 U | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 UJ | < 360 U | < 360 U |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 900 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 900 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 360 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 360 U | < 360 U |
| 2-Chloronaphthalene | | | < 360 U | < 360 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | 5,700 | < 360 U | < 360 U |
| 2-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 2-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 2-Nitrophenol | | | < 360 U | < 360 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 360 UJ | < 360 UJ |
| 3-Nitroaniline | | | < 900 U | < 900 UJ | < 900 UJ |
| 4,6-Dinitro-2-Methylphenol | | | < 900 U | < 900 UJ | < 900 UJ |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 360 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Methylphenol | | | < 360 U | < 360 U | < 360 UJ |
| 4-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 4-Nitrophenol | | | < 900 UJ | < 900 U | < 900 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 360 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 360 U | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | 560 | < 360 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Carbazole | | | < 360 U | < 360 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Di-n-Octylphthalate | | | < 360 R | < 360 U | < 360 U |
| Dibenzofuran | | | < 360 U | < 360 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 360 U | < 360 UJ |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorocyclopentadiene | | | < 360 UJ | < 360 U | < 360 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Isophorone | | | < 360 U | < 360 U | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 360 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 360 U | < 360 U |
| Nitrobenzene | | | < 360 U | < 360 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 900 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |

| Location ID | Residential | Industrial/Commercial | MW16-15R | MW16-22D DUP | MW16-22D |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 49–51 | 59–61 | 59–61 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 360 U | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 U | < 360 U | < 360 U |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 900 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 900 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 360 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 360 U | < 360 U |
| 2-Chloronaphthalene | | | < 360 U | < 360 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 2-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 2-Nitrophenol | | | < 360 U | < 360 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 360 UJ | < 360 UJ |
| 3-Nitroaniline | | | < 900 U | < 900 UJ | < 900 UJ |
| 4,6-Dinitro-2-Methylphenol | | | < 900 UJ | < 900 UJ | < 900 UJ |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 360 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 4-Nitrophenol | | | < 900 U | < 900 U | < 900 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 360 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 360 U | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Carbazole | | | < 360 R | < 360 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Di-n-Octylphthalate | | | < 360 U | < 360 U | < 360 U |
| Dibenzofuran | | | < 360 U | < 360 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 360 U | < 360 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 360 U | < 360 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Isophorone | | | < 360 U | < 360 U | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 UJ | < 360 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 360 U | < 360 U |
| Nitrobenzene | | | < 360 U | < 360 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 900 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |

| Location ID | Residential | Industrial/Commercial | MW16-23D | SB16-21 | SB16-21 DUP |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 54–56 | 00–02 | 0–2 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 400 U | < 330 U | < 330 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 400 U | < 330 UJ | < 330 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 980 U | < 820 U | < 820 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 400 U | < 330 U | < 330 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 400 U | < 330 U | < 330 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 980 UJ | < 820 UJ | < 820 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 400 U | < 330 U | < 330 U |
| 2,6-Dinitrotoluene | | | < 400 U | < 330 U | < 330 U |
| 2-Chloronaphthalene | | | < 400 U | < 330 U | < 330 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| 2-Methylphenol | | | < 400 U | < 330 U | < 330 U |
| 2-Nitroaniline | | | < 980 U | < 820 U | < 820 U |
| 2-Nitrophenol | | | < 400 U | < 330 U | < 330 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 400 UJ | < 330 U | < 330 U |
| 3-Nitroaniline | | | < 980 UJ | < 820 U | < 820 U |
| 4,6-Dinitro-2-Methylphenol | | | < 980 UJ | < 820 U | < 820 U |
| 4-Bromophenyl Phenyl Ether | | | < 400 U | < 330 U | < 330 U |
| 4-Chloro-3-Methylphenol | | | <400 U | < 330 U | < 330 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 400 UJ | < 330 UJ | < 330 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 400 U | < 330 U | < 330 U |
| 4-Methylphenol | | | < 400 U | < 330 U | < 330 U |
| 4-Nitroaniline | | | < 980 U | < 820 UJ | < 820 UJ |
| 4-Nitrophenol | | | < 980 U | < 820 U | < 820 U |
| bis(2-Chloroethoxy) Methane | | | < 400 U | < 330 U | < 330 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 400 U | < 330 U | < 330 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 400 U | < 330 U | < 330 U |
| Butyl Benzyl Phthalate | | | < 400 U | < 330 U | < 330 U |
| Carbazole | | | < 400 U | 550 J | 260 J |
| Di-n-Butyl Phthalate | | | < 400 U | < 330 U | < 330 U |
| Di-n-Octylphthalate | | | < 400 U | < 330 U | < 330 U |
| Dibenzofuran | | | < 400 U | < 330 U | < 330 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |
| Hexachlorobenzene | 400 | 3,600 | < 400 U | < 330 U | < 330 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 400 U | < 330 U | < 330 U |
| Hexachlorocyclopentadiene | | | < 400 U | < 330 U | < 330 U |
| Hexachloroethane | 46,000 | 410,000 | < 400 U | < 330 U | < 330 U |
| Isophorone | | | < 400 U | < 330 U | < 330 U |
| n-Nitroso-Di-n-Propylamine | | | < 400 U | < 330 U | < 330 U |
| n-Nitrosodiphenylamine | | | < 400 U | < 330 U | < 330 U |
| Nitrobenzene | | | < 400 U | < 330 U | < 330 U |
| Pentachlorophenol | 5,300 | 48,000 | < 980 U | < 820 U | < 820 U |
| Phenol | 6,000,000 | 10,000,000 | < 400 U | < 330 U | < 330 U |

NOTES: J = Estimated value below sample qualification limit.

| Location ID | Residential | Industrial/Commercial | SB16-21 | SB16-22 | SB16-22 |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 08–10 | 00–02 | 06–08 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 400 U | < 330 UJ | < 400 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 400 UJ | < 330 UJ | < 400 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 980 U | < 820 UJ | < 980 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 400 U | < 330 UJ | < 400 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 400 U | < 330 UJ | < 400 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 980 UJ | < 820 UJ | < 980 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 400 U | < 330 UJ | < 400 U |
| 2,6-Dinitrotoluene | | | < 400 U | < 330 UJ | < 400 U |
| 2-Chloronaphthalene | | | < 400 U | < 330 UJ | < 400 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| 2-Methylphenol | | | < 400 U | < 330 UJ | < 400 U |
| 2-Nitroaniline | | | < 980 U | < 820 UJ | < 980 U |
| 2-Nitrophenol | | | < 400 U | < 330 UJ | < 400 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 400 U | < 330 UJ | < 400 U |
| 3-Nitroaniline | | | < 980 U | < 820 UJ | < 980 U |
| 4,6-Dinitro-2-Methylphenol | | | < 980 U | < 820 UJ | < 980 U |
| 4-Bromophenyl Phenyl Ether | | | < 400 U | < 330 UJ | < 400 U |
| 4-Chloro-3-Methylphenol | | | < 400 U | < 330 UJ | < 400 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 400 UJ | < 330 UJ | < 400 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 400 U | < 330 UJ | < 400 U |
| 4-Methylphenol | | | < 400 U | < 330 UJ | < 400 U |
| 4-Nitroaniline | | | < 980 UJ | < 820 UJ | < 980 UJ |
| 4-Nitrophenol | | | < 980 U | < 820 UJ | < 980 U |
| bis(2-Chloroethoxy) Methane | | | < 400 U | < 330 UJ | < 400 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 400 U | < 330 UJ | < 400 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 400 U | < 330 UJ | < 400 U |
| Butyl Benzyl Phthalate | | | < 400 U | < 330 UJ | < 400 U |
| Carbazole | | | < 400 U | < 330 UJ | < 400 U |
| Di-n-Butyl Phthalate | | | < 400 U | < 330 UJ | < 400 U |
| Di-n-Octylphthalate | | | < 400 U | < 330 UJ | < 400 U |
| Dibenzofuran | | | < 400 U | < 330 UJ | < 400 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |
| Hexachlorobenzene | 400 | 3,600 | < 400 U | < 330 UJ | < 400 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 400 U | < 330 UJ | < 400 U |
| Hexachlorocyclopentadiene | | | < 400 U | < 330 UJ | < 400 U |
| Hexachloroethane | 46,000 | 410,000 | < 400 U | < 330 UJ | < 400 U |
| Isophorone | | | < 400 U | < 330 UJ | < 400 U |
| n-Nitroso-Di-n-Propylamine | | | < 400 U | < 330 UJ | < 400 U |
| n-Nitrosodiphenylamine | | | < 400 U | < 330 UJ | < 400 U |
| Nitrobenzene | | | < 400 U | < 330 UJ | < 400 U |
| Pentachlorophenol | 5,300 | 48,000 | < 980 U | < 820 UJ | < 980 U |
| Phenol | 6,000,000 | 10,000,000 | < 400 U | < 330 UJ | < 400 U |

| Location ID | Residential | Industrial/Commercial | SB16-23 | SB16-23 | SB16-24 |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 00–02 | 03–05 | 07–09 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 400 U | < 400 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 UJ | < 400 UJ | < 400 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 980 U | < 980 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 400 U | < 400 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 400 U | < 400 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 980 UJ | < 980 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 400 U | < 400 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 400 U | < 400 U |
| 2-Chloronaphthalene | | | < 360 U | < 400 U | < 400 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| 2-Methylphenol | | | < 360 U | < 400 U | < 400 U |
| 2-Nitroaniline | | | < 900 U | < 980 U | < 980 U |
| 2-Nitrophenol | | | < 360 U | < 400 U | < 400 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 400 U | < 400 U |
| 3-Nitroaniline | | | < 900 U | < 980 U | < 980 U |
| 4,6-Dinitro-2-Methylphenol | | | < 900 U | < 980 U | < 980 U |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 400 U | < 400 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 400 U | < 400 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 400 UJ | < 400 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 400 U | < 400 U |
| 4-Methylphenol | | | < 360 U | < 400 U | < 400 U |
| 4-Nitroaniline | | | < 900 UJ | < 980 UJ | < 980 UJ |
| 4-Nitrophenol | | | < 900 U | < 980 U | < 980 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 400 U | < 400 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 400 U | < 400 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 400 U | < 400 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 400 U | < 400 U |
| Carbazole | | | < 360 U | < 400 U | < 400 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 400 U | < 400 U |
| Di-n-Octylphthalate | | | < 360 U | < 400 U | < 400 U |
| Dibenzofuran | | | < 360 U | < 400 U | < 400 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 400 U | < 400 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 400 U | < 400 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 400 U | < 400 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 400 U | < 400 U |
| Isophorone | | | < 360 U | < 400 U | < 400 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 400 U | < 400 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 400 U | < 400 U |
| Nitrobenzene | | | < 360 U | < 400 U | < 400 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 980 U | < 980 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 400 U | < 400 U |

| Location ID | Residential | Industrial/Commercial | SB16-24 | SB16-25 | SB16-25 |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 00–02 | 07–09 | 00–02 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 400 U | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 UJ | < 400 UJ | < 360 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 980 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 400 U | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 400 U | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 980 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 400 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 400 U | < 360 U |
| 2-Chloronaphthalene | | | < 360 U | < 400 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| 2-Methylphenol | | | < 360 U | < 400 U | < 360 U |
| 2-Nitroaniline | | | < 900 U | < 980 U | < 900 U |
| 2-Nitrophenol | | | < 360 U | < 400 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 400 U | < 360 U |
| 3-Nitroaniline | | | < 900 U | < 980 U | < 900 U |
| 4,6-Dinitro-2-Methylphenol | | | < 900 U | < 980 U | < 900 U |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 400 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 400 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 400 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 400 U | < 360 U |
| 4-Methylphenol | | | < 360 U | < 400 U | < 360 U |
| 4-Nitroaniline | | | < 900 UJ | < 980 UJ | < 900 UJ |
| 4-Nitrophenol | | | < 900 U | < 980 U | < 900 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 400 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 400 U | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 400 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 400 U | < 360 U |
| Carbazole | | | < 360 U | < 400 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 400 U | < 360 U |
| Di-n-Octylphthalate | | | < 360 U | < 400 U | < 360 U |
| Dibenzofuran | | | < 360 U | < 400 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 400 U | < 360 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 400 U | < 360 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 400 U | < 360 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 400 U | < 360 U |
| Isophorone | | | < 360 U | < 400 U | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 400 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 400 U | < 360 U |
| Nitrobenzene | | | < 360 U | < 400 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 980 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 400 U | < 360 U |

| Location ID | Residential | Industrial/Commercial | SB16-26 | SB16-26 | SB16-27 DUP |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 00–02 | 02–04 | 02–04 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 360 U | < 360 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 U | < 360 U | < 360 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 900 U | < 900 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 900 UJ | < 900 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 360 U | < 360 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 360 U | < 360 U |
| 2-Chloronaphthalene | | | < 360 U | < 360 U | < 360 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| 2-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 2-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 2-Nitrophenol | | | < 360 U | < 360 U | < 360 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 360 U | < 360 U |
| 3-Nitroaniline | | | < 900 U | < 900 U | < 900 U |
| 4,6-Dinitro-2-Methylphenol | | | < 900 U | < 900 U | < 900 U |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 360 UJ | < 360 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 360 U | < 360 U |
| 4-Methylphenol | | | < 360 U | < 360 U | < 360 U |
| 4-Nitroaniline | | | < 900 UJ | < 900 UJ | < 900 UJ |
| 4-Nitrophenol | | | < 900 U | < 900 U | < 900 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 360 U | < 360 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 360 U | < 360 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Carbazole | | | < 360 U | < 360 U | < 360 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 360 U | < 360 U |
| Di-n-Octylphthalate | | | < 360 U | < 360 U | < 360 U |
| Dibenzofuran | | | < 360 U | < 360 U | < 360 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 360 U | < 360 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 360 U | < 360 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 360 U | < 360 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 360 U | < 360 U |
| Isophorone | | | < 360 U | < 360 U | < 360 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 360 U | < 360 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 360 U | < 360 U |
| Nitrobenzene | | | < 360 U | < 360 U | < 360 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 900 U | < 900 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 360 U | < 360 U |

| Location ID | Residential | Industrial/Commercial | SB16-27 | SB16-27 | SB16-28 |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 00–02 | 02–04 | 00–02 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 360 U | < 360 U | < 430 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 360 UJ | < 360 UJ | < 430 UJ |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 900 U | < 900 U | < 1,100 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 360 U | < 360 U | < 430 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 360 U | < 360 U | < 430 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 900 UJ | < 900 UJ | < 1,100 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 360 U | < 360 U | < 430 U |
| 2,6-Dinitrotoluene | | | < 360 U | < 360 U | < 430 U |
| 2-Chloronaphthalene | | | < 360 U | < 360 U | < 430 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| 2-Methylphenol | | | < 360 U | < 360 U | < 430 U |
| 2-Nitroaniline | | | < 900 U | < 900 U | < 1,100 U |
| 2-Nitrophenol | | | < 360 U | < 360 U | < 430 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 360 U | < 360 U | < 430 U |
| 3-Nitroaniline | | | < 900 U | < 900 U | < 1,100 U |
| 4,6-Dinitro-2-Methylphenol | | | < 900 U | < 900 U | < 1,100 U |
| 4-Bromophenyl Phenyl Ether | | | < 360 U | < 360 U | < 430 U |
| 4-Chloro-3-Methylphenol | | | < 360 U | < 360 U | < 430 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 360 UJ | < 360 UJ | < 430 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 360 U | < 360 U | < 430 U |
| 4-Methylphenol | | | < 360 U | < 360 U | < 430 U |
| 4-Nitroaniline | | | < 900 UJ | < 900 UJ | < 1,100 UJ |
| 4-Nitrophenol | | | < 900 U | < 900 U | < 1,100 U |
| bis(2-Chloroethoxy) Methane | | | < 360 U | < 360 U | < 430 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 360 U | < 360 U | < 430 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 360 U | < 360 U | < 430 U |
| Butyl Benzyl Phthalate | | | < 360 U | < 360 U | < 430 U |
| Carbazole | | | < 360 U | < 360 U | < 430 U |
| Di-n-Butyl Phthalate | | | < 360 U | < 360 U | < 430 U |
| Di-n-Octylphthalate | | | < 360 U | < 360 U | < 430 U |
| Dibenzofuran | | | < 360 U | < 360 U | < 430 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |
| Hexachlorobenzene | 400 | 3,600 | < 360 U | < 360 U | < 430 U* |
| Hexachlorobutadiene | 8,200 | 73,000 | < 360 U | < 360 U | < 430 U |
| Hexachlorocyclopentadiene | | | < 360 U | < 360 U | < 430 U |
| Hexachloroethane | 46,000 | 410,000 | < 360 U | < 360 U | < 430 U |
| Isophorone | | | < 360 U | < 360 U | < 430 U |
| n-Nitroso-Di-n-Propylamine | | | < 360 U | < 360 U | < 430 U |
| n-Nitrosodiphenylamine | | | < 360 U | < 360 U | < 430 U |
| Nitrobenzene | | | < 360 U | < 360 U | < 430 U |
| Pentachlorophenol | 5,300 | 48,000 | < 900 U | < 900 U | < 1,100 U |
| Phenol | 6,000,000 | 10,000,000 | < 360 U | < 360 U | < 430 U |

NOTES: * = Exceeds residential criteria.

| Location ID | Residential | Industrial/Commercial | SB16-28 | SB16-29 | SB16-29 |
|---|---|---|---|---|---|
| Sample Depth in ft bgs | Action Level | Action Level | 04–06 | 32–34 | 20–22 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 96,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| 1,2-Dichlorobenzene | 510,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| 1,3-Dichlorobenzene | 430,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| 1,4-Dichlorobenzene | 27,000 | 240,000 | < 400 U | < 430 U | < 400 U |
| 2,2'-Oxybis(1-Chloropropane) | 9,100 | 82,000 | < 400 UJ | < 430 U | < 400 U |
| 2,4,5-Trichlorophenol | 330,000 | 10,000,000 | < 980 U | < 1,100 U | < 980 U |
| 2,4,6-Trichlorophenol | 58,000 | 520,000 | < 400 U | < 430 U | < 400 U |
| 2,4-Dichlorophenol | 30,000 | 6,100,000 | < 400 U | < 430 U | < 400 U |
| 2,4-Dimethylphenol | 1,400,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| 2,4-Dinitrophenol | 160,000 | 4,100,000 | < 980 UJ | < 1,100 UJ | < 980 UJ |
| 2,4-Dinitrotoluene | 900 | 8,400 | < 400 U | < 430 U | < 400 U |
| 2,6-Dinitrotoluene | | | < 400 U | < 430 U | < 400 U |
| 2-Chloronaphthalene | | | < 400 U | < 430 U | < 400 U |
| 2-Chlorophenol | 50,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| 2-Methylphenol | | | < 400 U | < 430 U | < 400 U |
| 2-Nitroaniline | | | < 980 U | < 1,100 U | < 980 U |
| 2-Nitrophenol | | | < 400 U | < 430 U | < 400 U |
| 3,3'-Dichlorobenzidine | 1,400 | 13,000 | < 400 U | < 430 UJ | < 400 UJ |
| 3-Nitroaniline | | | < 980 U | < 1,100 UJ | < 980 UJ |
| 4,6-Dinitro-2-Methylphenol | | | < 980 U | < 1,100 UJ | < 980 UJ |
| 4-Bromophenyl Phenyl Ether | | | < 400 U | < 430 U | < 400 U |
| 4-Chloro-3-Methylphenol | | | < 400 U | < 430 U | < 400 U |
| 4-Chloroaniline | 310,000 | 8,200,000 | < 400 UJ | < 430 UJ | < 400 UJ |
| 4-Chlorophenyl Phenyl Ether | | | < 400 U | < 430 U | < 400 U |
| 4-Methylphenol | | | < 400 U | < 430 U | < 400 U |
| 4-Nitroaniline | | | < 980 UJ | < 1,100 U | < 980 U |
| 4-Nitrophenol | | | < 980 U | < 1,100 U | < 980 U |
| bis(2-Chloroethoxy) Methane | | | < 400 U | < 430 U | < 400 U |
| bis(2-Chloroethyl) Ether | 600 | 5,200 | < 400 U | < 430 U | < 400 U |
| bis(2-Ethylhexyl) Phthalate | 46,000 | 410,000 | < 400 U | < 430 U | < 400 U |
| Butyl Benzyl Phthalate | | | < 400 U | < 430 U | < 400 U |
| Carbazole | | | < 400 U | < 430 U | < 400 U |
| Di-n-Butyl Phthalate | | | < 400 U | < 430 U | < 400 U |
| Di-n-Octylphthalate | | | < 400 U | < 430 U | < 400 U |
| Dibenzofuran | | | < 400 U | < 430 U | < 400 U |
| Diethyl Phthalate | 340,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| Dimethyl Phthalate | 1,900,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |
| Hexachlorobenzene | 400 | 3,600 | < 400 U | < 430 U* | < 400 U |
| Hexachlorobutadiene | 8,200 | 73,000 | < 400 U | < 430 U | < 400 U |
| Hexachlorocyclopentadiene | | | < 400 U | < 430 U | < 400 U |
| Hexachloroethane | 46,000 | 410,000 | < 400 U | < 430 U | < 400 U |
| Isophorone | | | < 400 U | < 430 U | < 400 U |
| n-Nitroso-Di-n-Propylamine | | | < 400 U | < 430 U | < 400 U |
| n-Nitrosodiphenylamine | | | < 400 U | < 430 U | < 400 U |
| Nitrobenzene | | | < 400 U | < 430 U | < 400 U |
| Pentachlorophenol | 5,300 | 48,000 | < 980 U | < 1,100 U | < 980 U |
| Phenol | 6,000,000 | 10,000,000 | < 400 U | < 430 U | < 400 U |

# TABLE 4-4 POLYCYCLIC AROMATIC HYDROCARBONS (PAH) DETECTED IN SOIL SAMPLES (μg/kg)

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-01D | MW16-01S | MW16-02D | MW16-02S | MW16-03D DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 5/15/00 | 5/17/00 | 5/22/00 | 5/24/00 | 6/1/00 |
| Sample Depth in ft bgs | | | 48–50 | 19–21 | 64–66 | 10–12 | 46.5–48.5 |
| Chemical Name | | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 U |
| Acenaphthene | 43,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 UJ |
| Acenaphthylene | 23,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 UJ |
| Anthracene | 35,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 U |
| Benzo(a)Anthracene | 900 | 7,800 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 UJ |
| Benzo(a)Pyrene | 400 | 800 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 U |
| Benzo(b)Fluoranthene | 900 | 7,800 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 UJ |
| Benzo(k)Fluoranthene | 900 | 78,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 U |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 UJ |
| Chrysene | 400 | 780,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 U |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 UJ |
| Fluoranthene | 20,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 U |
| Fluorene | 28,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 U |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 UJ |
| Naphthalene | 54,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 UJ | < 24 UJ | < 22 U |
| Phenanthrene | 40,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 UJ | < 22 U |
| Pyrene | 13,000 | 10,000,000 | < 24 UJ | < 24 UJ | < 24 U | < 24 U | < 22 U |

NOTES:
μg/kg = Micrograms per kilogram.
ft bgs = Feet below ground surface.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-03D | MW16-03S | MW16-04D | MW16-04S | MW16-05D |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/1/00 | 6/12/00 | 6/13/00 | 6/14/00 | 5/25/00 |
| Sample Depth in ft bgs | | | 46.5–48.5 | 03–05 | 52–52 | 03–05 | 54–56 |
| Chemical Name | | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | < 22 U | < 22 U |
| Acenaphthene | 43,000 | 10,000,000 | < 20 UJ | < 24 U | < 24 U | < 22 U | < 22 UJ |
| Acenaphthylene | 23,000 | 10,000,000 | < 20 UJ | < 24 U | < 24 U | < 22 U | < 22 UJ |
| Anthracene | 35,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | 11 | < 22 U |
| Benzo(a)Anthracene | 900 | 7,800 | < 20 UJ | < 24 U | < 24 U | 59 | < 22 UJ |
| Benzo(a)Pyrene | 400 | 800 | < 20 U | < 24 U | < 24 U | 51 | < 22 U |
| Benzo(b)Fluoranthene | 900 | 7,800 | < 20 UJ | < 24 U | < 24 U | 81 | < 22 UJ |
| Benzo(k)Fluoranthene | 900 | 78,000 | < 20 U | < 24 U | < 24 U | 24 | < 22 U |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | < 20 UJ | < 24 U | < 24 U | 34 | < 22 UJ |
| Chrysene | 400 | 780,000 | < 20 U | < 24 U | < 24 U | 50 | < 22 U |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 20 UJ | < 24 U | < 24 U | 10 | < 22 UJ |
| Fluoranthene | 20,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | 100 | < 22 U |
| Fluorene | 28,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | < 22 U | < 22 U |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | < 20 UJ | < 24 U | < 24 U | 43 | < 22 UJ |
| Naphthalene | 54,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | < 22 U | < 22 U |
| Phenanthrene | 40,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | 60 | < 22 U |
| Pyrene | 13,000 | 10,000,000 | < 20 U | < 24 U | < 24 U | 83 | < 22 U |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-05S | MW16-06D | MW16-06S | MW16-07D | MW16-07S DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 5/30/00 | 6/22/00 | 6/21/00 | 6/15/00 | 6/19/00 |
| Sample Depth in ft bgs | | | 05–07 | 40–42 | 10–12 | 36–38 | 05–07 |
| Chemical Name | | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 5,900 |
| Acenaphthene | 43,000 | 10,000,000 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | 600 |
| Acenaphthylene | 23,000 | 10,000,000 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | < 22. UJ |
| Anthracene | 35,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 1,200 |
| Benzo(a)Anthracene | 900 | 7,800 | < 24 UJ | < 22 U | < 22 U | < 22 U | 140 |
| Benzo(a)Pyrene | 400 | 800 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | 92 J |
| Benzo(b)Fluoranthene | 900 | 7,800 | < 24 UJ | < 22 U | < 22 U | < 22 U | 180 |
| Benzo(k)Fluoranthene | 900 | 78,000 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | 35 J |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | 46 J |
| Chrysene | 400 | 780,000 | < 24 U | < 22 U | < 22 U | < 22 U | 100 J |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | 19 |
| Fluoranthene | 20,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 300 |
| Fluorene | 28,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 710 J |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | < 24 UJ | < 22 U | < 22 U | < 22 UJ | 63 J |
| Naphthalene | 54,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 540 |
| Phenanthrene | 40,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 1,300 |
| Pyrene | 13,000 | 10,000,000 | < 24 U | < 22 U | < 22 U | < 22 U | 350 |

NOTES:
J = Estimated value below sample qualification limit.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-07S | MW16-13D | MW16-14D | MW16-15R | MW16-22D DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/19/00 | 1/16/01 | 1/30/01 | 1/22/01 | 1/16/01 |
| Sample Depth in ft bgs | | | 05–07 | 58–60 | 57.5–59.5 | 49–51 | 59–61 |
| Chemical Name | | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | 7000 | < 22 U | < 22 UJ | < 22 U | < 22 U |
| Acenaphthene | 43,000 | 10,000,000 | 600 | < 22 UJ | < 22 U | < 22 UJ | < 22 UJ |
| Acenaphthylene | 23,000 | 10,000,000 | 310 J | < 22 UJ | < 22 U | < 22 UJ | < 22 UJ |
| Anthracene | 35,000 | 10,000,000 | 1300 | < 22 U | < 22 U | < 22 U | < 22 U |
| Benzo(a)Anthracene | 900 | 7,800 | 140 | < 22 U | < 22 U | < 22 U | < 22 U |
| Benzo(a)Pyrene | 400 | 800 | 89 J | < 22 U | < 22 U | < 22 U | < 22 U |
| Benzo(b)Fluoranthene | 900 | 7,800 | 200 | < 22 U | < 22 U | < 22 U | < 22 U |
| Benzo(k)Fluoranthene | 900 | 78,000. | 24 | < 22 U | < 22 U | < 22 U | < 22 U |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | 46 J | < 22 U | < 22 U | < 22 U | < 22 U |
| Chrysene | 400 | 780,000 | 100 J | < 22 U | < 22 U | < 22 U | < 22 U |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 22. U | < 22 U | < 22 U | < 22 U | < 22 U |
| Fluoranthene | 20,000 | 10,000,000 | 280 | < 22 U | < 22 U | < 22 U | < 22 U |
| Fluorene | 28,000 | 10,000,000 | 660 J | < 22 UJ | < 22 U | < 22 UJ | < 22 UJ |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | 60 J | < 22 U | < 22 U | < 22 U | < 22 U |
| Naphthalene | 54,000 | 10,000,000 | 620 | < 22 U | < 22 UJ | < 22 U | < 22 U |
| Phenanthrene | 40,000 | 10,000,000 | 1400 | < 22 U | < 22 U | < 22 U | < 22 U |
| Pyrene | 13,000 | 10,000,000 | 400 | < 22 U | < 22 U | < 22 U | < 22 U |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-22D | MW16-23D | SB16-21 | SB16-21 DUP | SB16-21 |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 1/16/01 | 1/10/01 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 59–61 | 54–56 | 00–02 | 0–2 | 08–10 |
| Chemical Name | | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 22 U | < 24 U | 16 | < 2,200 U | < 24 U |
| Acenaphthene | 43,000 | 10,000,000 | < 22 UJ | < 24 U | 440 | < 2,200 U | < 24 U |
| Acenaphthylene | 23,000 | 10,000,000 | < 22 UJ | < 24 U | 440 | < 2,200 U | < 24 U |
| Anthracene | 35,000 | 10,000,000 | < 22 U | < 24 U | 930 | < 2,200 U | < 24 U |
| Benzo(a)Anthracene | 900 | 7,800 | < 22 U | < 24 U | 4,800* | 4,100* | 28 |
| Benzo(a)Pyrene | 400 | 800 | < 22 U | < 24 U | 2,000** | 2,700** | 26 |
| Benzo(b)Fluoranthene | 900 | 7,800 | < 22 U | < 24 U | 7,400* | 7,400* | 57 |
| Benzo(k)Fluoranthene | 900 | 78,000 | < 22 UJ | < 24 U | 1,300* | 2,300* | 15 |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | < 22 UJ | < 24 U | 900* | 1,200* | 13 |
| Chrysene | 400 | 780,000 | < 22 U | < 24 U | 4,200* | 5,300* | 30 |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 22 UJ | < 24 U | 400* | < 2,200 U** | < 24 U |
| Fluoranthene | 20,000 | 10,000,000 | < 22 U | < 24 U | 710 | 7,900 | 40 |
| Fluorene | 28,000 | 10,000,000 | < 22 UJ | < 24 U | 85 | < 2,200 UJ | < 24 UJ |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | < 22 UJ | < 24 U | 2,100* | 2,500* | 24 |
| Naphthalene | 54,000 | 10,000,000 | < 22 U | < 24 U | 14 | < 2,200 U | < 24 U |
| Phenanthrene | 40,000 | 10,000,000 | < 22 U | < 24 U | 710 | < 2,200 U | < 24 U |
| Pyrene | 13,000 | 10,000,000 | < 22 U | < 24 U | 6,200 | 6,600 | 39 |

NOTES:
* = Meets or exceeds residential criteria.
** = Meets or exceeds industrial/commercial criteria.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-22 | SB16-22 | SB16-23 | SB16-23 | SB16-24 |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/27/00 | 6/27/00 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 00–02 | 06–08 | 00–02 | 03–05 | 07–09 |
| Chemical Name | | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 20 U | < 24 U | < 42 U | < 2,400 U | < 24 U |
| Acenaphthene | 43,000 | 10,000,000 | < 20 U | < 24 U | < 42 U | < 2,400 U | < 24 U |
| Acenaphthylene | 23,000 | 10,000,000 | < 20 U | < 24 U | < 42 U | < 2,400 U | < 24 U |
| Anthracene | 35,000 | 10,000,000 | < 20 U | < 24 U | 37 | < 2,400 U | < 24 U |
| Benzo(a)Anthracene | 900 | 7,800 | 25 | < 24 U | 100 | < 2,400 U* | < 24 U |
| Benzo(a)Pyrene | 400 | 800 | 20 | < 24 U | 73 | < 2,400 U** | < 24 U |
| Benzo(b)Fluoranthene | 900 | 7,800 | 40 J | < 24 U | 120 | < 2,400 U* | < 24 U |
| Benzo(k)Fluoranthene | 900 | 78,000 | < 20 U | < 24 U | 41 | < 2,400 U* | < 24 U |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | 13 | < 24 U | 47 | < 2,400 U* | < 24 U |
| Chrysene | 400 | 780,000 | 26 | < 24 U | 83 | < 2,400 U* | < 24 U |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 20 U | < 24 U | 24 | < 2,400 U** | < 24 U |
| Fluoranthene | 20,000 | 10,000,000 | 40 J | < 24 U | 220 | < 2,400 U | < 24 U |
| Fluorene | 28,000 | 10,000,000 | < 20 UJ | < 24 UJ | < 42 UJ | < 2,400 UJ | < 24 UJ |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | 22 | < 24 U | 76 | < 2,400 U* | < 24 U |
| Naphthalene | 54,000 | 10,000,000 | < 20 U | < 24 U | < 42 U | < 2,400 U | < 24 U |
| Phenanthrene | 40,000 | 10,000,000 | 24 | < 24 U | 77 | < 2,400 U | < 24 U |
| Pyrene | 13,000 | 10,000,000 | 32 J | < 24 U | 170 | < 2,400 U | < 24 U |

| Location ID<br>Sample Date<br>Sample Depth in ft bgs<br>Chemical Name | Residential Action Level | Industrial/ Commercial Action Level | SB16-24<br>6/26/00<br>00–02 | SB16-25<br>6/26/00<br>07–09 | SB16-25<br>6/26/00<br>00–02 | SB16-26<br>6/23/00<br>00–02 |
|---|---|---|---|---|---|---|
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 22 U | < 24 U | < 42 U | < 22 U |
| Acenaphthene | 43,000 | 10,000,000 | < 22 U | < 24 U | < 42 U | < 22 U |
| Acenaphthylene | 23,000 | 10,000,000 | < 22 U | < 24 U | < 42 U | 12 |
| Anthracene | 35,000 | 10,000,000 | < 22 U | 12 J | < 42 U | 6 |
| Benzo(a)Anthracene | 900 | 7,800 | 43 | 31 | 60 | 53 |
| Benzo(a)Pyrene | 400 | 800 | 32 | 19 J | 71 | 51 |
| Benzo(b)Fluoranthene | 900 | 7,800 | 62 | 37 J | 140 | 97 |
| Benzo(k)Fluoranthene | 900 | 78,000 | 14 | < 24 U | 36 | 18 |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | 28 | 15 J | 50 | 68 |
| Chrysene | 400 | 780,000 | 38 | 31 | 86 | 34 |
| Dibenzo(a,h)Anthracene | 400 | 800 | < 22 U | < 24 U | < 42 U | 26 |
| Fluoranthene | 20,000 | 10,000,000 | 69 | 92 | 120 | 53 |
| Fluorene | 28,000 | 10,000,000 | < 22 U | < 24 UJ | < 42 UJ | < 22 U |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | 42 | 22 J | 83 | 100 |
| Naphthalene | 54,000 | 10,000,000 | < 22 U | 27 | < 42 U | < 22 U |
| Phenanthrene | 40,000 | 10,000,000 | 20 | 55 | 35 | 28 |
| Pyrene | 13,000 | 10,000,000 | 59 | 62 | 68 | 53 |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-26 | SB16-27 DUP | SB16-27 | SB16-27 |
|---|---|---|---|---|---|---|
| Sample Date | | | 6/23/00 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 02–04 | 02–04 | 00–02 | 02–04 |
| Chemical Name | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | < 22 U | < 86 U | < 22 U | < 42 U |
| Acenaphthene | 43,000 | 10,000,000 | < 22 U | < 86 U | < 22 U | < 42 U |
| Acenaphthylene | 23,000 | 10,000,000 | 29 | < 86 U | < 22 U | < 42 U |
| Anthracene | 35,000 | 10,000,000 | 45 | < 86 U | 12 | < 42 U |
| Benzo(a)Anthracene | 900 | 7,800 | 300 | 92 | 75 J | 83 |
| Benzo(a)Pyrene | 400 | 800 | 500* | 83 | 70 | 68 |
| Benzo(b)Fluoranthene | 900 | 7,800 | 850 | 170 | 100 J | 120 |
| Benzo(k)Fluoranthene | 900 | 78,000 | 260 | < 86 U | 35 J | 37 |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | 400 | 56 | 50 J | 44 |
| Chrysene | 400 | 780,000 | 190 | 94 | 69 | 70 |
| Dibenzo(a,h)Anthracene | 400 | 800 | 140 | < 86 U | 15 J | < 42 U |
| Fluoranthene | 20,000 | 10,000,000 | 180 | 230 | 120 | 160 |
| Fluorene | 28,000 | 10,000,000 | 7 | < 86 UJ | < 22 UJ | < 42 UJ |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | 640 | 96 | 86 J | 75 |
| Naphthalene | 54,000 | 10,000,000 | 6 | < 86 U | < 22 U | < 42 U |
| Phenanthrene | 40,000 | 10,000,000 | 98 | 99 | 64 | 75 |
| Pyrene | 13,000 | 10,000,000 | 130 | 130 | 90 | 100 |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-28 | SB16-28 | SB16-29 | SB16-29 |
|---|---|---|---|---|---|---|
| Sample Date | | | 6/27/00 | 6/27/00 | 1/17/01 | 1/17/01 |
| Sample Depth in ft bgs | | | 00–02 | 04–06 | 32–34 | 20–22 |
| Chemical Name | | | | | | |
| 2-Methylnaphthalene | 123,000 | 10,000,000 | 30 | 49,000 | < 26 U | < 24 U |
| Acenaphthene | 43,000 | 10,000,000 | 14 | 5,300 | < 26 UJ | < 24 UJ |
| Acenaphthylene | 23,000 | 10,000,000 | 32 | < 2,400 U | < 26 UJ | < 24 UJ |
| Anthracene | 35,000 | 10,000,000 | 870 | 2,800 | < 26 U | < 24 U |
| Benzo(a)Anthracene | 900 | 7,800 | 250 | 2,000* | < 26 U | < 24 U |
| Benzo(a)Pyrene | 400 | 800 | 140 J | 1,600** | < 26 U | < 24 U |
| Benzo(b)Fluoranthene | 900 | 7,800 | 500 | 2,600** | < 26 U | 5 J |
| Benzo(k)Fluoranthene | 900 | 78,000 | 150 J | < 2,400 U* | < 26 UJ | < 24 U |
| Benzo[g,h,i]Perylene | 800 | 10,000,000 | 100 | < 2,400 U* | < 26 UJ | < 24 U |
| Chrysene | 400 | 780,000 | 1,000* | 2,200* | < 26 U | 6 J |
| Dibenzo(a,h)Anthracene | 400 | 800 | 50 | < 2,400 U* | < 26 UJ | < 24 U |
| Fluoranthene | 20,000 | 10,000,000 | 1,400 | 5,500 | 4 | 6 |
| Fluorene | 28,000 | 10,000,000 | 55 J | 5,100 J | < 26 UJ | < 24 UJ |
| Indeno(1,2,3-cd)Pyrene | 900 | 7,800 | 190 J | 1,500* | < 26 UJ | < 24 U |
| Naphthalene | 54,000 | 10,000,000 | 15 | 12,000 | < 26 U | < 24 U |
| Phenanthrene | 40,000 | 10,000,000 | 920 | 13,000 J | 6 | < 24 U |
| Pyrene | 13,000 | 10,000,000 | 760 | 5,000 | < 26 U | 5 J |

# TABLE 4-5 PESTICIDES AND POLYCHLORINATED BIPHENYLS (PCB) DETECTED IN SOIL SAMPLES (µg/kg)

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-01D | MW16-01S | MW16-02D | MW16-02S | MW16-03D DUP | MW16-03D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 5/15/00 | 5/17/00 | 5/22/00 | 5/24/00 | 6/1/00 | 6/1/00 |
| Sample Depth in ft bgs | | | 48–50 | 19–21 | 64–66 | 10–12 | 46.5–48.5 | 46.5–48.5 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| 4,4'-DDE | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| 4,4'-DDT | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Aldrin | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Alpha BHC | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Alpha-Chlordane | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Beta BHC | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Delta BHC | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Dieldrin | 40 | 400 | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Endosulfan I | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Endosulfan II | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Endosulfan Sulfate | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Endrin | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Endrin Aldehyde | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Endrin Ketone | | | < 4.2 U | < 4.0 U | < 3.8 U | < 4.0 U | < 3.6 U | < 3.4 U |
| Gamma BHC | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Gamma-Chlordane | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Heptachlor | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Heptachlor Epoxide | | | < 2.1 U | < 2.1 U | < 2.0 U | < 2.1 U | < 1.9 U | < 1.8 U |
| Methoxychlor | | | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1016 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1221 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1232 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1242 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1248 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1254 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| PCB-1260 | 10,000 | 10,000 | < 21 U | < 21 U | < 20 U | < 21 U | < 19 U | < 18 U |
| Toxaphene | | | < 42 U | < 40 U | < 38 U | < 40 U | < 36 U | < 34 U |

NOTES:
µg/kg = Micrograms per kilogram.
ft bgs = Feet below ground surface.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-03S | MW16-04D | MW16-04S | MW16-05D | MW16-05S | MW16-06D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/12/00 | 6/13/00 | 6/14/00 | 5/25/00 | 5/30/00 | 6/22/00 |
| Sample Depth in ft bgs | | | 03–05 | 52–52 | 03–05 | 54–56 | 05–07 | 40–42 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| 4,4'-DDE | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| 4,4'-DDT | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Aldrin | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Alpha BHC | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 UJ |
| Alpha-Chlordane | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Beta BHC | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Delta BHC | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Dieldrin | 40 | 400 | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Endosulfan I | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Endosulfan II | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Endosulfan Sulfate | | | < 3.8 UJ | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Endrin | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Endrin Aldehyde | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Endrin Ketone | | | < 3.8 U | < 3.9 U | < 3.8 U | < 3.6 U | < 3.8 U | < 3.7 U |
| Gamma BHC | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Gamma-Chlordane | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Heptachlor | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Heptachlor Epoxide | | | < 2.0 U | < 2.0 U | < 1.9 U | < 1.8 U | < 2.0 U | < 1.9 U |
| Methoxychlor | | | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1016 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1221 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1232 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1242 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1248 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1254 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| PCB-1260 | 10,000 | 10,000 | < 20 U | < 20 U | < 19 U | < 18 U | < 20 U | < 19 U |
| Toxaphene | | | < 38 U | < 39 U | < 38 U | < 36 U | < 38 U | < 37 U |

NOTES:
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-06S | MW16-07D | MW16-07S DUP | MW16-07S | MW16-13D | MW16-14D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/21/00 | 6/15/00 | 6/19/00 | 6/19/00 | 1/16/01 | 1/30/01 |
| Sample Depth in ft bgs | | | 10–12 | 36–38 | 05–07 | 05–07 | 58–60 | 57.5–59.5 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| 4,4'-DDE | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| 4,4'-DDT | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Aldrin | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Alpha BHC | | | < 2.0 UJ | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Alpha-Chlordane | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Beta BHC | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Delta BHC | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Dieldrin | 40 | 400 | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Endosulfan I | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Endosulfan II | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Endosulfan Sulfate | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Endrin | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Endrin Aldehyde | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Endrin Ketone | | | < 3.8 U | < 3.6 U | < 3.7 U | < 3.8 U | < 3.7 U | < 3.8 U |
| Gamma BHC | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Gamma-Chlordane | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Heptachlor | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Heptachlor Epoxide | | | < 2.0 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U | < 1.9 U |
| Methoxychlor | | | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1016 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1221 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1232 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1242 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1248 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1254 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 U |
| PCB-1260 | 10,000 | 10,000 | < 20 U | < 19 U | < 19 U | < 19 U | < 19 U | < 19 UJ |
| Toxaphene | | | < 38 U | < 36 U | < 37 U | < 38 U | < 37 U | < 38 U |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | MW16-15R | MW16-22D DUP | MW16-22D | MW16-23D | SB16-21 | SB16-21 DUP |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 1/22/01 | 1/16/01 | 1/16/01 | 1/10/01 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 49–51 | 59–61 | 59–61 | 54–56 | 00–02 | 0–2 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| 4,4'-DDE | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| 4,4'-DDT | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Aldrin | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Alpha BHC | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Alpha-Chlordane | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Beta BHC | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Delta BHC | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Dieldrin | 40 | 400 | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Endosulfan I | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Endosulfan II | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Endosulfan Sulfate | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Endrin | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Endrin Aldehyde | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Endrin Ketone | | | < 3.7 U | < 3.6 U | < 3.6 U | < 4.0 U | < 3.5 R | < 3.5 R |
| Gamma BHC | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Gamma-Chlordane | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | 2.9 J | < 1.8 R |
| Heptachlor | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Heptachlor Epoxide | | | < 1.9 U | < 1.8 U | < 1.9 U | < 2.0 U | < 1.8 R | < 1.8 R |
| Methoxychlor | | | < 19 U | < 18 U | < 19 U | < 20 U | < 18 R | < 18 R |
| PCB-1016 | 10,000 | 10,000 | < 19 U | < 18 U | < 19 U | < 21 U | < 18 U | < 18 U |
| PCB-1221 | 10,000 | 10,000 | < 19 U | < 18 U | < 19 U | < 21 U | < 18 U | < 18 U |
| PCB-1232 | 10,000 | 10,000 | < 19 U | < 18 U | < 19 U | < 21 U | < 18 U | < 18 U |
| PCB-1242 | 10,000 | 10,000 | < 19 U | < 18 U | < 19 U | < 21 U | < 18 U | < 18 U |
| PCB-1248 | 10,000 | 10,000 | < 19 U | < 18 U | < 19 U | < 21 U | < 18 U | < 18 U |
| PCB-1254 | 10,000 | 10,000 | < 19 U | < 18 U | < 19 U | < 21 U | < 18 U | < 18 U |
| PCB-1260 | 10,000 | 10,000 | < 19 UJ | < 18 U | < 19 U | < 21 U | < 18 U | 19 |
| Toxaphene | | | < 37 U | < 36 U | < 36 U | < 40 U | < 35 R | < 35 R |

NOTES:
R = The data are unusable (compound may or may not be present).
J = Estimated value below sample qualification limit.

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-21 | SB16-22 | SB16-22 | SB16-23 | SB16-23 | SB16-24 |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/27/00 | 6/27/00 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 08–10 | 00–02 | 06–08 | 00–02 | 03–05 | 07–09 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| 4,4'-DDE | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| 4,4'-DDT | | | < 3.9 U | < 3.4 UJ | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| Aldrin | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Alpha BHC | | | < 2.0 UJ | < 1.8 U | < 2.0 UJ | < 1.8 UJ | < 2.1 UJ | < 2.0 UJ |
| Alpha-Chlordane | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Beta BHC | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Delta BHC | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Dieldrin | 40 | 400 | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| Endosulfan I | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Endosulfan II | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| Endosulfan Sulfate | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| Endrin | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| Endrin Aldehyde | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | 4.7 | < 3.9 U |
| Endrin Ketone | | | < 3.9 U | < 3.4 U | < 3.8 U | < 3.5 U | < 4.0 U | < 3.9 U |
| Gamma BHC | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Gamma-Chlordane | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Heptachlor | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Heptachlor Epoxide | | | < 2.0 U | < 1.8 U | < 2.0 U | < 1.8 U | < 2.1 U | < 2.0 U |
| Methoxychlor | | | < 20 U | < 18 UJ | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1016 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1221 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1232 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1242 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1248 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1254 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| PCB-1260 | 10,000 | 10,000 | < 20 U | < 18 U | < 20 U | < 18 U | < 21 U | < 20 U |
| Toxaphene | | | < 39 U | < 34 U | < 38 U | < 35 U | < 40 U | < 39 U |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-24 | SB16-25 | SB16-25 | SB16-26 | SB16-26 | SB16-27 DUP |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/26/00 | 6/26/00 | 6/23/00 | 6/23/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 00–02 | 07–09 | 00–02 | 00–02 | 02–04 | 02–04 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | 4.1 J |
| 4,4'-DDE | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| 4,4'-DDT | | | < 3.6 U | < 3.8 U | < 3.5 U | 3.7 | 3.7 | < 3.6 U |
| Aldrin | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Alpha BHC | | | < 1.8 UJ | < 2.0 UJ | < 1.8 UJ | < 1.8 UJ | < 1.8 UJ | < 1.8 UJ |
| Alpha-Chlordane | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Beta BHC | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Delta BHC | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Dieldrin | 40 | 400 | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| Endosulfan I | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Endosulfan II | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| Endosulfan Sulfate | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| Endrin | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| Endrin Aldehyde | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| Endrin Ketone | | | < 3.6 U | < 3.8 U | < 3.5 U | < 3.5 U | < 3.6 U | < 3.6 U |
| Gamma BHC | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Gamma-Chlordane | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Heptachlor | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Heptachlor Epoxide | | | < 1.8 U | < 2.0 U | < 1.8 U | < 1.8 U | < 1.8 U | < 1.8 U |
| Methoxychlor | | | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1016 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1221 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1232 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1242 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1248 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1254 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| PCB-1260 | 10,000 | 10,000 | < 18 U | < 20 U | < 18 U | < 18 U | < 18 U | < 18 U |
| Toxaphene | | | < 36 U | < 38 U | < 35 U | < 35 U | < 36 U | < 36 U |

| Location ID | Residential Action Level | Industrial/ Commercial Action Level | SB16-27 | SB16-27 | SB16-28 | SB16-28 | SB16-29 | SB16-29 |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/26/00 | 6/27/00 | 6/27/00 | 1/17/01 | 1/17/01 |
| Sample Depth in ft bgs | | | 00–02 | 02–04 | 00–02 | 04–06 | 32–34 | 20–22 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | | < 3.5 U | < 3.5 UJ | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| 4,4'-DDE | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| 4,4'-DDT | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Aldrin | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Alpha BHC | | | < 1.8 UJ | < 1.8 UJ | 2.4 J | < 4.1 UJ | < 2.2 U | < 2.1 U |
| Alpha-Chlordane | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Beta BHC | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Delta BHC | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Dieldrin | 40 | 400 | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Endosulfan I | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Endosulfan II | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Endosulfan Sulfate | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Endrin | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Endrin Aldehyde | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Endrin Ketone | | | < 3.5 U | < 3.5 U | < 4.2 U | < 8.0 U | < 4.2 U | < 4.1 U |
| Gamma BHC | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Gamma-Chlordane | | | < 1.8 U | < 1.8 U | < 2.1 U | 8.9 J | < 2.2 U | < 2.1 U |
| Heptachlor | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Heptachlor Epoxide | | | < 1.8 U | < 1.8 U | < 2.1 U | < 4.1 U | < 2.2 U | < 2.1 U |
| Methoxychlor | | | < 18 U | < 18 U | < 21 U | < 41 U | < 22 U | < 21 U |
| PCB-1016 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| PCB-1221 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| PCB-1232 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| PCB-1242 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| PCB-1248 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| PCB-1254 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| PCB-1260 | 10,000 | 10,000 | < 18 U | < 18 U | < 21 U | < 21 U | < 22 U | < 21 U |
| Toxaphene | | | < 35 U | < 35 U | < 42 U | < 80 U | < 42 U | < 41 U |

# TABLE 4-6 METALS DETECTED IN SOIL SAMPLES (mg/kg)

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | MW16-01D | MW16-01S | MW16-02D | MW16-02S | MW16-03D-DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 5/15/00 | 5/17/00 | 5/22/00 | 5/24/00 | 6/1/00 |
| Sample Depth in ft bgs | | | 48–50 | 19–21 | 64–66 | 10–12 | 46.5–48.5 |
| Chemical Name | | | | | | | |
| Aluminum | | | 7,190 | 3,570 | 8,340 | 3,380 | 5,090 |
| Antimony | 10 | 820 | < 0.18 U | < 0.22 U | < 0.26 U | < 0.23 U | < 0.22 UJ |
| Arsenic | 1.7 | 3.8 | 2.0* | 3.1* | 2.0* | 2.0* | 1.4 |
| Barium | 5,500 | 10,000 | 21.9 | 10.1 | 24.4 | 9.5 | 16.0 |
| Beryllium | 0.4 | 1.3 | 0.47* | 0.29 | 0.48* | 0.31 | 0.43* |
| Cadmium | 39 | 1,000 | 0.24 J | < 0.25 U | < 0.03 U | < 0.03 U | 0.29 J |
| Calcium | | | 1,900 | 492 | 1,440 | 587 | 1,240 |
| Chromium | | | 11.7 | 5.4 | 14.5 | 5.5 | 9.0 |
| Cobalt | | | 7.4 | 4.9 | 10.6 | 4.3 | 7.6 |
| Copper | 3,100 | 10,000 | 13.4 | 15.5 | 18.7 | 8.1 | 13.9 |
| Iron | | | 18,600 | 11,500 | 20,000 | 9,080 | 15,400 |
| Lead | 150 | 500 | 5.8 | 5.8 | 8.3 | 4.6 | 7.1 |
| Magnesium | | | 3,530 | 1,410 | 4,100 | 1,260 | 3,050 |
| Manganese | 390 | 10,000 | 227 | 157 | 201 | 145 | 148 J |
| Mercury | 23 | 610 | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U |
| Nickel | 1,000 | 10,000 | 12.9 | < 1.13 U | 21.0 | 6.1 | 14.0 |
| Potassium | | | 1,240 | 616 | 1,900 | 469 | 1,530 |
| Selenium | 390 | 10,000 | < 0.24 U | < 0.28 U | < 0.34 U | < 0.3 U | < 0.29 U |
| Silver | 200 | 10,000 | < 0.22 U | < 0.26 U | < 0.31 U | < 0.27 U | < 0.1 U |
| Sodium | | | 53.1 | 68.6 | 79.1 | 45.9 | 41.2 |
| Thallium | 5.5 | 140 | < 0.26 U | < 0.31 U | < 0.37 U | < 0.33 U | < 0.32 U |
| Vanadium | | | 14.5 | 8.2 | 17.2 | 6.6 | 12.8 |
| Zinc | 6,000 | 10,000 | 46.2 | 20.8 | 47.6 | 22.7 | 34.4 |

NOTES:
- mg/kg = Milligrams per kilogram.
- RIDEM = Rhode Island Department of Environmental Management.
- ft bgs = Feet below ground surface.
- U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
- UJ = The analyte was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
- * = Meets or exceeds Residential criteria.
- J = Estimated value below sample qualification limit.

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | MW16-03D | MW16-03S | MW16-04D | MW16-04S | MW16-05D |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/1/00 | 6/12/00 | 6/13/00 | 6/14/00 | 5/25/00 |
| Sample Depth in ft bgs | | | 46.5–48.5 | 03–05 | 52–52 | 03–05 | 54–56 |
| Chemical Name | | | | | | | |
| Aluminum | | | 3,710 | 5,270 | 4,920 | 2,810 | 5,150 |
| Antimony | 10 | 820 | < 0.22 UJ | < 0.76 UJ | < 0.23 UJ | < 0.18 UJ | < 0.25 UJ |
| Arsenic | 1.7 | 3.8 | 1.7* | < 0.66 UJ | < 0.2 UJ | < 0.15 UJ | 1.1 |
| Barium | 5,500 | 10,000 | 11.5 | 11.6 | 12.6 | 12.0 | 14.9 |
| Beryllium | 0.4 | 1.3 | 0.31 | 0.60* | 0.58* | 0.44* | 0.34 |
| Cadmium | 39 | 1,000 | < 0.25 U | < 0.86 U | 0.27 | < 0.2 U | < 0.28 UJ |
| Calcium | | | 1,080 | < 1.92 U | < 0.58 U | < 0.45 U | 1,360 J |
| Chromium | | | 6.6 | 8.1 | 7.1 | 2.5 | 9.0 |
| Cobalt | | | 5.7 | 10.2 | 6.7 | 2.9 | 6.8 |
| Copper | 3,100 | 10,000 | 14.1 | 56.7 J | 20.1 J | 6.7 J | 11.9 |
| Iron | | | 9,630 | 22,000 | 12,200 | 5,900 | 11,400 |
| Lead | 150 | 500 | 4.7 | 9.1 | 4.7 | 11.6 | 4.2 |
| Magnesium | | | 2,140 | 1,740 J | 2,600 J | < 1.01 UJ | 2,470 |
| Manganese | 390 | 10,000 | 92.8 J | 219 | 107 | 92.0 | 114 |
| Mercury | 23 | 610 | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U |
| Nickel | 1,000 | 10,000 | 11.9 | 12.6 | < 1.2 U | < 0.93 U | 12.6 |
| Potassium | | | 1,230 | < 27.94 U | < 34.03 U | < 26.37 U | 1,160 |
| Selenium | 390 | 10,000 | < 0.28 U | 0.92 | < 0.3 U | < 0.23 U | < 0.32 U |
| Silver | 200 | 10,000 | < 0.1 U | < 0.9 U | < 0.28 UJ | < 0.21 UJ | < 0.11 U |
| Sodium | | | 32.7 | < 1.19 U | < 1.45 U | < 1.12 U | 47.0 |
| Thallium | 5.5 | 140 | < 0.31 U | < 1.08 U | < 0.33 U | < 0.26 U | < 0.35 U |
| Vanadium | | | 8.9 | 10.9 | 10.9 | 4.6 | 11.3 |
| Zinc | 6,000 | 10,000 | 28.7 | 39.3 J | 33.6 J | 27.8 J | 28.3 |

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | MW16-05S | MW16-06D | MW16-06S | MW16-07D | MW16-07S-DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 5/30/00 | 6/22/00 | 6/21/00 | 6/15/00 | 6/19/00 |
| Sample Depth in ft bgs | | | 05–07 | 40–42 | 10–12 | 36–38 | 05–07 |
| Chemical Name | | | | | | | |
| Aluminum | | | 4,560 | 7,410 | 7,970 | 5,630 | 3,520 |
| Antimony | 10 | 820 | < 0.21 UJ | < 0.23 UJ | < 0.24 UJ | < 0.21 UJ | < 0.24 UJ |
| Arsenic | 1.7 | 3.8 | 2.2* | 1.9 J* | 2.8 J* | < 0.18 UJ | 1.7* |
| Barium | 5,500 | 10,000 | 10.8 | 19.5 | 23.5 | 13.6 | 37.2 |
| Beryllium | 0.4 | 1.3 | 0.36 | 0.71* | 0.57* | 0.41* | 0.39 |
| Cadmium | 39 | 1,000 | 0.33 J | < 0.24 U | < 0.25 U | < 0.23 U | < 0.27 U |
| Calcium | | | 358 J | < 0.59 U | < 0.6 U | < 1.51 U | < 0.61 U |
| Chromium | | | 7.4 | 11.9 | 9.9 | 9.7 | < 0.08 U |
| Cobalt | | | 4.8 | 9.3 | 7.7 | 7.6 | 3.8 |
| Copper | 3,100 | 10,000 | 8.6 | 19.2 J | 20.2 J | 17.0 J | 9.3 J |
| Iron | | | 12,900 | 19,400 | 17,100 | 14,200 | 7,690 |
| Lead | 150 | 500 | 4.6 | 6.7 | 7.2 | 4.9 | 4.1 |
| Magnesium | | | 1,900 | 4,080 J | 3,040 J | 2,970 J | 1,050 |
| Manganese | 390 | 10,000 | 140 | 194 | 195 | 123 | 73.7 |
| Mercury | 23 | 610 | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U |
| Nickel | 1,000 | 10,000 | 8.3 | 16.2 | 11.3 | 14.2 | 5.1 |
| Potassium | | | 619 | < 31.63 U | < 32.6 U | < 30.02 U | < 35.06 U |
| Selenium | 390 | 10,000 | < 0.27 U | < 0.3 U | < 0.31 U | < 0.26 U | < 0.31 U |
| Silver | 200 | 10,000 | 0.30 J | < 0.26 UJ | < 0.26 UJ | < 0.24 UJ | 0.33 J |
| Sodium | | | 31.8 | < 5.38 U | < 1.38 U | < 1.28 U | < 1.49 U |
| Thallium | 5.5 | 140 | < 0.3 U | < 0.33 U | < 0.34 U | < 0.29 U | < 0.34 U |
| Vanadium | | | 8.3 | 17.6 | 15.1 | 13.7 | 7.0 |
| Zinc | 6,000 | 10,000 | 25.2 | 46.1 J | 37.3 J | 34.4 J | 18.7 J |

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | MW16-07S | MW16-13D | MW16-14D | MW16-15R | MW16-22D-DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/19/00 | 1/16/01 | 1/30/01 | 1/22/01 | 1/16/01 |
| Sample Depth in ft bgs | | | 05–07 | 58–60 | 57.5–59.5 | 49–51 | 59–61 |
| Chemical Name | | | | | | | |
| Aluminum | | | 3,390 | 6,560 | 5,740 | 5,580 | 8,700 |
| Antimony | 10 | 820 | < 0.21 UJ | < 0.87 UJ | 0.40 J | < 0.88 UJ | < 0.86 UJ |
| Arsenic | 1.7 | 3.8 | 1.5 | 1.5 | 1.4 | 0.85 | 2.3* |
| Barium | 5,500 | 10,000 | 38.4 | 17.6 | 15.9 | 13.6 | 21.4 |
| Beryllium | 0.4 | 1.3 | 0.27 J | 0.54* | < 0.55 UJ | 0.58* | 0.51* |
| Cadmium | 39 | 1,000 | < 0.23 U | < 1.1 UJ | < 1.1 UJ | < 1.1 UJ | < 1.1 UJ |
| Calcium | | | < 0.62 U | < 5.4 U | 1900 | < 5.5 U | < 5.4 U |
| Chromium | | | < 0.07 U | 10.9 | 9.7 | 9.1 | 13.4 |
| Cobalt | | | 3.3 | 7.6 | 6.8 | 7.0 | 10.1 |
| Copper | 3,100 | 10,000 | 8.3 J | 15.7 | 11.4 J | 11.3 | 43.3 J |
| Iron | | | 6,930 | 17,400 | 15,800 | 14,100 | 18,300 |
| Lead | 150 | 500 | 3.8 | 5.6 | 5.1 | 6.8 | 7.4 |
| Magnesium | | | < 1.15 U | 3,420 J | 3,230 | 3,000 J | 4,540 J |
| Manganese | 390 | 10,000 | 66.8 | 243 J | 181 | 130 J | 196 J |
| Mercury | 23 | 610 | < 0.01 U | < 0.037 U | < 0.038 U | < 0.030 U | < 0.030 U |
| Nickel | 1,000 | 10,000 | 5.9 | 13.9 | 13.5 | 15.9 | 19.0 |
| Potassium | | | < 30 U | < 913 U | 1,470 | < 785 U | < 875 U |
| Selenium | 390 | 10,000 | < 0.32 U | < 1.1 U | 0.42 J | < 1.1 U | < 1.1 U |
| Silver | 200 | 10,000 | < 0.24 U | < 1.6 U | < 1.6 U | < 1.6 U | < 1.6 U |
| Sodium | | | < 1.27 U | < 913 U | < 998 U | < 785 U | < 875 U |
| Thallium | 5.5 | 140 | < 0.29 U | < 1.6 U | < 1.6 U | < 1.6 U | < 1.6 U |
| Vanadium | | | 6.6 | 13.4 | 12.4 | 12.8 | 17.3 |
| Zinc | 6,000 | 10,000 | 15.9 J | 37.2 | 37.5 | 38.0 | 52.2 |

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | MW16-22D | MW16-23D | SB16-21 | SB16-21-DUP | SB16-21 |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 1/16/01 | 1/10/01 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 59–61 | 54–56 | 00–02 | 0–2 | 08–10 |
| Chemical Name | | | | | | | |
| Aluminum | | | 9,200 | 2,840 | 3,510 | 3,860 | 11,300 |
| Antimony | 10 | 820 | < 0.77 UJ | < 0.80 UJ | < 0.23 UJ | < 0.2 UN | < 0.24 UN |
| Arsenic | 1.7 | 3.8 | 0.94 | 2.8* | 2.1* | 1.9* | 2.5* |
| Barium | 5,500 | 10,000 | 22.1 | 9.5 | 18.3 | 26.1 | 17.4 |
| Beryllium | 0.4 | 1.3 | 0.56* | 0.32 | 0.44* | 0.48* | 0.55* |
| Cadmium | 39 | 1,000 | < 0.97 U | < 1.0 UJ | < 0.26 U | < 0.23 U | < 0.27 U |
| Calcium | | | < 4.8 U | 739 | 665 J | 864 | 1,090 |
| Chromium | | | 14.2 | 5.1 | 4.7 J | 3.2 | 10.5 |
| Cobalt | | | 10.3 | 3.8 | 3.1 J | 3.3 | 4.7 J |
| Copper | 3,100 | 10,000 | 16.6 J | 7.2 | 9.4 | 7.0 J | 7.9 J |
| Iron | | | 21,200 | 10,800 | 9,840 | 8,270 | 14,200 |
| Lead | 150 | 500 | 6.4 | 4.8 | 16.1 | 10.8 | 8.5 |
| Magnesium | | | 4,910 J | 1,300 J | 861 J | 1,130 | 1,490 |
| Manganese | 390 | 10000 | 193 J | 182 J | 141 J | 173 J | 94.2 J |
| Mercury | 23 | 610 | < 0.031 U | < 0.037 U | < 0.01 U | < 0.01 U | < 0.01 U |
| Nickel | 1,000 | 10,000 | 19.5 | 8.5 | < 1.19 U | 3.7 | 6.6 |
| Potassium | | | 1,230 | < 969 U | 449 J | 921 J | 481 |
| Selenium | 390 | 10,000 | < 0.97 U | < 1.0 U | < 0.3 U | < 0.26 U | 0.70 |
| Silver | 200 | 10,000 | < 1.4 U | < 1.5 U | < 0.28 U | < 0.24 U | 0.28 J |
| Sodium | | | < 858 U | < 969 U | < 1.44 U | 34.0 | 38.5 |
| Thallium | 5.5 | 140 | 0.51 J | < 1.5 U | < 0.33 U | < 0.29 U | < 0.34 U |
| Vanadium | | | 18.4 | 7.5 | 6.4 | 7.4 | 18.4 |
| Zinc | 6,000 | 10,000 | 53.7 | 20.4 | 38.3 | 41.9 J | 22.9 J |

NOTES:
UN = The analyte was analyzed for but not detected. Spiked sample recovery is not within control limits.

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | SB16-22 | SB16-22 | SB16-23 | SB16-23 | SB16-24 |
|---|---|---|---|---|---|---|---|
| Sample Date | | | 6/27/00 | 6/27/00 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 00–02 | 06–08 | 00–02 | 03–05 | 07–09 |
| Chemical Name | | | | | | | |
| Aluminum | | | 2,570 | 12,400 | 5,360 | 7,210 | 6,670 |
| Antimony | 10 | 820 | < 0.21 UN | < 0.24 UN | < 0.23 UN | 4.7 | < 0.26 UJ |
| Arsenic | 1.7 | 3.8 | 1.3 | 2.6* | 1.8* | **4.2** | **5.8** |
| Barium | 5,500 | 10,000 | 14.8 | 25.2 | 14.9 | 189 | 18.4 |
| Beryllium | 0.4 | 1.3 | 0.53* | 0.71* | 0.52* | 0.58* | 0.48* |
| Cadmium | 39 | 1,000 | < 0.24 U | < 0.27 U | < 0.25 U | < 0.12 U | < 0.3 U |
| Calcium | | | 282 | 975 | 1,200 | 3,970 | 584 J |
| Chromium | | | 2.9 | 11.5 | 7.0 | 19.1 | 7.6 J |
| Cobalt | | | 2.0 | 6.0 J | 4.7 | 6.5 | 5.2 |
| Copper | 3,100 | 10,000 | 8.2 J | 14.2 J | 40.2 J | 160 J | 11.0 |
| Iron | | | 5,930 | 16,900 | 11,700 | 26,500 | 14,100 |
| Lead | 150 | 500 | 22.0 | 8.1 | 18.8 | 288* | 6.7 |
| Magnesium | | | 540 | 2,360 | 1,470 | 2,550 | 1,780 J |
| Manganese | 390 | 10,000 | 84.4 J | 144 J | 149 J | 295 J | 136 J |
| Mercury | 23 | 610 | < 0.01 U | < 0.01 U | < 0.01 U | 0.52 | < 0.01 U |
| Nickel | 1,000 | 10,000 | 2.6 | 10.3 | 7.2 | 25.6 | < 1.36 U |
| Potassium | | | 381 | 754 | 564 | 1,100 | 490 |
| Selenium | 390 | 10,000 | < 0.27 U | 0.55 J | < 0.29 U | < 1.18 U | < 0.34 U |
| Silver | 200 | 10,000 | < 0.25 U | < 0.29 U | < 0.27 U | 2.0 | < 0.31 U |
| Sodium | | | 27.5 | 33.6 | 82.0 | 209 | 29.8 |
| Thallium | 5.5 | 140 | < 0.3 U | < 0.34 U | < 0.32 U | < 1.3 U | < 0.37 U |
| Vanadium | | | 4.7 | 18.9 | 10.6 | 14.2 | 11.3 |
| Zinc | 6,000 | 10,000 | 33.1 J | 28.8 J | 40.8 J | 688 J | 23.2 |

NOTES:
Bold Data = Meets or exceeds Industrial/Commercial criteria.

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | SB16-24 | SB16-25 | SB16-25 | SB16-26 |
|---|---|---|---|---|---|---|
| Sample Date | | | 6/26/00 | 6/26/00 | 6/26/00 | 6/23/00 |
| Sample Depth in ft bgs | | | 00–02 | 07–09 | 00–02 | 00–02 |
| Chemical Name | | | | | | |
| Aluminum | | | 4,430 | 6,150 | 3,670 | 5,560 |
| Antimony | 10 | 820 | < 0.24 UJ | < 0.25 UJ | < 0.22 UJ | < 0.22 UJ |
| Arsenic | 1.7 | 3.8 | < 0.21 U | 2.9* | 3.3* | 2.0 J* |
| Barium | 5,500 | 10,000 | 14.8 | 36.9 | 29.9 | 40.6 |
| Beryllium | 0.4 | 1.3 | 0.53* | 0.50* | 0.40* | 0.51* |
| Cadmium | 39 | 1,000 | 0.56 | < 0.28 UJ | < 0.25 UJ | 0.35 J |
| Calcium | | | 321 J | 748 J | 361 J | < 0.56 U |
| Chromium | | | 4.7 J | 7.5 J | 6.0 J | 7.4 |
| Cobalt | | | 3.5 | 6.8 | 3.9 | 4.7 J |
| Copper | 3,100 | 10,000 | 14.6 | 16.6 | 24.8 | 16.9 J |
| Iron | | | 8,120 | 12,900 | 9,880 | 14,000 |
| Lead | 150 | 500 | 98.4 | 17.1 | 59.3 | 29.1 |
| Magnesium | | | 872 J | 1,670 J | 1,200 J | 1,830 J |
| Manganese | 390 | 10,000 | 121 J | 102 J | 102 J | 171 |
| Mercury | 23 | 610 | < 0.01 U | < 0.01 U | 0.11 | < 0.01 U |
| Nickel | 1,000 | 10,000 | < 1.25 U | 9.4 | < 1.12 U | 9.0 |
| Potassium | | | 531 | 588 | 432 | < 33.01 U |
| Selenium | 390 | 10,000 | < 0.31 U | < 0.32 U | < 0.28 U | < 0.29 U |
| Silver | 200 | 10,000 | < 0.29 U | < 0.3 U | 0.32 J | < 0.27 UJ |
| Sodium | | | < 1.51 U | 31.4 | < 1.35 U | < 1.4 U |
| Thallium | 5.5 | 140 | < 0.35 U | < 0.35 U | < 0.31 U | < 0.31 U |
| Vanadium | | | 8.0 | 10.5 | 8.6 | 11.8 |
| Zinc | 6,000 | 10,000 | 29.8 | 366 | 70.4 | 62.6 J |

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | SB16-26 | SB16-27-DUP | SB16-27 | SB16-27 |
|---|---|---|---|---|---|---|
| Sample Date | | | 6/23/00 | 6/26/00 | 6/26/00 | 6/26/00 |
| Sample Depth in ft bgs | | | 02–04 | 02–04 | 00–02 | 02–04 |
| Chemical Name | | | | | | |
| Aluminum | | | 3,440 | 4,950 | 3,340 | 4,570 |
| Antimony | 10 | 820 | < 0.25 UJ | < 0.23 UJ | < 0.21 UJ | < 0.24 UJ |
| Arsenic | 1.7 | 3.8 | < 0.21 UJ | 2.8* | < 0.18 U | 2.1* |
| Barium | 5,500 | 10,000 | 28.4 | 18.5 | 26.1 | 21.8 |
| Beryllium | 0.4 | 1.3 | 0.62* | 0.48* | 0.33 | 0.46* |
| Cadmium | 39 | 1,000 | < 0.21 U | < 0.26 UJ | < 0.24 U | < 0.27 UJ |
| Calcium | | | < 0.62 U | 451 J | 469 J | 427 J |
| Chromium | | | 5.2 | 9.7 J | 5.9 J | 7.5 J |
| Cobalt | | | 2.6 | 5.0 J | 3.4 | 5.2 |
| Copper | 3,100 | 10,000 | 10.7 J | 14.8 | 21.6 | 14.4 |
| Iron | | | 9,220 | 13,800 | 8,080 | 11,800 |
| Lead | 150 | 500 | 27.7 | 27.0 | 36.0 | 33.8 |
| Magnesium | | | < 1.02 UJ | 1,530 J | 1,200 J | 1,480 J |
| Manganese | 390 | 10,000 | 81.7 | 108 J | 105 J | 107 J |
| Mercury | 23 | 610 | < 0.01 U | < 0.01 U | < 0.01 U | < 0.01 U |
| Nickel | 1,000 | 10,000 | 3.9 | 8.5 | < 1.07 U | < 1.22 U |
| Potassium | | | < 26.64 U | 690 | 542 | 724 |
| Selenium | 390 | 10,000 | < 0.32 U | 0.30 J | < 0.27 U | 0.36 J |
| Silver | 200 | 10,000 | < 0.22 UJ | < 0.28 U | < 0.25 U | < 0.28 U |
| Sodium | | | < 1.13 U | 28.5 | < 1.29 U | 24.6 |
| Thallium | 5.5 | 140 | < 0.35 U | < 0.33 U | 0.65 J | < 0.34 U |
| Vanadium | | | 6.0 | 10.9 | 7.4 | 10.3 |
| Zinc | 6,000 | 10,000 | 42.9 J | 36.8 | 35.9 | 39.8 |

| Location ID | RIDEM Residential Action Level | RIDEM Industrial/Commercial Action Level | SB16-28 | SB16-28 | SB16-29 | SB16-29 |
|---|---|---|---|---|---|---|
| Sample Date | | | 6/27/00 | 6/27/00 | 1/17/01 | 1/17/01 |
| Sample Depth in ft bgs | | | 00–02 | 04–06 | 32–34 | 20–22 |
| Chemical Name | | | | | | |
| Aluminum | | | 8,590 | 7,740 | 4,690 | 3,390 |
| Antimony | 10 | 820 | < 0.28 UN | 8.7 | < 1.0 UJ | < 0.87 UJ |
| Arsenic | 1.7 | 3.8 | **4.0** | **10.6** | 1.6 | 1.4 |
| Barium | 5,500 | 10,000 | 38.9 | 1,100 | 12.1 | 11.4 |
| Beryllium | 0.4 | 1.3 | 0.64* | 0.56* | 0.54* | 0.50* |
| Cadmium | 39 | 1,000 | < 0.32 U | 2.4 | < 1.2 U | < 1.1 U |
| Calcium | | | 495 | 23,400 | < 6.2 U | < 5.4 U |
| Chromium | | | 11.6 | 67.2 | 6.7 | 5.2 |
| Cobalt | | | 7.8 | 6.0 | 3.0 | 3.0 |
| Copper | 3,100 | 10,000 | 24.3 J | 452 J | 13.8 | 8.6 |
| Iron | | | 21,200 | 54,300 | 10,500 | 9,290 |
| Lead | 150 | 500 | 69.3 | **2,650** | 4.7 | 4.7 |
| Magnesium | | | 2,140 | 4,910 | 1,850 J | 1,260 J |
| Manganese | 390 | 10,000 | 248 J | 587 J* | 119 J | 117 J |
| Mercury | 23 | 610 | < 0.01 U | 0.96 | < 0.037 U | < 0.038 U |
| Nickel | 1,000 | 10,000 | 11.0 | 34.5 | 7.2 | 5.5 |
| Potassium | | | 634 | 1,060 | < 977 U | < 940 U |
| Selenium | 390 | 10,000 | 0.88 | < 2.97 U | < 1.2 U | < 1.1 U |
| Silver | 200 | 10,000 | < 0.33 U | 6.8 | < 1.9 U | < 1.6 U |
| Sodium | | | 43.1 | 596 | < 977 U | < 940 U |
| Thallium | 5.5 | 140 | < 0.4 U | < 3.27 U | < 1.9 U | < 1.6 U |
| Vanadium | | | 16.1 | 14.4 | 9.7 | 8.4 |
| Zinc | 6,000 | 10,000 | 85.3 J | 1,610 J | 25.2 | 27.1 |

# TABLE 4-7 DIOXIN DETECTED IN SOIL SAMPLES (PPTR)

| Location ID | SB16-21 | SB16-21DUP | SB16-21 | SB16-22 | SB16-22 | SB16-23 | SB16-23 | SB16-24 | SB16-24 |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | 6/26/00 | 6/26/00 | 6/26/00 | 6/27/00 | 6/27/00 | 6/26/00 | 6/26/00 | 6/26/00 | 6/26/00 |
| Depth of sample | 0-2 | 0-2 | 8-10 | 0-2 | 6-8 | 0-2 | 3-5 | 7-9 | 0-2 |
| Chemical Name | | | | | | | | | |
| 1,2,3,4,6,7,8,9-OCDD | 1,060J | 740 | 7,240J | 831J | 2,500J | 2,080J | 34,930J | 4,590J | 1,360 |
| 1,2,3,4,6,7,8,9-OCDF | 35.1 | 23.7 | <9.888263U | 45.8 | <9.834776U | 112 | 1,790 | <10.06441U | 15.1 |
| 1,2,3,4,6,7,8-HPCDD | 63.9 | 49.7 | 46.8 | 69.0 | 16.0 | 242 | 7,630J | 24.5 | 22.5 |
| 1,2,3,4,6,7,8-HPCDF | 12.7 | 9.2 | <4.944131U | 23.3 | <4.917388U | 43.6 | 1870 | <5.032206U | 7.4 |
| 1,2,3,4,7,8,9-HPCDF | <4.955401U | <5.002001U | <4.944131U | 0.97 | <4.917388U | 3.7 | 48.4 | <5.032206U | <5.006007U |
| 1,2,3,4,7,8-HXCDD | 1.1 | <5.002001U | <4.944131U | 1.0 | <4.917388U | 2.8 | 87.4 | <5.032206U | <5.006007U |
| 1,2,3,4,7,8-HXCDF | <4.955401U | 1.2 | <4.944131U | <4.971662U | <4.917388U | 5.9 | 68.5 | <5.032206U | 0.98 |
| 1,2,3,6,7,8-HXCDD | 3.5 | 2.7 | <4.944131U | 3.8 | <4.917388U | 10.3 | 403 | <5.032206U | <5.006007U |
| 1,2,3,6,7,8-HXCDF | 1.1 | 0.89 | <4.944131U | 1.4 | <4.917388U | 3.2 | 26.0 | <5.032206U | 0.54 |
| 1,2,3,7,8,9-HXCDD | 3.8J | 1.9 | <4.944131U | 3.6 | <4.917388U | 10.8 | 412 | <5.032206U | <5.006007U |
| 1,2,3,7,8,9-HXCDF | <4.955401U | <5.002001U | <4.944131U | <4.971662U | <4.917388U | <4.882813U | <4.902922U | <5.032206U | <5.006007U |
| 1,2,3,7,8-PECDD | 1.4 | <5.002001U | <4.944131U | 1.1 | <4.917388U | 2.7 | 69.2 | <5.032206U | <5.006007U |
| 1,2,3,7,8-PECDF | 1.0 | <5.002001U | <4.944131U | 2.3J | <4.917388U | <4.882813U | 33.2 | <5.032206U | <5.006007U |
| 2,3,4,6,7,8-HXCDF | 1.4 | <5.002001U | <4.944131U | 2.2 | <4.917388U | 5.4 | 39.8 | <5.032206U | 1.4 |
| 2,3,4,7,8-PECDF | 1.5 | 1.4J | <4.944131U | 2.1 | <4.917388U | 3.6 | 20.0 | <5.032206U | 0.77J |
| 2,3,7,8-TCDD | 0.26 | <1.0004U | <.9888263U | <.9943323U | <.9834776U | 0.96 | 18.8 | <1.006441U | <1.001201U |
| 2,3,7,8-TCDF | 1.4 | <1.0004U | <.9888263U | 2.1 | <.9834776U | 3.9 | 16.9 | <1.006441U | 0.73 |
| TOTAL HPCDD | 122 | 95.5 | 80.5J | 128 | 38.1 | 473 | 14,230J | 70.9 | 50.8 |
| TOTAL HPCDF | 35.0 | 20.7 | <9.888263U | 54.4 | <9.834776U | 135 | 4,030J | <10.06441U | 17.9 |
| TOTAL HXCDD | 34.6 | 22.2 | <14.83239U | 34.8 | <14.75216U | 102 | 4,080 | 14.1 | 7.4 |
| TOTAL HXCDF | <19.82161U | 7.8 | <19.77653U | 24.9 | <19.66955U | 71.6 | 1,190 | <20.12882U | 22.1 |
| TOTAL PECDD | <4.955401UJ | 1.8 | <4.944131U | <4.971662U | <4.917388U | 25.8 | 868 | <5.032206U | <5.006007U |
| TOTAL PECDF | <9.910803UJ | 7.0 | <9.888263U | 19.4 | <9.834776U | 61.6J | 261J | <10.06441U | 17.2J |
| TOTAL TCDD | 2.1J | 0.55 | <.9888263U | 1.6 | <.9834776U | 15.7 | 335 | <1.006441U | <1.001201U |
| TOTAL TCDF | 15.7J | 9.2J | <.9888263U | 31.2 | <.9834776U | 81.8J | 399J | <1.006441U | 4.6J |
| TEQ | 4.37 | 3.3 | 3 | 4.8 | 2.4 | 12.44 | 302.55 | 2.6 | 2.6 |

NOTES:
pptr = Parts per trillion.
J = Estimated.
U = Undetected.
UJ = The compound was analyzed for, but not detected. The associated numerical value is the estimated sample quantitation limit.

| Location ID | SB16-25 | SB16-25 | SB16-26 | SB16-26 | SB16-27 | SB16-27 | SB16-27DUP | SB16-28 | SB16-28 |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | 6/26/00 | 6/26/00 | 6/23/00 | 6/23/00 | 6/26/00 | 6/26/00 | 6/26/00 | 6/26/00 | 6/27/00 |
| Depth of sample | 7-9 | 0-2 | 0-2 | 2-4 | 0-2 | 2-4 | 2-4 | 4-6 | 0-2 |
| Chemical Name | | | | | | | | | |
| 1,2,3,4,6,7,8,9-OCDD | 1,310 | 3,310 | 1,140 | 1,410 | 1,400 | 1,860 | 1,840 | 26,370J | 1,940J |
| 1,2,3,4,6,7,8,9-OCDF | 9.5 | 113 | 77.2 | 98.0 | 68.4 | 87.2 | 69.9 | 851 | 33.6 |
| 1,2,3,4,6,7,8-HPCDD | 52.5 | 664 | 53.7 | 73.0 | 80.0 | 51.8 | 59.0 | 8,340J | 181 |
| 1,2,3,4,6,7,8-HPCDF | 6.4 | 69.2 | 43.1 | 36.7 | 29.2 | 26.3 | 25.8 | 719J | 17.8 |
| 1,2,3,4,7,8,9-HPCDF | <5.027147U | 4.0 | 1.4 | 1.1 | 0.96 | <5.002501U | <5.018569U | <4.852485U | 1.4 |
| 1,2,3,4,7,8-HXCDD | 0.77 | 8.8 | 0.66 | 0.94 | 1.1 | <5.002501U | <5.018569U | 88.1 | 3.2 |
| 1,2,3,4,7,8-HXCDF | 1.1 | 24.4 | 1.6 | 2.1 | 2.7 | 1.5 | 1.0 | 310J | <4.943154U |
| 1,2,3,6,7,8-HXCDD | 2.9 | 36.7 | 2.7 | 4.2 | 3.8 | 2.3 | 2.4 | 505 | 10.6 |
| 1,2,3,6,7,8-HXCDF | <5.027147U | 10.0 | 1.3 | 1.2 | 1.6 | 1.2 | 1.2 | <4.852485UJ | 3.5 |
| 1,2,3,7,8,9-HXCDD | 2.9 | 38.0 | 1.8 | 3.2 | 3.3J | <5.002501U | 1.6 | 556 | 12.1 |
| 1,2,3,7,8,9-HXCDF | <5.027147U | <5.017058U | <5.034233U | <5.010522U | <5.029675U | <5.002501U | <5.018569U | <4.852485U | 0.31 |
| 1,2,3,7,8-PECDD | <5.027147U | 10.0 | <5.034233U | 0.75 | <5.029675U | <5.002501U | <5.018569U | 119 | 4.1 |
| 1,2,3,7,8-PECDF | 0.69 | 20.5J | <5.034233U | 2.9J | <5.029675U | <5.002501U | <5.018569U | 121 | 3.6 |
| 2,3,4,6,7,8-HXCDF | <5.027147U | 11.5 | 2.3 | 1.7 | 3.0 | 2.4 | 2.3 | 215J | 4.1 |
| 2,3,4,7,8-PECDF | <5.027147U | 20.0J | 0.71J | 1.1J | 1.6J | 0.76J | 0.89J | 125 | 5.6 |
| 2,3,7,8-TCDD | <1.005429U | 4.0 | <1.006847U | <1.002104U | <1.005935U | <1.0005U | <1.003714U | 44.5 | 1.1 |
| 2,3,7,8-TCDF | <1.005429U | 28.3 | <1.006847U | <1.002104U | <1.005935U | 0.58 | <1.003714U | 125 | 6.1 |
| TOTAL HPCDD | 99.1 | 1,220 | 105 | 134 | 151 | 109 | 136 | 15,510J | 331 |
| TOTAL HPCDF | 13.5 | 156 | 86.5 | 89.0 | 64.2 | 70.5 | 76.7 | 2,400 | 45.6 |
| TOTAL HXCDD | 28.5 | 340 | 21.7 | 30.6 | 29.7 | 13.9 | 14.2 | 4,630J | 110 |
| TOTAL HXCDF | 6.3 | 125 | 45.9 | 34.1 | 45.3 | 34.9 | 39.5 | 1,160J | 37.3 |
| TOTAL PECDD | 5.6 | 101 | <5.034233U | 4.2 | 2.1 | <5.002501U | <5.018569U | 897 | 40.6 |
| TOTAL PECDF | 1.9 | 197 | 30.4J | 22.3J | 35.7J | 13.3J | 25.2J | 789 | 47.7 |
| TOTAL TCDD | 0.91 | 54.4 | 0.76 | 0.72 | 1.1 | 1.0 | <1.003714U | 505 | 14.0 |
| TOTAL TCDF | 3.2J | 495 | 12.3J | 20.6J | 25.2J | 4.0J | 9.5J | 1,900J | 115 |
| TEQ | 2.9 | 45.21 | 3.4 | 4.29 | 4.24 | 3.7 | 2.83 | 496.68 | 14.14 |

NOTES:
TEQ = Toxicity equivalent. TEQ calculated at half the detection limit for not-detected analytes.

# TABLE 4-8 VOLATILE ORGANIC COMPOUND (VOC) DETECTED IN SEDIMENT SAMPLES (µg/kg)

| Location ID | PAL | OPSED16-01 | SED16-01 | SED16-01-DUP | SED16-02 |
|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | |
| 1,1,1-Trichloroethane | 11,000 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 1,1,2,2-Tetrachloroethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 1,1,2-Trichloroethane | 100 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 1,1-Dichloroethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 1,1-Dichloroethene | 700 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 1,2-Dichloroethane | 100 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 1,2-Dichloropropane | 100 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| 2-Butanone | | < 13 UJ | < 24 UJ | < 10 UJ | < 41 UJ |
| 2-Hexanone | | < 13 UJ | < 24 U | < 10 U | < 41 U |
| 4-Methyl-2-Pentanone | | < 13 UJ | < 24 U | < 10 U | < 41 U |
| Acetone | | 89 J | 84 J | 30 J | 120 J |
| Benzene | 200 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Bromodichloromethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Bromoform | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Bromomethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Carbon Disulfide | | < 6 UJ | 5 J | 50 J | 12 |
| Carbon Tetrachloride | 400 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Chlorobenzene | 3,200 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Chloroethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Chloroform | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Chloromethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| *cis*-1,2-Dichloroethene | 1,700 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| *cis*-1,3-Dichloropropene | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Dibromochloromethane | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Ethylbenzene | 27,000 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| m,p-Xylenes | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Methylene Chloride | | < 6 UJ | < 12 UJ | < 5 U | < 20 U |
| o-Xylene | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Styrene | 2,900 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Tetrachloroethene | 100 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Toluene | 32,000 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Total 1,2-Dichloroethene | | < 6 UJ | < 12 U | < 5 U | < 20 U |
| *trans*-1,2-Dichloroethene | 3,300 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| *trans*-1,3-Dichloropropene | | < 6 UJ | < 12 U | < 5 U | < 20 U |

NOTES:
µg/kg = Micrograms per kilogram.
PAL = Rhode Island Department of Environmental Management (RIDEM) GA leachability criteria.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
J = Estimated value below sample qualification limit.

| Location ID | PAL | OPSED16-01 | SED16-01 | SED16-01-DUP | SED16-02 |
|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | |
| Trichloroethene | 200 | < 6 UJ | < 12 U | < 5 U | < 20 U |
| Vinyl Chloride | 300 | < 13 UJ | < 24 U | < 10 U | < 41 U |
| Total CVOC | | ND | ND | ND | ND |
| Total BTEX | | ND | ND | ND | ND |

NOTES:
CVOC = Chlorinated volatile organic compounds.
ND = Indicates not detected at or above the reporting limit.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.

# TABLE 4-9 SEMIVOLATILE ORGANIC COMPOUND (SVOC) DETECTED IN SEDIMENT SAMPLES (µg/kg)

| Location ID | PAL | OPSED16-01 | SED16-01 | SED16-01-DUP | SED16-02 |
|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | |
| 1,2,4-Trichlorobenzene | 140,000 | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 1,2-Dichlorobenzene | 41,000 | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 1,3-Dichlorobenzene | 41,000 | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 1,4-Dichlorobenzene | 41,000 | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2,2'-Oxybis(1-Chloropropane) | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2,4,5-Trichlorophenol | | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| 2,4,6-Trichlorophenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2,4-Dichlorophenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2,4-Dimethylphenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2,4-Dinitrophenol | | < 3,900 UJ | < 4,100 UJ | < 980 UJ | < 3,200 UJ |
| 2,4-Dinitrotoluene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2,6-Dinitrotoluene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2-Chloronaphthalene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2-Chlorophenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2-Methylnaphthalene | | < 480 UJ | < 620 UJ | < 620 U | < 78 U |
| 2-Methylphenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 2-Nitroaniline | | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| 2-Nitrophenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 3,3'-Dichlorobenzidine | | < 1,600 UJ | < 1,600 UJ | < 400 UJ | < 1,300 UJ |
| 3-Nitroaniline | | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| 4,6-Dinitro-2-Methylphenol | | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| 4-Bromophenyl Phenyl Ether | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 4-Chloro-3-Methylphenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 4-Chloroaniline | | < 1,600 UJ | < 1,600 UJ | < 400 UJ | < 1,300 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 4-Methylphenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| 4-Nitroaniline | | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| 4-Nitrophenol | | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| bis(2-Chloroethoxy) Methane | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| bis(2-Chloroethyl) Ether | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| bis(2-Ethylhexyl) Phthalate | | 3,600 | 430 | 210 | 600 J |
| Butyl Benzyl Phthalate | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Carbazole | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Di-n-Butyl Phthalate | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |

NOTES:
µg/kg = Micrograms per kilogram.
PAL = Rhode Island Department of Environmental Management (RIDEM) GA leachability criteria.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
J = Estimated value below sample qualification limit.

| Location ID | PAL | OPSED16-01 | SED16-01 | SED16-01-DUP | SED16-02 |
|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | |
| Di-n-Octylphthalate | | 550 | < 1,600 U | < 400 U | < 1,300 UJ |
| Dibenzofuran | | < 1,600 U | 270 | 240 | < 1,300 UJ |
| Diethyl Phthalate | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Dimethyl Phthalate | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Hexachlorobenzene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Hexachlorobutadiene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Hexachlorocyclopentadiene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Hexachloroethane | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Isophorone | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| n-Nitroso-Di-n-Propylamine | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| n-Nitrosodiphenylamine | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Nitrobenzene | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |
| Pentachlorophenol | 7,100 | < 3,900 U | < 4,100 U | < 980 U | < 3,200 UJ |
| Phenol | | < 1,600 U | < 1,600 U | < 400 U | < 1,300 UJ |

# TABLE 4-10 POLYCYCLIC AROMATIC HYDROCARBONS (PAH) DETECTED IN SEDIMENT SAMPLES (µg/kg)

| Location ID | PAL | OPSED16-01 | SED16-01 | SED16-01 DUP | SED16-02 |
|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | |
| Acenaphthene | | < 480 U | 1,200 J | 780 | < 78 U |
| Acenaphthylene | | 110 J | < 620 UJ | < 620 U | < 78 U |
| Anthracene | | < 480 UJ | 450 | 210 | < 78 U |
| Anthracene | | 68 | | | |
| Benzo(a)Anthracene | | 200 | 960 | 120 J | 20 |
| Benzo(a)Pyrene | 240,000 | 300 | 370 | 66 | < 78 U |
| Benzo(b)Fluoranthene | | 480 J | 190 J | 130 | 83 J |
| Benzo(k)Fluoranthene | | 340 | 310 | 42 | < 78 U |
| Benzo[g,h,i]Perylene | | 380 | 230 | 56 | 23 |
| Chrysene | | 450 | 2,000 J | 170 J | 34 |
| Dibenzo(a,h)Anthracene | | < 480 U | < 620 U | < 620 U | < 78 UJ |
| Fluoranthene | | 810 | 9,800 J | 1,900 J | 99 J |
| Fluorene | | < 480 UJ | 800 J | 500 | < 78 U |
| Indeno(1,2,3-cd)Pyrene | | 250 | 270 | 51 | < 78 UJ |
| Naphthalene | 800 | < 480 UJ | < 620 UJ | < 620 U | < 78 U |
| Phenanthrene | | 790 J | 260 J | 480 | 44 |
| Pyrene | | 550 | 5,400 J | 680 J | 68 |
| Pyrene | | | 710 | | |

Notes:
µg/kg = Micrograms per kilogram.
PAL = Rhode Island Department of Environmental Management (RIDEM) GA leachability criteria.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
J = Estimated value below sample qualification limit.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

# TABLE 4-11 PESTICIDES DETECTED IN SEDIMENT SAMPLES (µg/kg)

| Location ID | OPSED16-01 | SED16-01 | SED16-01 DUP | SED16-02 |
|---|---|---|---|---|
| Sample Date | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | |
| 4,4'-DDD | < 4.0 U | 4.4 J | 2.5 J | 2.0 J |
| 4,4'-DDE | 1.7 | < 4.1 U | < 4.0 U | 1.5 J |
| 4,4'-DDT | 1.4 J | < 4.1 U | < 4.0 U | 1.8 J |
| Aldrin | < 2.0 U | < 2.1 U | < 2.1 U | < 3.3 U |
| Alpha BHC | < 2.0 U | < 2.1 U | < 2.1 U | < 3.3 U |
| Alpha-Chlordane | < 2.0 U | < 2.1 U | < 2.1 U | < 3.3 U |
| Beta BHC | < 2.0 U | < 2.1 U | < 2.1 U | < 3.3 U |
| Delta BHC | 1.5 | < 2.1 U | < 2.1 U | < 3.3 U |
| Dieldrin | < 4.0 U | < 4.1 U | < 4.0 U | 1.7 J |
| Endosulfan I | < 2.0 U | < 2.1 U | < 2.1 U | < 3.3 U |
| Endosulfan II | < 4.0 U | < 4.1 U | < 4.0 U | < 6.5 U |
| Endosulfan Sulfate | < 4.0 U | 2.2 J | < 4.0 U | < 6.5 U |
| Endrin | < 4.0 U | < 4.1 U | < 4.0 U | < 6.5 U |
| Endrin Aldehyde | < 4.0 U | < 4.1 U | < 4.0 U | < 6.5 U |
| Endrin Ketone | 1.6 | 0.76 J | < 4.0 U | 0.64 J |
| Gamma BHC | < 2.0 U | < 2.1 U | < 2.1 U | < 3.3 U |
| Gamma-Chlordane | 1.7 | < 2.1 U | < 2.1 U | < 3.3 U |
| Heptachlor | < 2.0 U | 0.80 | 0.45 J | 0.71 |
| Heptachlor Epoxide | 1.2 J | < 2.1 U | < 2.1 U | < 3.3 U |
| Methoxychlor | < 20 U | < 21 U | < 21 U | < 33 UJ |
| Toxaphene | < 40 U | < 41 U | < 40 U | < 65 U |

NOTES:

µg/kg = Micrograms per kilogram.
4,4'-DDD = 4,4'-Dichlorodiphenyldichloroethane.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
J = Estimated value below sample qualification limit.
4,4'-DDE = 4,4'-Dichlorodiphenyldichloroethylene.
4,4'-DDT = 4,4'-Dichlorodiphenyltrichloroethane.
BHC = Benzene hexachloride (Lindane).
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

# TABLE 4-12 POLYCHLORINATED BIPHENYLS (PCB) DETECTED IN SEDIMENT SAMPLES (µg/kg)

| Location ID | PAL | OPSED16-01 | SED16-01 | SED16-01 DUP | SED16-02 |
|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | |
| PCB-1016 | 10,000 | < 20 U | < 21 U | < 21 U | < 33 U |
| PCB-1221 | 10,000 | < 20 U | < 21 U | < 21 U | < 33 U |
| PCB-1232 | 10,000 | < 20 U | < 21 U | < 21 U | < 33 U |
| PCB-1242 | 10,000 | < 20 U | < 21 U | < 21 U | < 33 U |
| PCB-1248 | 10,000 | < 20 U | < 21 U | < 21 U | < 33 U |
| PCB-1254 | 10,000 | < 20 U | < 21 U | < 21 U | < 33 U |
| PCB-1260 | 10,000 | < 20 U | 36 | 36 | < 33 U |

NOTES:
µg/kg = Micrograms per kilogram.
PAL = Rhode Island Department of Environmental Management (RIDEM) GA leachability criteria.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).

# TABLE 4-13 METALS DETECTED IN SEDIMENT SAMPLES (mg/kg)

| Sample ID | OPSED16-01 | SED16-01 | SED16-01 DUP | SED16-02 |
|---|---|---|---|---|
| Sample Date | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | |
| Aluminum | 2,370 | 5,710 | 5,350 | 5,670 |
| Antimony | 0.50 J | 1.5 J | < 2.4 UJ | 1.2 J |
| Arsenic | 0.97 | 4.5 | 6.0 | 36.6 |
| Barium | 23.5 | 99.2 | 121 | 29.9 |
| Beryllium | 0.33 | 0.97 | 0.84 | 0.32 |
| Cadmium | < 0.95 U | 1.9 | 0.12 | 0.57 |
| Calcium | 1,380 | 1,970 | 1,660 | 1,660 J |
| Chromium | 33.5 | 19.5 | 26.0 | 11.7 |
| Cobalt | 2.4 | 6.0 | 6.1 | 37.9 |
| Copper | 35.2 J | 231 J | 9,290 J | 13.4 J |
| Iron | 6,400 | 53,800 | 72,900 | 40,900 |
| Lead | 58.6 | 56.6 | 85.6 J | 11.4 |
| Magnesium | 994 J | 1,360 J | 1,790 J | 2,020 J |
| Manganese | 89.0 J | 176 J | 233 J | 788 |
| Mercury | < 0.040 U | 0.07 | 0.04 | < 0.054 UJ |
| Nickel | 3.9 | 53.1 | 54.5 | 7.8 |
| Potassium | 599 | 690 | 615 | 916 |
| Selenium | < 0.95 U | 1.1 | < 3.0 U | < 1.9 U |
| Silver | < 1.4 U | < 1.7 U | < 1.5 U | < 2.8 U |
| Sodium | < 95 U | 299 | 180 | < 190 U |
| Thallium | < 1.4 U | < 3.4 U | < 4.5 U | < 2.8 U |
| Vanadium | 15.8 | 17.1 | 13.8 | 22.9 |
| Zinc | 76.5 J | 374 | 629 J | 50.5 |

NOTES:
mg/kg = Milligrams per kilogram.
J = Estimated value below sample qualification limit.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).

# TABLE 4-14 VOLATILE ORGANIC COMPOUND (VOC) DETECTED IN GROUND-WATER SAMPLES (µg/L)

| Location ID | PAL | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S |
|---|---|---|---|---|---|---|
| Sample Date | | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | 0.3 | 0.3 | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | < 1.0 U | 1 | 2 | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ |
| 2-Hexanone | | < 4 UJ | < 4 UJ | < 4 UJ | < 4 UJ | < 4 UJ |
| 4-Methyl-2-Pentanone | | < 3 UJ | < 3 UJ | < 3 UJ | < 3 UJ | < 3 UJ |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | < 2.0 U | < 2.0 U | 5 | 7 | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | 0.6 | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | < 2.0 U | 0.8 | 0.9 | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

NOTES:
µg/L = Micrograms per liter.
PAL = Project Action Level equals Rhode Island Department of Environmental Management (RIDEM) GA ground-water objective and/or Maximum Contaminant Level (MCL), whichever is more stringent.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

| Location ID | PAL | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S |
|---|---|---|---|---|---|---|
| Sample Date | | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 |
| Chemical Name | | | | | | |
| Trichloroethene | 5 | 3 | 1 | 2,100* | 3,100* | < 1.0 U |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Total CVOC | | 3 | 1 | 2,107.3 | 3,110.3 | ND |
| Total BTEX | | ND | ND | ND | 0.6 | ND |

NOTES:
* = Exceeds PAL.
CVOC = Chlorinated volatile organic compounds.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
ND = Indicates not detected at or above the reporting limit.

| Location ID | PAL | MW16-03D | MW16-03S | MW16-04D | MW16-04S | MW16-05D DUP |
|---|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/22/01 | 3/21/01 | 3/22/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 UJ | < 5 U | < 5 U | 1 | < 5 U |
| 2-Hexanone | | < 4 U | < 4 U | < 4 U | < 4 U | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 UJ | < 3 U | < 3 U | < 3 U | < 3 U |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | < 5 R | < 5 UJ |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | 0.5 | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | < 2.0 U | < 2.0 U | 6 | < 2.0 U | 6 |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | 0.8 |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Trichloroethene | 5 | < 1.0 U | < 1.0 U | 560* | 0.5 | 2,200* |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | 0.9 | < 2.0 U |
| Total CVOC | | ND | ND | 567 | 1.4 | 2,207 |
| Total BTEX | | ND | ND | ND | 0.5 | ND |

| Location ID | PAL | MW16-05D | MW16-05S | MW16-06D | MW16-06S | MW16-07D |
|---|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 | 3/23/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 U | < 5 UJ | < 5 UJ | < 5 U | < 5 U |
| 2-Hexanone | | < 4 U | < 4 UJ | < 4 UJ | < 4 U | < 4 UJ |
| 4-Methyl-2-Pentanone | | < 3 U | < 3 U | < 3 U | < 3 U | < 3 U |
| Acetone | | < 5 UJ | 1 | < 5 UJ | < 5 UJ | 0.8 J |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 UJ | < 2.0 UJ | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 UJ | < 2.0 UJ | < 2.0 U | < 2.0 UJ |
| *cis*-1,2-Dichloroethene | 70 | 7 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ | < 1.0 U |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | 0.9 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Trichloroethene | 5 | 2,300* | < 1.0 U | < 1.0 U | 1 | 1 |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Total CVOC | | 2,308 | ND | ND | 1 | 1 |
| Total BTEX | | ND | ND | ND | ND | ND |

| Location ID | PAL | MW16-07S DUP | MW16-07S | MW16-08D | MW16-09D | MW16-10D DUP |
|---|---|---|---|---|---|---|
| Sample Date | | 3/23/01 | 3/23/01 | 3/28/01 | 3/26/01 | 3/26/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 UJ | 0.4 | < 1.0 U |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | 6 | 6 | < 5 U | < 5 U | < 5 U |
| 2-Hexanone | | < 4 U | < 4 U | < 4 U | < 4 U | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 U | 2 | < 3 U | < 3 U | < 3 U |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ |
| Benzene | 5 | 0.5 | 0.5 | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | < 2.0 U | < 2.0 U | 2 | < 2.0 U | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | 0.6 | 0.7 | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ | < 1.0 UJ |
| o-Xylene | | 0.4 | 0.5 | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 UJ |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | 0.5 |
| Toluene | 100 | 0.5 | 0.4 | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Trichloroethene | 5 | 1 | 0.6 | 190* | < 1.0 U | < 1.0 U |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Total CVOC | | 1 | 0.6 | 192 | 0.4 | 0.5 |
| Total BTEX | | 2 | 2.1 | ND | ND | ND |

| Location ID | PAL | MW16-10D | MW16-10R | MW16-11D | MW16-12D | MW16-13D |
|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/27/01 | 3/26/01 | 3/23/01 | 3/26/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | 0.3 | < 1.0 U | 0.4 | < 1.0 U | 0.3 |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 U | < 5 U | < 5 U | < 5 U | < 5 U |
| 2-Hexanone | | < 4 U | < 4 U | < 4 U | < 4 UJ | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 U | < 3 U | < 3 U | < 3 U | < 3 U |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | < 5 U | 70 J |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | 0.5 | 4 | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 UJ | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ |
| Tetrachloroethene | 5 | 0.6 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Trichloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | 21* | < 1.0 U |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Total CVOC | | 0.9 | ND | 0.4 | 21 | 0.3 |
| Total BTEX | | ND | ND | ND | ND | ND |

| Location ID | PAL | MW16-14D | MW16-15D DUP | MW16-15D | MW16-15R | MW16-16D |
|---|---|---|---|---|---|---|
| Sample Date | | 3/23/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/26/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U** | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | 0.6 |
| 1,1-Dichloroethene | 7 | < 1.0 U | 0.7 | 1 J | < 50 U** | 0.7 |
| 1,2-Dichloroethane | 5 | < 1.0 U | < 1.0 UJ | < 1.0 U | < 50 U** | < 1.0 U |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U** | < 1.0 U |
| 2-Butanone | | < 5 U | < 5 U | < 5 U | < 250 U | < 5 U |
| 2-Hexanone | | < 4 U | < 4 U | < 4 U | < 200 U | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 U | < 3 U | < 3 U | < 150 UJ | < 3 U |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | 130 J | < 5 UJ |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U** | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 UJ | < 1.0 U | < 50 UJ | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 UJ | < 100 UJ | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 50 U** | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| Chloroethane | | 0.6 | < 2.0 U | < 2.0 U | < 100 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 UJ | < 100 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | 5 | 3 | 3 | 110* | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 UJ | < 1.0 U | < 50 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 U | 0.5 | < 1.0 U | < 50 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 50 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 U | < 1.0 UJ | < 50 UJ** | < 1.0 UJ |
| o-Xylene | | < 1 U | 0.6 | 0.4 | < 50 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 UJ | < 50 U | < 1.0 UJ |
| Tetrachloroethene | 5 | < 1.0 U | 0.7 | 0.7 | < 50 U** | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 50 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | < 2.0 U | 0.7 | < 100 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 UJ | < 1.0 U | < 50 U | < 1.0 U |
| Trichloroethene | 5 | 4,900* | 6,400* | 6,200* | 4,600* | 89* |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 UJ | < 100 U** | < 2.0 U |
| Total CVOC | | 4,906.6 | 6,405.4 | 6,205.7 | 4,710 | 90.3 |
| Total BTEX | | ND | 1.1 | 0.4 | ND | ND |

NOTES:
** = Detection limit is above the PAL.

| Location ID | PAL | MW16-17D | MW16-18D | MW16-19D | MW16-20D | MW16-21D |
|---|---|---|---|---|---|---|
| Sample Date | | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | 1 |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | 0.7 |
| 1,2-Dichloroethane | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 U | < 5 UJ | < 5 U | < 5 U | < 5 UJ |
| 2-Hexanone | | < 4 U | < 4 UJ | < 4 U | < 4 U | < 4 UJ |
| 4-Methyl-2-Pentanone | | < 3 U | < 3 UJ | < 3 UJ | < 3 UJ | < 3 UJ |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | 8 J | < 5 UJ |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | 1 | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 UJ | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 UJ | < 2.0 UJ | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | 0.5 | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | 1 |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ | < 1.0 UJ |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | 0.4 |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Trichloroethene | 5 | < 1.0 U | 0.7 | 390* | 1 | 1,900* |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Total CVOC | | ND | 0.7 | 390 | 1 | 1,904.1 |
| Total BTEX | | ND | ND | ND | 1 | ND |

| Location ID | PAL | MW16-22D | MW16-23D | MW16-25D | MW16-25R | MW16-25R DUP |
|---|---|---|---|---|---|---|
| Sample Date | | 3/28/01 | 3/28/01 | 3/27/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | 0.4 J | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | 1 | 0.5 | 0.7 | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 UJ | < 1.0 U | 0.4 | < 1.0 UJ | < 1.0 UJ |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 U | < 5 UJ | < 5 U | < 5 U | < 5 U |
| 2-Hexanone | | < 4 U | < 4 UJ | < 4 UJ | < 4 U | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 U | < 3 UJ | < 3 U | < 3 U | < 3 U |
| Acetone | | < 5 UJ | 100 J | < 5 UJ | < 5 UJ | < 5 UJ |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 UJ |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 UJ | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | 1 | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 UJ |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | 0.4 | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | 10 | 4 | 2 | < 2.0 U | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 UJ |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 U |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | 0.5 | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | 0.8 | 0.9 |
| *trans*-1,2-Dichloroethene | 100 | 0.6 | < 2.0 U | < 2.0 UJ | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 UJ |
| Trichloroethene | 5 | 2,600* | 3,500* | 890* | < 1.0 U | < 1.0 U |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 UJ | < 2.0 U | < 2.0 U |
| Total CVOC | | 2,611 | 3,504.5 | 894 | 0.4 | ND |
| Total BTEX | | ND | ND | ND | 0.8 | 0.9 |

| Location ID | PAL | MW16-26D | MW16-27D | MW16-27R | MW16-28D | MW16-28R |
|---|---|---|---|---|---|---|
| Sample Date | | 3/21/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 U | 1 | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ |
| 1,2-Dichloropropane | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 U | < 5 U | < 5 U | < 5 UJ | < 5 U |
| 2-Hexanone | | < 4 U | < 4 U | < 4 U | < 4 UJ | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 U | < 3 U | < 3 U | < 3 UJ | < 3 U |
| Acetone | | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ | < 5 UJ |
| Benzene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ |
| Bromomethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ |
| Chlorobenzene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Chloroform | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | < 2.0 U | 9 | 1 | 0.8 | < 2.0 U |
| *cis*-1,3-Dichloropropene | | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ |
| Ethylbenzene | 70 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U |
| o-Xylene | | < 1 U | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | < 2.0 U | 0.7 | < 2.0 U | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 U | < 1.0 UJ | < 1.0 UJ | < 1.0 U | < 1.0 UJ |
| Trichloroethene | 5 | 0.7 | 310* | 1 | 120* | 0.9 |
| Vinyl Chloride | 2 | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Total CVOC | | 0.7 | 321 | 2 | 120.8 | 0.9 |
| Total BTEX | | ND | ND | ND | ND | ND |

| Location ID | PAL | MW16-29D | OPW16-01 | SEEP16-01 DUP | SEEP16-01 | SEEP16-02 |
|---|---|---|---|---|---|---|
| Sample Date | | 3/21/01 | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | | |
| 1,1,1-Trichloroethane | 200 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2,2-Tetrachloroethane | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1,2-Trichloroethane | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethane | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,1-Dichloroethene | 7 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 1,2-Dichloroethane | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 UJ |
| 1,2-Dichloropropane | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| 2-Butanone | | < 5 UJ | < 5 U | < 5 U | < 5 U | < 5 U |
| 2-Hexanone | | < 4 UJ | < 4 UJ | < 4 UJ | < 4 UJ | < 4 U |
| 4-Methyl-2-Pentanone | | < 3 UJ | < 3 U | < 3 U | < 3 U | < 3 U |
| Acetone | | < 5 UJ | 0.9 J | < 5 UJ | < 5 UJ | < 5 UJ |
| Benzene | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromodichloromethane | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Bromoform | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 UJ |
| Bromomethane | | < 2.0 UJ | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| Carbon Disulfide | | 0.5 J | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Carbon Tetrachloride | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 UJ | < 1.0 U |
| Chlorobenzene | 100 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloroethane | | < 2.0 UJ | < 2.0 U | < 2.0 U | < 2.0 UJ | < 2.0 U |
| Chloroform | | 0.5 J | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Chloromethane | | < 2.0 UJ | < 2.0 UJ | < 2.0 UJ | < 2.0 U | < 2.0 U |
| *cis*-1,2-Dichloroethene | 70 | 52 J | < 2.0 U | < 2.0 U | < 2.0 U | 0.7 |
| *cis*-1,3-Dichloropropene | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Dibromochloromethane | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Ethylbenzene | 70 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| m,p-Xylenes | | < 1 UJ | < 1 U | < 1 U | < 1 U | < 1 U |
| Methylene Chloride | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| o-Xylene | | < 1 UJ | < 1 U | < 1 U | < 1 U | < 1 U |
| Styrene | 100 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Tetrachloroethene | 5 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Toluene | 100 | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| *trans*-1,2-Dichloroethene | 100 | 3 J | < 2.0 U | < 2.0 U | < 2.0 U | < 2.0 U |
| *trans*-1,3-Dichloropropene | | < 1.0 UJ | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |
| Trichloroethene | 5 | 2,700* | < 1.0 U | < 1.0 U | < 1.0 U | 0.7 |
| Vinyl Chloride | 2 | 2 J* | < 2.0 U | 0.4 | 0.5 J | < 2.0 U |
| Total CVOC | | 2,757.5 | ND | 0.4 | 0.5 | 1.4 |
| Total BTEX | | ND | ND | ND | ND | ND |

# TABLE 4-15 COMPARISON OF DETECTED CONCENTRATIONS OF TRICHLOROETHENE AND TOTAL CHLORINATED VOLATILE ORGANIC COMPOUNDS

| Ground-Water Zone | Sample Designation | Total CVOC (µg/L) | TCE (µg/L) | % TCE of Total CVOC |
|---|---|---|---|---|
| **Shallow** | MW16-01S | 1 | 1 | 100% |
| | MW16-02S | ND | ND | ND |
| | MW16-03S | ND | ND | ND |
| | MW16-04S | 1.4 | 0.5 | 36% |
| | MW16-05S | ND | ND | ND |
| | MW16-06S | 1 | 1 | 100% |
| | MW16-07S DUP | 1 | 1 | 100% |
| | MW16-07S | 0.6 | 0.6 | 100% |
| **Deep** | MW16-01D | 3 | 3 | 100% |
| | MW16-02D | 2,107.3 | 2,100 | 100% |
| | MW16-03D | ND | ND | ND |
| | MW16-04D | 567 | 560 | 99% |
| | MW16-05D DUP | 2,207 | 2,200 | 100% |
| | MW16-05D | 2,308 | 2,300 | 100% |
| | MW16-06D | ND | ND | ND |
| | MW16-07D | 1 | 1 | 100% |
| | MW16-08D | 192 | 190 | 99% |
| | MW16-09D | 0.4 | ND | 0% |
| | MW16-10D DUP | 0.5 | ND | 0% |
| | MW16-10D | 0.9 | ND | 0% |
| | MW16-11D | 0.4 | ND | 0% |
| | MW16-12D | 21 | 21 | 100% |
| | MW16-13D | 0.3 | ND | 0% |
| | MW16-14D | 4,906.6 | 4,900 | 100% |
| | MW16-15D DUP | 6,405.4 | 6,400 | 100% |
| | MW16-15D | 6,205.7 | 6,200 | 100% |
| | MW16-16D | 90.3 | 89 | 99% |
| | MW16-17D | ND | ND | ND |
| | MW16-18D | 0.7 | 0.7 | 100% |
| | MW16-19D | 390 | 390 | 100% |
| | MW16-20D | 1 | 1 | 100% |
| | MW16-21D | 1,904.1 | 1,900 | 100% |
| | MW16-22D | 2,611 | 2,600 | 100% |
| | MW16-23D | 3,504.5 | 3,500 | 100% |
| | MW16-25D | 894 | 890 | 100% |
| | MW16-26D | 0.7 | 0.7 | 100% |
| | MW16-27D | 321 | 310 | 97% |
| | MW16-28D | 120.8 | 120 | 99% |
| | MW16-29D | 2,757.5 | 2,700 | 98% |

NOTES:
CVOC = Chlorinated volatile organic compounds.
µg/L = Micrograms per liter.
TCE = Trichloroethene.
ND = Not detected.

| Ground-Water Zone | Sample Designation | Total CVOC (µg/L) | TCE (µg/L) | % TCE of Total CVOC |
|---|---|---|---|---|
| **Bedrock** | MW16-02R | 3,110.3 | 3,100 | 100% |
| | MW16-10R | ND | ND | ND |
| | MW16-15R | 4,710 | 4,600 | 98% |
| | MW16-25R | 0.4 | ND | 0% |
| | MW16-25R DUP | ND | ND | ND |
| | MW16-27R | 2 | 1 | 50% |
| | MW16-28R | 0.9 | 0.9 | 100% |

# TABLE 4-16 SEMIVOLATILE ORGANIC COMPOUND (SVOC) DETECTED IN GROUND-WATER SAMPLES (µg/L)

| Location ID | PAL | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S | MW16-03D | MW16-03S | MW16-04D |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/22/01 | 3/21/01 | 3/22/01 |
| Chemical Name | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U |
| 1,4-Dichlorobenzene | 75 | < 10 U | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dimethylphenol | | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dinitrophenol | | < 25 U | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chlorophenol | | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2-Nitrophenol | | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U |
| 3-Nitroaniline | | < 25 U | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 U | < 25 U | < 25 U |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloroaniline | | < 10 U | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |

NOTES:
µg/L = Micrograms per liter.
PAL = Project Action Level equals Rhode Island Department of Environmental Management (RIDEM) GA.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

| Location ID | PAL | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S | MW16-03D | MW16-03S | MW16-04D |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/22/01 | 3/21/01 | 3/22/01 |
| Chemical Name | | | | | | | | | |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| bis(2-Ethylhexyl) Phthalate | 6 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorobenzene | 1 | < 10 UJ** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Hexachlorobutadiene | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Hexachloroethane | | < 10 U | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** |
| Phenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Pyrene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |

NOTES:
** = Detection limit is above PAL.

| Location ID | PAL | MW16-04S | MW16-05D DUP | MW16-05D | MW16-05S | MW16-06D | MW16-06S | MW16-07D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/21/01 | 3/22/01 | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 | 3/23/01 |
| Chemical Name | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,4-Dichlorobenzene | 75 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dimethylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dinitrophenol | | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2-Nitrophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 3-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloroaniline | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |

| Location ID | PAL | MW16-04S | MW16-05D DUP | MW16-05D | MW16-05S | MW16-06D | MW16-06S | MW16-07D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/21/01 | 3/22/01 | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 | 3/23/01 |
| Chemical Name | | | | | | | | |
| bis(2-Ethylhexyl) Phthalate | 6 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | 7* | 5 | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorobenzene | 1 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Hexachlorobutadiene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Hexachloroethane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** |
| Phenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Pyrene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |

NOTES:
* = Exceeds PAL.

| Location ID | PAL | MW16-07S DUP | MW16-07S | MW16-08D | MW16-09D | MW16-10D DUP | MW16-10D | MW16-10R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/23/01 | 3/23/01 | 3/28/01 | 3/26/01 | 3/26/01 | 3/26/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 UJ | < 10 U | < 10 R | < 10 R | < 10 U |
| 1,4-Dichlorobenzene | 75 | < 10 U | < 10 U | 2 J | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4-Dimethylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4-Dinitrophenol | | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 R | < 25 R | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2-Chlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| 2-Nitrophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 U | < 10 U | < 10 UJ | < 10 U | < 10 R | < 10 R | < 10 U |
| 3-Nitroaniline | | < 25 U | < 25 U | < 25 UJ | < 25 U | < 25 R | < 25 R | < 25 U |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 4-Chloroaniline | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 R | < 10 R | < 10 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |

| Location ID | PAL | MW16-07S DUP | MW16-07S | MW16-08D | MW16-09D | MW16-10D DUP | MW16-10D | MW16-10R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/23/01 | 3/23/01 | 3/28/01 | 3/26/01 | 3/26/01 | 3/26/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| bis(2-Ethylhexyl) Phthalate | 6 | 18 J* | < 10 UJ** | < 10 U** | < 10 U** | < 10 R** | < 10 R** | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Hexachlorobenzene | 1 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 R** | < 10 R** | < 10 U** |
| Hexachlorobutadiene | | < 10 U | < 10 U | < 10 UJ | < 10 U | < 10 R | < 10 R | < 10 U |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 R | < 10 R | < 10 UJ |
| Hexachloroethane | | < 10 U | < 10 U | < 10 UJ | < 10 UJ | < 10 R | < 10 R | < 10 UJ |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 R** | < 25 R** | < 25 U** |
| Phenol | | < 10 U | < 10 U | < 10 U | < 10 UJ | < 10 R | < 10 R | < 10 UJ |
| Pyrene | | < 10 U | < 10 U | < 10 U | < 10 UJ | < 10 R | < 10 R | < 10 UJ |

| Location ID | PAL | MW16-11D | MW16-12D | MW16-13D | MW16-14D | MW16-15D DUP | MW16-15D | MW16-15R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/23/01 | 3/26/01 | 3/23/01 | 3/27/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 1,4-Dichlorobenzene | 75 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4-Dimethylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2,4-Dinitrophenol | | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 R | < 25 R | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 2-Chlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 U | < 25 U |
| 2-Nitrophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 UJ | < 10 U |
| 3-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 U | < 25 U |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 4-Chloroaniline | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 R | < 10 UJ | < 10 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 R | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 U | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 R | < 25 R | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |

| Location ID | PAL | MW16-11D | MW16-12D | MW16-13D | MW16-14D | MW16-15D DUP | MW16-15D | MW16-15R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/23/01 | 3/26/01 | 3/23/01 | 3/27/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| bis(2-Ethylhexyl) Phthalate | 6 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 R** | < 10 U** | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Hexachlorobenzene | 1 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 R** | < 10 U** | < 10 U** |
| Hexachlorobutadiene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 R | < 10 UJ | < 10 UJ |
| Hexachloroethane | | < 10 UJ | < 10 U | < 10 UJ | < 10 U | < 10 R | < 10 UJ | < 10 UJ |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 R | < 10 U | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 R** | < 25 R** | < 25 U** |
| Phenol | | < 10 UJ | < 10 U | < 10 UJ | < 10 U | < 10 R | < 10 R | < 10 UJ |
| Pyrene | | < 10 UJ | < 10 U | < 10 UJ | < 10 U | < 10 R | < 10 UJ | < 10 UJ |

| Location ID | PAL | MW16-16D | MW16-17D | MW16-18D | MW16-19D | MW16-20D | MW16-21D | MW16-22D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 |
| Chemical Name | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 U | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 1,4-Dichlorobenzene | 75 | < 10 U | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 28 U | < 25 R | < 25 U | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 2,4-Dimethylphenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 2,4-Dinitrophenol | | < 25 UJ | < 25 UJ | < 25 UJ | < 28 UJ | < 25 R | < 25 UJ | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 2-Chlorophenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 28 U | < 25 UJ | < 25 U | < 25 U |
| 2-Nitrophenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 U | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 3-Nitroaniline | | < 25 U | < 25 UJ | < 25 UJ | < 28 UJ | < 25 UJ | < 25 UJ | < 25 UJ |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 28 U | < 25 R | < 25 U | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 4-Chloroaniline | | < 10 UJ | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 28 U | < 25 UJ | < 25 U | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 28 U | < 25 R | < 25 U | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |

| Location ID | PAL | MW16-16D | MW16-17D | MW16-18D | MW16-19D | MW16-20D | MW16-21D | MW16-22D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 |
| Chemical Name | | | | | | | | |
| bis(2-Ethylhexyl) Phthalate | 6 | < 10 U** | < 10 U** | < 10 U** | < 11 U** | < 10 UJ** | 5 | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | < 10 U | < 10 U | 0.9 | < 10 UJ | < 10 U | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Hexachlorobenzene | 1 | < 10 U** | < 10 U** | < 10 U** | < 11 U** | < 10 UJ** | < 10 U** | < 10 U** |
| Hexachlorobutadiene | | < 10 U | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Hexachloroethane | | < 10 UJ | < 10 UJ | < 10 UJ | < 11 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 28 U** | < 25 R** | < 25 U** | < 25 U** |
| Phenol | | < 10 UJ | < 10 U | < 10 U | < 11 U | < 10 R | < 10 U | < 10 U |
| Pyrene | | < 10 UJ | < 10 U | < 10 U | < 11 U | < 10 UJ | < 10 U | < 10 U |

| Location ID | PAL | MW16-23D | MW16-24D | MW16-25D | MW16-25R DUP | MW16-25R | MW16-26D | MW16-27D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/28/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 U | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,4-Dichlorobenzene | 75 | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dimethylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dinitrophenol | | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2-Nitrophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U |
| 3-Nitroaniline | | < 25 UJ | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloroaniline | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |

| Location ID | PAL | MW16-23D | MW16-24D | MW16-25D | MW16-25R DUP | MW16-25R | MW16-26D | MW16-27D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/28/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| bis(2-Ethylhexyl) Phthalate | 6 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | 10* | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | 0.6 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorobenzene | 1 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Hexachlorobutadiene | | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Hexachloroethane | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 UJ |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** |
| Phenol | | < 10 U | < 10 U | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 UJ |
| Pyrene | | < 10 U | < 10 U | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 UJ |

| Location ID | PAL | MW16-27R | MW16-28D | MW16-28R | MW16-29D | OPW16-01 | SEEP16-01 | SEEP16-01 |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/22/01 | 3/21/01 | 3/21/01 |
| Chemical Name | | | | | | | | |
| 1,2,4-Trichlorobenzene | 70 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,2-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,3-Dichlorobenzene | 600 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 1,4-Dichlorobenzene | 75 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,2'-Oxybis(1-Chloropropane) | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4,5-Trichlorophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2,4,6-Trichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dichlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dimethylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,4-Dinitrophenol | | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ | < 25 UJ |
| 2,4-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2,6-Dinitrotoluene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chloronaphthalene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Chlorophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 2-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 2-Nitrophenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 3,3'-Dichlorobenzidine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 3-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4,6-Dinitro-2-Methylphenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Bromophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloro-3-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Chloroaniline | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| 4-Chlorophenyl Phenyl Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Methylphenol | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| 4-Nitroaniline | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| 4-Nitrophenol | | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| bis(2-Chloroethoxy) Methane | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| bis(2-Chloroethyl) Ether | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |

| Location ID | PAL | MW16-27R | MW16-28D | MW16-28R | MW16-29D | OPW16-01 | SEEP16-01 | SEEP16-01 |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/22/01 | 3/21/01 | 3/21/01 |
| Chemical Name | | | | | | | | |
| bis(2-Ethylhexyl) Phthalate | 6 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | 39* | < 10 U** | < 10 U** |
| Butyl Benzyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Carbazole | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Butyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Di-n-Octylphthalate | | < 10 U | < 10 U | < 10 U | < 10 U | 1 | < 10 U | < 10 U |
| Dibenzofuran | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | 11 | 12 |
| Diethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Dimethyl Phthalate | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorobenzene | 1 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Hexachlorobutadiene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Hexachlorocyclopentadiene | 50 | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ | < 10 UJ |
| Hexachloroethane | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U |
| Isophorone | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitroso-Di-n-Propylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| n-Nitrosodiphenylamine | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Nitrobenzene | | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Pentachlorophenol | 1 | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** | < 25 U** |
| Phenol | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | < 10 U | < 10 U |
| Pyrene | | < 10 UJ | < 10 UJ | < 10 UJ | < 10 U | < 10 U | 1 | 2 |

# TABLE 4-17 POLYCYCLIC AROMATIC HYDROCARBONS (PAH) DETECTED IN GROUND-WATER SAMPLES (µg/L)

| Location ID | PAL | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S | MW16-03D | MW16-03S | MW16-04D |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/22/01 | 3/21/01 | 3/22/01 |
| Chemical Name | | | | | | | | | |
| 2-Methylnaphthalene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U** | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(b)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(k)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Chrysene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluorene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Indeno(1,2,3-cd)Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Naphthalene | 20 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Phenanthrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 1 U | < 0.2 U | < 0.2 U | < 0.2 U |

NOTES:
µg/L = Micrograms per liter.
PAL = Project Action Level equals Rhode Island Department of Environmental Management (RIDEM) GA.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
** = Detection limit is above PAL.

| Location ID | PAL | MW16-04S | MW16-05D DUP | MW16-05D | MW16-05S | MW16-06D | MW16-06S | MW16-07D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/21/01 | 3/22/01 | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 | 3/23/01 |
| Chemical Name | | | | | | | | |
| 2-Methylnaphthalene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthene | | 0.1 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(b)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ |
| Benzo(k)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Chrysene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluoranthene | | 0.1 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluorene | | 0.1 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Indeno(1,2,3-cd)Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Naphthalene | 20 | 0.1 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Phenanthrene | | 0.1 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |

NOTES:
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.

| Location ID | PAL | MW16-07S DUP | MW16-07S | MW16-08D | MW16-09D | MW16-10D DUP | MW16-10D | MW16-10R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/23/01 | 3/23/01 | 3/28/01 | 3/26/01 | 3/26/01 | 3/26/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| 2-Methylnaphthalene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthylene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Anthracene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Anthracene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 2 U** | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(b)Fluoranthene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(k)Fluoranthene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Chrysene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluoranthene | | 1 J | 0.5 J | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluorene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Indeno(1,2,3-cd)Pyrene | | < 2 U | < 0.2 UJ | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Naphthalene | 20 | < 2 U | < 0.2 UJ | < 0.2 U | 0.2 J | < 0.2 U | < 0.2 U | < 0.2 U |
| Phenanthrene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | 0.06 |
| Pyrene | | < 2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |

NOTES:
J = Estimated value below sample qualification limit.

| Location ID | PAL | MW16-11D | MW16-12D | MW16-13D | MW16-14D | MW16-15D DUP | MW16-15D | MW16-15R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/23/01 | 3/26/01 | 3/23/01 | 3/27/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| 2-Methylnaphthalene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Anthracene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Benzo(b)Fluoranthene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 UJ | < 0.2 UJ |
| Benzo(k)Fluoranthene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Chrysene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluorene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Indeno(1,2,3-cd)Pyrene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Naphthalene | 20 | 0.1 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Phenanthrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Pyrene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |

| Location ID | PAL | MW16-16D | MW16-17D | MW16-18D | MW16-19D | MW16-20D | MW16-21D | MW16-22D | MW16-23D |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 |
| Chemical Name | | | | | | | | | |
| 2-Methylnaphthalene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(b)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(k)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Chrysene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluorene | | < 0.2 U | < 0.2 UJ | < 0.2 UJ | < 0.2 U | < 0.2 UJ | < 0.2 UJ | < 0.2 UJ | < 0.2 UJ |
| Indeno(1,2,3-cd)Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Naphthalene | 20 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Phenanthrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |

| Location ID | PAL | MW16-24D | MW16-25D | MW16-25R | MW16-25R DUP | MW16-26D | MW16-27D | MW16-27R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| 2-Methylnaphthalene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Acenaphthylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Anthracene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(b)Fluoranthene | | < 0.2 U | < 0.2 UJ | < 0.2 UJ | < 0.2 UJ | < 0.2 U | < 0.2 UJ | < 0.2 UJ |
| Benzo(k)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Chrysene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Fluorene | | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Indeno(1,2,3-cd)Pyrene | | < 0.2 U | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Naphthalene | 20 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Phenanthrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |

| Location ID | PAL | MW16-28D | MW16-28R | MW16-29D | OPW16-01 | SEEP16-01 DUP | SEEP16-01 | SEEP16-02 |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/21/01 | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | | | | |
| 2-Methylnaphthalene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | 0.9 | 1 | < 0.2 U |
| Acenaphthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | 37 | 34 | < 0.2 U |
| Acenaphthylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | 0.2 | 0.2 J | < 0.2 U |
| Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | 1 J | 2 J | < 0.2 U |
| Benzo(a)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(a)Pyrene | 0.2 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(b)Fluoranthene | | < 0.2 UJ | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo(k)Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Benzo[g,h,i]Perylene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Chrysene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U |
| Dibenzo(a,h)Anthracene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Fluoranthene | | < 0.2 U | < 0.2 U | < 0.2 U | 0.1 | 3 J | 2 J | < 0.2 U |
| Fluorene | | < 0.2 UJ | < 0.2 U | < 0.2 U | < 0.2 U | 15 | 14 | < 0.2 U |
| Indeno(1,2,3-cd)Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 UJ | < 0.2 U |
| Naphthalene | 20 | < 0.2 U | < 0.2 U | < 0.2 U | < 0.2 U | 2 | 6 J | < 0.2 U |
| Phenanthrene | | < 0.2 U | < 0.2 U | < 0.2 U | 0.1 | 5 J | 9 | < 0.2 U |
| Pyrene | | < 0.2 U | < 0.2 U | < 0.2 U | 0.1 | 1 | 1 | < 0.2 U |

# TABLE 4-18 PESTICIDES DETECTED IN GROUND-WATER SAMPLES (µg/L)

| Location ID | PAL | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S | MW16-03D | MW16-03S |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/22/01 | 3/21/01 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 UJ |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 U |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 UJ | < 0.050 U |
| Endosulfan II | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 U |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.053 U | 0.004 J | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.053 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 U | < 0.50 U | < 0.53 U | < 0.50 U | < 0.50 U | < 0.50 UJ | < 0.50 UJ |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.1 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

NOTES:
µg/L = Micrograms per liter.
PAL = Project Action Level equals Rhode Island Department of Environmental Management (RIDEM) GA.
DDD = Dichlorodiphenyldichloroethane (Rhothane).
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
DDE = Dichlorodiphenyldichloroethane.
DDT = Dichlorodiphenyltrichloroethane.
BHC = Benzene hexachloride (Lindane).
J = Estimated value below sample qualification limit.

| Location ID | PAL | MW16-04D | MW16-04S | MW16-05D DUP | MW16-05D | MW16-05S | MW16-06D | MW16-06S |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

| Location ID | PAL | MW16-07D | MW16-07S DUP | MW16-07S | MW16-08D | MW16-09D | MW16-10D DUP |
|---|---|---|---|---|---|---|---|
| Sample Date | | 3/23/01 | 3/23/01 | 3/23/01 | 3/28/01 | 3/26/01 | 3/26/01 |
| Chemical Name | | | | | | | |
| 4,4'-DDD | | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 U | < 0.10 U |
| Aldrin | | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | 0.011 | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 UJ |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.051 U | < 0.051 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 UJ | < 0.51 UJ | < 0.51 UJ | < 0.50 U | < 0.50 U | < 0.50 U |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

| Location ID | PAL | MW16-10D | MW16-10R | MW16-11D | MW16-12D | MW16-13D | MW16-14D |
|---|---|---|---|---|---|---|---|
| Sample Date | | 3/26/01 | 3/27/01 | 3/26/01 | 3/23/01 | 3/26/01 | 3/23/01 |
| Chemical Name | | | | | | | |
| 4,4'-DDD | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 U | < 0.10 UJ |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 U | < 0.10 UJ |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 U | < 0.10 UJ |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 UJ | < 0.50 U | < 0.50 UJ |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

| Location ID | PAL | MW16-15D DUP | MW16-15D | MW16-15R | MW16-16D | MW16-17D | MW16-18D |
|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/27/01 | 3/26/01 | 3/28/01 | 3/28/01 |
| Chemical Name | | | | | | | |
| 4,4'-DDD | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 U | < 0.10 UJ | < 0.10 U | < 0.10 UJ | < 0.10 U | < 0.10 U |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U | < 0.50 U |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

| Location ID | PAL | MW16-19D | MW16-20D | MW16-21D | MW16-22D | MW16-23D | MW16-24D |
|---|---|---|---|---|---|---|---|
| Sample Date | | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/27/01 |
| Chemical Name | | | | | | | |
| 4,4'-DDD | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.11 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.051 U | < 0.053 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 U | < 0.50 U | < 0.51 U | < 0.53 U | < 0.50 U | < 0.50 U |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.1 U | < 1.0 U | < 1.0 U |

| Location ID | PAL | MW16-25D | MW16-25R | MW16-25R DUP | MW16-26D | MW16-27D | MW16-27R |
|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | | |
| 4,4'-DDD | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 U | < 0.10 U |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 UJ | < 0.50 U | < 0.50 U | < 0.50 UJ | < 0.50 U | < 0.50 U |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

| Location ID | PAL | MW16-28D | MW16-28R | MW16-29D | OPW16-01 | SEEP16-01 | SEEP16-01 | SEEP16-02 |
|---|---|---|---|---|---|---|---|---|
| Sample Date | | 3/27/01 | 3/27/01 | 3/21/01 | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | | | | |
| 4,4'-DDD | | < 0.10 U | < 0.10 U | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 UJ | < 0.10 U |
| 4,4'-DDE | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| 4,4'-DDT | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Aldrin | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Alpha BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | 0.035 | 0.030 J | < 0.050 U |
| Alpha-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Beta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Delta BHC | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Dieldrin | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan I | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Endosulfan II | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endosulfan Sulfate | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin | 2 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Endrin Aldehyde | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 UJ |
| Endrin Ketone | | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| Gamma BHC | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Gamma-Chlordane | | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor | 0.4 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Heptachlor Epoxide | 0.2 | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U | < 0.050 U |
| Methoxychlor | 40 | < 0.50 U | < 0.50 U | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ | < 0.50 UJ | < 0.50 U |
| Toxaphene | 3 | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U | < 1.0 U |

# TABLE 4-19 TOTAL METALS AND SALINITY DETECTED IN GROUND-WATER SAMPLES (μg/L)

| Location ID | Project Action | Background | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S | MW16-03D | MW16-03S |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/22/01 | 3/21/01 |
| Chemical Name | | | | | | | | | |
| Aluminum | | 5,315 | 935 J | < 300 U | < 300 U | 2,600 J | < 300 U | < 300 U | < 300 U |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 22.7 | 29.4 | 8.9 | 26.8 | 10.7 | 9.9 | 8.8 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 15,800 | 8,770 | 6,530 | 9,480 | 27,000 | 6,610 J | 24,700 J |
| Chromium | 100 | 214 | 1.2 | < 15 U | < 15 U | 4.4 | 0.63 J | 0.65 J | < 15 U |
| Cobalt | | 24.9 | 5.2 | < 30 U | 1.8 J | 3.8 | < 30 U | < 30 U | < 30 U |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| Iron | | 25,500 | 15,600 | < 100 U | 2,770 | 9,590 | < 100 U | 470 J | 3,220 J |
| Lead | 15 | 4.8 | < 5.0 U | < 5.0 U | < 5.0 U | 2.0 J | < 5.0 U | < 5.0 U | < 5.0 U |
| Magnesium | | 5,126 | 5,500 | 2,890 | 2,140 | 3,260 | 2,750 | 5,580 | 3,230 |
| Manganese | | 3,292 | 801 | 49.6 | 231 | 493 | 1.5 | 130 J | 180 J |
| Nickel | 100 | 154 | 5.7 | < 40 U | < 40 U | 7.0 | < 40 U | 4.1 | 1.1 J |
| Potassium | | 3,843 | 2,370 | 1,790 | 1,350 | 4,680 | 3,510 | 2,410 | 2,420 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 15,200 | 99,800 | 10,700 | 11,600 | 68,700 | 25,200 J | 9,860 J |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |

NOTES:
Background inorganic ground-water concentrations from Stone & Webster's Final Background Inorganics Ground-Water Study Report.
μg/L = Micrograms per liter.
PAL = Project Action Level equals Rhode Island Department of Environmental Management (RIDEM) GA ground-water objective and/or Maximum Contaminant Level (MCL), whichever is more stringent.
J = Estimated value below sample qualification limit.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).
** = Detection limit is above PAL.

| Location ID | Project Action | Background | MW16-01D | MW16-01S | MW16-02D | MW16-02R | MW16-02S | MW16-03D | MW16-03S |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/29/01 | 3/22/01 | 3/21/01 |
| Chemical Name | | | | | | | | | |
| Vanadium | | 24.4 | 1.1 | < 25 U | < 25 U | 4.9 | < 25 U | < 25 U | < 25 U |
| Zinc | | 89.9 | 20.8 | < 25 U | < 25 U | 36.1 | < 25 U | 4.0 | < 25 U |
| Salinity (ppth) | | | 0.049 J | 0.22 J | < 0 UJ | < 0 UJ | 0.18 J | 0.017 J | 0.00040 J |
| NTU | | | 60 | 8.6 | 3.6 | 55 | 0 | 4.9 | 10 |

NOTES:
ppth = Parts per thousand.
UJ = The compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit.
NTU = Nephelometric turbidity units.

| Location ID | Project Action | Background | MW16-04D | MW16-04S | MW16-05D DUP | MW16-05D | MW16-05S | MW16-06D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/22/01 | 3/21/01 | 3/22/01 | 3/22/01 | 3/21/01 | 3/22/01 |
| Chemical Name | | | | | | | | |
| Aluminum | | 5,315 | < 300 U | < 300 U | < 300 U | < 300 U | < 300 U | < 300 U |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | 2.8 J | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 12.3 | 253 | 5.4 | 5.5 | 7.9 | 10.8 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 8,860 J | 66,400 J | 4,910 J | 4,940 J | 25,400 J | 9,440 J |
| Chromium | 100 | 214 | 1.0 J | 0.63 J | < 15 U | < 15 U | < 15 U | < 15 U |
| Cobalt | | 24.9 | < 30 U | 1.4 J | < 30 U | 1.2 J | 3.6 | 1.7 J |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| Iron | | 25,500 | 4,140 J | 27,700 J | 585 J | 577 J | 27,800 J | 6,280 J |
| Lead | 15 | 4.8 | < 5.0 U | 1.6 J | < 5.0 U | < 5.0 U | < 5.0 U | < 5.0 U |
| Magnesium | | 5,126 | 2,750 | 9,520 | 1,850 | 1,880 | 2,360 | 4,560 |
| Manganese | | 3,292 | 251 J | 733 J | 111 J | 112 J | 1,350 J | 435 J |
| Nickel | 100 | 154 | < 40 U | 1.5 | 1.6 | 2.1 | 2.7 | 1.4 J |
| Potassium | | 3,843 | 1,730 | 6,990 | 1,360 | 1,360 | 2,380 | 2,000 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 54,000 J | 24,500 J | 16,400 J | 16,500 J | 4,840 J | 20,200 J |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| Zinc | | 89.9 | 5.4 | 7.3 | 3.7 | 3.6 | 5.1 | 1.8 |
| Salinity (ppth) | | | 0.064 J | 0.16 J | < 0 UJ | < 0 UJ | 0.0051 J | 0.024 J |
| NTU | | | 14 | 75 | 0 | 0 | 26.7 | 3 |

| Location ID | Project Action | Background | MW16-06S | MW16-07D | MW16-07S DUP | MW16-07S | MW16-08D | MW16-09D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/22/01 | 3/23/01 | 3/23/01 | 3/23/01 | 3/28/01 | 3/26/01 |
| Chemical Name | | | | | | | | |
| Aluminum | | 5,315 | < 300 U | 2,780 | < 300 U | < 300 U | < 300 U | 413 |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | 2.8 J | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 16.7 | 27.1 | 909 | 938 | 6.6 | 13.5 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 7,960 J | 9,310 J | 150,000 J | 152,000 J | 17,700 | 8,230 |
| Chromium | 100 | 214 | 0.85 J | 3.3 | < 15 U | < 15 U | < 15 U | < 15 U |
| Cobalt | | 24.9 | 1.1 J | 2.6 | 1.4 J | 1.0 J | < 30 U | < 30 U |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| Iron | | 25,500 | 69.0 J | 10,400 J | 18,200 J | 19,900 J | 103 | 8,400 |
| Lead | 15 | 4.8 | < 5.0 U | 2.0 J | 3.7 | 2.8 J | < 5.0 U | < 5.0 UJ |
| Magnesium | | 5,126 | 1,290 | 3,860 | 14,100 | 14,200 | 5,740 | 2,660 |
| Manganese | | 3,292 | 711 J | 531 J | 545 J | 536 J | 259 | 464 |
| Nickel | 100 | 154 | 2.4 | 5.1 | 4.6 | 4.2 | < 40 U | 1.7 |
| Potassium | | 3,843 | 2,500 | 2,670 | 4,700 | 4,640 | 2,140 | 2,930 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | 3.5 J | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 9,350 J | 44,500 J | 9,350 J | 8,910 J | 28,600 | 19,400 |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | < 25 U | 4.2 | < 25 U | < 25 U | < 25 U | 0.85 J |
| Zinc | | 89.9 | 5.0 | 19.0 | 23.2 | 16.3 | 6.8 | 7.3 J |
| Salinity (ppth) | | | < 0 UJ | 0.047 J | 0.34 J | 0.41 J | 0.076 J | 0.0021 J |
| NTU | | | 2 | 130 | 29 | 29 | 2.9 | 45 |

| Location ID | Project Action | Background | MW16-10D DUP | MW16-10D | MW16-10R | MW16-11D | MW16-12D | MW16-13D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/26/01 | 3/26/01 | 3/27/01 | 3/26/01 | 3/23/01 | 3/26/01 |
| Chemical Name | | | | | | | | |
| Aluminum | | 5,315 | 729 | 926 | < 300 U | 547 | < 300 U | 1,060 |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 13.8 | 13.4 | 3.2 | 17.1 | 10.7 | 18.0 |
| Beryllium | 4 | 1.3 | 0.18 J | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 9,890 | 9,870 | 15,500 | 11,000 | 10,200 J | 10,800 |
| Chromium | 100 | 214 | 1.9 | 1.9 | 1.3 | 1.6 | < 15 U | 2.3 |
| Cobalt | | 24.9 | 2.0 | 2.6 | < 30 U | < 30 U | 3.7 | < 30 U |
| Copper | 1,300 | 25.8 | 1.4 J | 1.9 | < 25 U | 2.4 | < 25 U | 1.6 J |
| Iron | | 25,500 | 4,310 | 4,580 | 4,070 | 5,670 | 4,970 J | 8,340 |
| Lead | 15 | 4.8 | 2.1 | 3.8 J | 1.7 J | 2.3 J | < 5.0 U | 1.9 J |
| Magnesium | | 5,126 | 3,480 | 3,550 | 3,170 | 2,880 | 3,320 | 3,040 |
| Manganese | | 3,292 | 886 | 888 | 712 | 472 | 329 J | 571 |
| Nickel | 100 | 154 | 2.3 | 2.5 | 1.5 | 2.3 | 6.4 | 2.8 |
| Potassium | | 3,843 | 10,900 | 10,900 | 5,360 | 5,770 | 3,220 | 4,550 |
| Selenium | 50 | 2.2 | 3.5 J | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 48,000 | 47,400 | 9,990 | 12,400 | 11,700 J | 15,400 |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | 1.7 | 1.7 | < 25 U | 1.3 | < 25 U | 2.0 |
| Zinc | | 89.9 | 7.4 J | 9.7 J | 5.0 J | 10.3 J | 2.5 | 14.3 J |
| Salinity (ppth) | | | 0.097 J | 0.10 J | < 0 UJ | < 0 UJ | < 0 UJ | 0.045 J |
| NTU | | | 70 | 70 | 30 | 70 | 13 | 180 |

| Location ID | Project Action | Background | MW16-14D | MW16-15D DUP | MW16-15D | MW16-15R | MW16-16D | MW16-17D |
|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/23/01 | 3/27/01 | 3/27/01 | 3/27/01 | 3/26/01 | 3/28/01 |
| Chemical Name | | | | | | | | |
| Aluminum | | 5,315 | 2,710 | < 300 U | < 300 U | < 300 U | < 300 U | 3,280 J |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 27.9 | 11.9 | 11.9 | 7.0 | 8.2 | 24.1 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 10,600 J | 8,450 | 8,720 | 9,510 | 7,580 | 7,100 |
| Chromium | 100 | 214 | 3.2 | 0.68 J | < 15 U | 0.86 J | 0.73 J | 5.1 |
| Cobalt | | 24.9 | 5.4 | 5.3 | 5.0 | < 30 U | 2.7 | 3.6 |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| Iron | | 25,500 | 8,170 J | 2,140 | 2,060 | 7,480 | 2,060 | 11,300 |
| Lead | 15 | 4.8 | 2.8 J | 2.6 J | 2.7 J | < 5.0 UJ | 2.3 J | 3.8 |
| Magnesium | | 5,126 | 3,660 | 3,040 | 3,090 | 2,490 | 2,220 | 3,450 |
| Manganese | | 3,292 | 424 J | 184 | 190 | 457 | 291 | 430 |
| Nickel | 100 | 154 | 7.8 | 9.4 | 9.8 | 1.7 | 3.9 | < 40 U |
| Potassium | | 3,843 | 3,830 | 2,280 | 2,300 | 2,560 | 2,200 | 5,700 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | 1.2 J |
| Sodium | | 12,346 | 11,200 J | 10,700 | 10,900 | 15,200 | 10,400 | 12,500 |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | 4.2 | < 25 U | 0.58 J | < 25 U | < 25 U | 4.7 |
| Zinc | | 89.9 | 17.6 | 16.8 J | 17.6 J | 12.4 J | 13.2 J | 21.2 |
| Salinity (ppth) | | | < 0 UJ | < 0 UJ | < 0 UJ | < 0 UJ | < 0 UJ | < 0 UJ |
| NTU | | | 80 | 17 | 17 | 7 | 3.2 | 180 |

| Location ID | Project Action | Background | MW16-18D | MW16-19D | MW16-20D | MW16-21D | MW16-22D | MW16-23D | MW16-24D |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/28/01 | 3/27/01 |
| Chemical Name | | | | | | | | | |
| Aluminum | | 5,315 | 2,420 J | < 300 U | < 300 U | < 300 U | < 300 U | 3,360 J | < 300 U |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 20.7 | 8.0 | 7.9 | 8.1 | 10.6 | 33.6 | 22.5 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | 0.31 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 5,420 | 4,910 | 6,650 | 6,910 | 7,950 | 8,820 | 8,920 |
| Chromium | 100 | 214 | 3.2 | < 15 U | 0.97 J | < 15 U | < 15 U | 4.9 | < 15 U |
| Cobalt | | 24.9 | 2.7 | 1.6 J | < 30 U | 2.8 | 1.3 J | 2.4 | 1.7 J |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U | < 25 U |
| Iron | | 25,500 | 8,020 | 4,350 | 1,760 | 1,720 | 3,700 | 5,720 | 2,760 |
| Lead | 15 | 4.8 | 2.4 J | < 5.0 U | 1.7 J | 1.7 J | < 5.0 U | 3.6 | < 5.0 U |
| Magnesium | | 5,126 | 2,920 | 2,050 | 1,840 | 2,390 | 2,550 | 2,420 | 2,060 |
| Manganese | | 3,292 | 313 | 206 | 526 | 64.6 | 230 | 236 | 155 |
| Nickel | 100 | 154 | < 40 U | 2.0 | < 40 U | < 40 U | < 40 U | < 40 U | 2.2 |
| Potassium | | 3,843 | 2,810 | 1,560 | 7,410 | 1,610 | 1,570 | 3,570 | 2,670 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 12,300 | 11,700 | 23,500 | 11,700 | 10,700 | 29,600 | 19,500 |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | 3.6 | 1.6 | 0.81 J | 0.63 J | < 25 U | 6.2 | < 25 U |
| Zinc | | 89.9 | 14.3 | 3.8 | 7.8 | 12.7 | 7.0 | 18.3 | 6.2 |
| Salinity (ppth) | | | < 0 UJ | 0.13 J | < 0 UJ | < 0 UJ | < 0 UJ | < 0 UJ | < 0 UJ |
| NTU | | | 120 | 1.9 | 11 | 80 | 4.2 | 110 | 4 |

| Location ID | Project Action | Background | MW16-25D | MW16-25R | MW16-25R DUP | MW16-26D | MW16-27D | MW16-27R |
|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/27/01 | 3/27/01 | 3/27/01 | 3/21/01 | 3/27/01 | 3/27/01 |
| Chemical Name | | | | | | | | |
| Aluminum | | 5,315 | < 300 U | 690 | 673 | < 300 U | < 300 U | < 300 U |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 7.1 | 4.2 | 5.3 | 28.7 | 9.0 | 47.3 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 6,960 | 8,940 | 9,020 | 16,500 J | 5,850 | 280,000 |
| Chromium | 100 | 214 | < 15 U | 3.3 | 3.1 | 0.76 J | < 15 U | < 15 U |
| Cobalt | | 24.9 | < 30 U | < 30 U | < 30 U | < 30 U | 1.2 J | < 30 U |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | 0.87 J | < 25 U | < 25 U | < 25 U |
| Iron | | 25,500 | 2,300 | 2,600 | 2,410 | 15,000 J | 2,140 | 897 |
| Lead | 15 | 4.8 | < 5.0 UJ | 3.0 J | 99.5 J | < 5.0 U | < 5.0 U | < 5.0 U |
| Magnesium | | 5,126 | 2,260 | 2,640 | 2,640 | 4,520 | 2,210 | 66,500 |
| Manganese | | 3,292 | 184 | 278 | 282 | 1,240 J | 145 | 2,800 |
| Nickel | 100 | 154 | < 40 U | 3.9 | 3.0 | 1.6 | < 40 U | 1.2 J |
| Potassium | | 3,843 | 2,310 | 5,740 | 5,340 | 4,420 | 3,910 | 14,800 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 11,200 | 13,600 | 13,400 | 20,500 J | 48,200 | 938,000 |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | < 25 U | < 25 U | < 25 U | < 25 U | 0.53 J | < 25 U |
| Zinc | | 89.9 | < 25 UJ | 13.6 J | 59.1 J | 3.1 | 6.5 | 3.9 |
| Salinity (ppth) | | | < 0 UJ | < 0 UJ | < 0 UJ | 0.026 J | 0.55 J | 4.4 J |
| NTU | | | 6.6 | 21 | 21 | 11 | 20 | 1 |

| Location ID | Project Action | Background | MW16-28D | MW16-28R | MW16-29D | OPW16-01 | SEEP16-01 | SEEP16-01 | SEEP16-02 |
|---|---|---|---|---|---|---|---|---|---|
| Sample Date | Level (PAL) | Concentrations | 3/27/01 | 3/27/01 | 3/21/01 | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | | | | | | |
| Aluminum | | 5,315 | < 300 U | 777 J | < 300 U | < 300 U | < 300 U | < 300 U | < 300 U |
| Antimony | 6 | 6 | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** | < 8.0 U** |
| Arsenic | 10 | 6.4 | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U | < 8.0 U |
| Barium | 2,000 | 80.5 | 13.7 | 53.3 | 18.3 | 9.9 | 291 | 300 | 2.3 |
| Beryllium | 4 | 1.3 | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** | < 5.0 U** |
| Cadmium | 5 | 3 | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** | < 10 U** |
| Calcium | | 13,302 | 25,400 | 534,000 | 21,800 J | 1,450 | 48,300 | 46,200 | 26,700 |
| Chromium | 100 | 214 | < 15 U | 7.5 | < 15 U | 4.0 | < 15 U | < 15 U | < 15 U |
| Cobalt | | 24.9 | 1.1 J | 1.9 | 1.9 | < 30 U | < 30 U | < 30 U | 10.2 |
| Copper | 1,300 | 25.8 | < 25 U | < 25 U | < 25 U | 4.0 | < 25 U | 8.9 | < 25 U |
| Iron | | 25,500 | 1,730 | 16,600 | 2,400 J | 438 | 27,200 | 32,000 | 6,480 |
| Lead | 15 | 4.8 | < 5.0 U | < 5.0 U | < 5.0 U | 18.8* | < 5.0 U | 12.4 | < 5.0 U |
| Magnesium | | 5,126 | 8,800 | 146,000 | 6,750 | 280 | 4,840 | 4,820 | 27,000 |
| Manganese | | 3,292 | 468 | 5,270 | 570 J | 8.9 | 450 | 441 | 2,170 |
| Nickel | 100 | 154 | < 40 U | 4.3 | 3.5 | < 40 U | < 40 U | < 40 U | 1.1 J |
| Potassium | | 3,843 | 7,400 | 33,100 | 5,720 | 173 | 3,590 | 3,610 | 10,800 |
| Selenium | 50 | 2.2 | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U | < 10 U |
| Silver | | 1 | < 15 U | 1.2 J | < 15 U | < 15 U | < 15 U | < 15 U | < 15 U |
| Sodium | | 12,346 | 137,000 | 1,880,000 | 30,100 J | 3,130 | 13,200 | 13,700 | 182,000 |
| Thallium | 2 | 4.1 | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** | < 15 U** |
| Vanadium | | 24.4 | < 25 U | 1.3 | < 25 U | < 25 U | < 25 U | 3.2 | < 25 U |
| Zinc | | 89.9 | < 25 U | 162 | 3.2 | 32.6 | < 25 U | 23.6 | 43.8 |
| Salinity (ppth) | | | 0.42 J | 7.4 J | 0.064 J | < 0 UJ | | 0.086 J | 0.62 J |
| NTU | | | 10 | 75 | 0.8 | | | | |

NOTES:
* = exceeds PAL

# TABLE 4-20 POLYCHLORINATED BIPHENYLS (PCB) DETECTED IN SEEP SAMPLES (μg/L)

| Location ID | OPW16-01 | SEEP16-01 | SEEP16-01 DUP | SEEP16-02 |
|---|---|---|---|---|
| Sample Date | 3/22/01 | 3/21/01 | 3/21/01 | 3/26/01 |
| Chemical Name | | | | |
| PCB-1016 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| PCB-1221 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| PCB-1232 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| PCB-1242 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| PCB-1248 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| PCB-1254 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |
| PCB-1260 | < 0.10 U | < 0.10 U | < 0.10 U | < 0.10 U |

NOTES:
μg/L = Micrograms per liter.
U = Analyte analyzed for but not detected (concentration is less than Instrument Detection Limit [IDL]).

# TABLE 5-1 DESCRIPTION OF MONITORING WELL LOCATIONS FOR SITE 16 PHASE II INVESTIGATION

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-11S | Shallow Overburden (S) | Assess elevated soil sample headspace value (10-12 ft bgs) near water table (approximately 12 ft bgs) in former Building 41 area. |
| MW16-17S | | Assess elevated soil sample headspace value (6-8 ft bgs) near water table (approximately 7.5 ft bgs) in the old railroad spur area. |
| MW16-33S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Elm Street in the old railroad spur area above an interpreted depression in the bedrock surface approximately 275 ft south southwest of MW16-12D where 21 µg/L total CVOC was detected. Also, located potentially downgradient from former Building 41. |
| MW16-34S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood/Tupelo Streets in the old railroad spur area approximately 100 ft southeast of MS16-12D where 21 µg/L total CVOC was detected, and approximately 100 ft southwest of the former MIP16-S22 location where there was a very low ECD response at about 10-11.5 ft bgs. Also, located approximately midway between MW16-33 and MW16-35 locations to provide evenly spaced coverage to assess this area potentially downgradient from former Building 41 or the Building E-319 area. |
| MW16-35S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood Street in the old railroad spur area above an interpreted depression in the bedrock surface. Also, located potentially downgradient from former Building 41 |
| MW16-36S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood Street in the old railroad spur area. |
| MW16-37S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Low Street in the old railroad spur area at the former SB16-29 (55 µg/kg TCE detected in soil sample from 20-22 ft bgs) and MIP16-S21 locations. Also, located potentially downgradient from former Building 41. |
| MW16-40S | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-10 location where there was trace photoionization detector response at about 24-28 ft bgs. |

NOTES:

ft bgs = Feet below ground surface.
VOC = Volatile organic compound.
CVOC = Chlorinated volatile organic compound (total detected).
MIP = Membrane Interface Probe.
ECD = Electron Capture Detector.
TCE = Trichloroethene.
RI = Remedial Investigation.
1,2-DCE = 1,2-Dichloroethene.
FFTA = Fire Fighting Training Area
EBS = Environmental Baseline Survey.

1. Soil sample headspace data from the related boring logs in Appendix D of the October 2001 Draft Site 16 Phase I RI Report.
2. Referenced silt layer(s) presence based on data from Figures 3-1 through 3-7, plus related boring logs in Appendix D, of the October 2001 Draft Site 16 Phase I RI Report.
3. EBS push-probe-collected ground-water sample data from Figure 5-5 in Appendix A of the October 2001 Draft Site 16 Phase I RI Report.
4. MIP ECD response data from Figure 2-4 of the October 2001 Draft Site 16 Phase I RI Report.
5. MIP push-probe-collected ground-water sample data from Figure 2-6 of the October 2001 Draft Site 16 Phase I RI Report.
6. Low-flow collected ground-water samples from monitoring wells' data from Figures 4-21 (shallow), 4-31 (deep), and 4-34 (rock) in October 2001 Draft Site 16 Phase I RI Report.

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-41S | Shallow Overburden (S) (Continued) | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-11 location where there was a very low to low ECD response at about 6-17 ft bgs. |
| MW16-42S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-17 location where there was a low ECD response at about 5-49 ft bgs and where 9 µg/L vinyl chloride and 15 µg/L total 1,2-DCE was detected in push-probe sample at 12 ft bgs. |
| MW16-43S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the southwest corner of the suspected former FFTA south of the former EBS 28-GW-04 location where 10 µg/L vinyl chloride was detected in push-probe sample at 7-9 ft bgs |
| MW16-44S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) southeast of the suspected former FFTA at the former MIP16-15 location where there was a 'trace?' ECD response at about 6-17 ft bgs and where 11 µg/L vinyl chloride and 230 µg/L total 1,2-DCE detected in push-probe sample at 17 ft bgs |
| MW16-45S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) within the suspected former FFTA north of the former MIP16-12 location where there was a low and very low ECD response at about 6-8 and 15-19 ft bgs, respectively, and where 14 µg/L vinyl chloride and 255 µg/L total 1,2-DCE detected in push-probe sample at 17 ft bgs. |
| MW16-46S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) northeast of the suspected former FFTA at the former MIP16-14 location where there was a very low ECD response at about 6-9 and 14-16 ft bgs and north of the former EBS 28-GW-05 location where 3 µg/L vinyl chloride detected in push-probe sample at 8-10 ft bgs. |
| MW16-47S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in northern portion of the former creosote dip tank area at the former MIP16-05 location where there was a very low to low ECD response at about 3 5-12 ft bgs. |
| MW16-48S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) between Building E-107 and Seep 01 at the former MIP16-30 location where there was a trace ECD response at about 2-3 ft bgs. |
| MW16-53S | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) at the former MIP16-26 location where there was a low ECD response at about 2-6 ft bgs (just above the water table that has been measured at approximately 9 5-11 ft bgs) |

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-02I | Intermediate Overburden (I) | Assess intermediate overburden ground-water interval (direction of ground-water flow and VOC presence) between silt layers where there was elevated soil sample headspace values (32-36.5 ft bgs). |
| MW16-04I | | Assess intermediate overburden ground-water interval (direction of ground-water flow and VOC presence) where silt layers were not encountered, but where there was elevated soil sample headspace value (28-30 ft bgs). |
| MW16-05I | | Assess intermediate overburden ground-water interval (direction of ground-water flow and VOC presence) between the shallow and deep overburden screened intervals and above the deeper 2 silt layers where there was elevated soil sample headspace values (21-36 ft bgs). |
| MW16-13I | | Assess intermediate overburden ground-water interval (VOC presence) just north of the former vapor degreasing pit in former Building 41 and above the top of the 2 silt layers that are at 34 ft bgs (no elevated soil sample headspace values). |
| MW16-14I | | Assess intermediate overburden ground-water interval (VOC presence) at 26-36 ft bgs southeast of former Building 41 where there appears to be a gap in the silt layers, although there were no elevated soil sample headspace values. |
| MW16-16I | | Assess intermediate overburden ground-water interval (VOC presence) east of former Building 41 in the old railroad spur area at 32-42 ft bgs, above the top of the 2 silt layers that are at 42 ft bgs, although there were no elevated soil sample headspace values. |
| MW16-17I | | Assess intermediate overburden ground-water interval (VOC presence) in the old railroad spur area 30-40 ft bgs, which is just above the deepest silt layer. |
| MW16-18I | | Assess potential downward migration of CVOC through the intermediate overburden ground-water interval (24-34 ft bgs) in the old railroad spur area where there appears to be a gap in the silt layers, although there were slightly elevated soil sample headspace values. |
| MW16-19I | | Assess intermediate overburden ground-water interval (VOC presence) in the old railroad spur area at 26-36 ft bgs, which is within the thick sand and silt interval, but just above the deepest silt layer. There was no significant MIP ECD response at this well location. MW16-19D is a location where the eastern extent of the deep CVOC plume has not been encountered. |
| MW16-20I | | Assess intermediate overburden ground-water interval (24-34 ft bgs) just above the sand and silt interval. There were no elevated soil sample headspace values at this well location. MW16-20D is an eastern location where only 1 µg/L of total CVOC was detected. |
| MW16-21I | | Assess the intermediate overburden ground-water interval (26.5-36.5 ft bgs) just above the silt layer. There was no significant MIP ECD response in this depth interval. However, there were slightly elevated soil sample headspace values. MW16-21D is a location where 1,904 µg/L of total CVOC was detected |
| MW16-22I | | Assess the intermediate overburden ground-water interval (33-43 ft bgs) just above the silt layer. There was mid-level MIP ECD response beginning at 42.5 ft bgs and continuing into the 4-ft thick silt layer. Additionally, there were slightly elevated soil sample headspace values in the underlying silt layer. MW16-22D is a location where 2,611 µg/L of total CVOC was detected. |
| MW16-24I | | Assess the intermediate overburden ground-water interval (18-28 ft bgs) just above the silt layer. There was no significant MIP ECD response and no elevated soil sample headspace values within this depth interval. |
| MW16-25I | | Assess intermediate overburden ground-water interval (VOC presence) east of former Building 41 in the old railroad spur area at 32-42 ft bgs, within a silty sand interval and where there were slightly elevated soil sample headspace values. At this well location there is no deep silt layer present to separate the intermediate and deep overburden ground-water intervals. MW16-25D is a location where 894 µg/L of total CVOC was detected. |
| MW16-33I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Elm Street in the old railroad spur area above an interpreted depression in the bedrock surface approximately 275 ft south southwest of MW16-12D, where 21 µg/L total CVOC was detected. Also, located potentially downgradient from former Building 41. |
| MW16-34I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood/Tupelo Streets in the old railroad spur area approximately 100 ft southeast of MS16-12D where 21 µg/L total CVOC was detected, and approximately 100 ft southwest of the former MIP16-S22 location where there was a 'trace?' ECD response at about 24.5-30 ft bgs. Also, located approximately midway between MW16-33 and MW16-35 locations to provide evenly spaced coverage to assess this area potentially downgradient from former Building 41 or the Building E-319 area. |

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-35I | Intermediate Overburden (I) (Continued) | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood Street in the old railroad spur area above an interpreted depression in the bedrock surface. Also, located potentially downgradient from Former Building 41 or the Building E-319 area. Assess the extent of the gap in the silt layers encountered at MW16-14D and MW16-18D |
| MW16-36I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood Street in the old railroad spur area Assess the extent of the gap in the silt layers encountered at MW16-14D and MW16-18D. |
| MW16-37I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Low Street in the old railroad spur area at the former SB16-29 (280 µg/kg TCE detected in soil sample from 32-34 ft bgs) and MIP16-S21 locations Also, located potentially downgradient from former Building 41. Assess the extent of the gap in the silt layers encountered at MW16-14D and MW16-18D. |
| MW16-38I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Birch Street in the old railroad spur area at 32-42 ft bgs between MW16-16I and MW16-25I and at the former MIP16-S10 location where there was a mid-level ECD response at about 28-50 ft bgs. |
| MW16-39I | | Assess the 46-54 ft bgs interval where there were soil vapor headspace flame ionization detector (FID) detections during the drilling of MW16-39D |
| MW16-41I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-11 location where there was a very low to low ECD response at about 20-29 ft bgs. |
| MW16-42I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-17 location where there was a low ECD response at about 5-49 ft bgs. |
| MW16-43I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the southwest corner of the suspected former FFTA. |
| MW16-44I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) southeast of the suspected former FFTA at the former MIP16-15 location where there was a 'trace?' ECD response at about 34-46+ ft bgs. |
| MW16-45I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) within the suspected former FFTA north of the former MIP16-12 location where there was a low ECD response at about 29-45 ft bgs. |
| MW16-46I | | Assess intermediate overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) northeast of the suspected former FFTA at the former MIP16-14 location where there was a very low to low ECD response at about 26-50+ ft bgs. |
| MW16-47I | | Deleted. Overburden thickness too thin to include an intermediate depth well. |
| MW16-48I | | Assess shallow overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) between Building E-107 and Seep-01 at the former MIP16-30 location where there was a trace ECD response at about 23-29 ft bgs. |

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-33D | Deep Overburden (D) | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Elm Street in the old railroad spur area within an interpreted depression in the bedrock surface approximately 275 ft south southwest of MW16-12D where 21 µg/L total CVOC was detected. Also, located potentially downgradient from former Building 41 or the Building E-319 area. |
| MW16-34D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood/Tupelo Streets in the old railroad spur area approximately 100 ft southeast of MS16-12D where 21 µg/L total CVOC was detected, and approximately 100 ft southwest of the former MIP16-S22 location where there was a 'trace?' ECD response at about 24.5-30 ft bgs. Also, located approximately midway between MW16-33 and MW16-35 locations to provide evenly spaced coverage to assess this area potentially downgradient from former Building 41 or the Building E-319 area. |
| MW16-35D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Dogwood Street in the old railroad spur area above an interpreted depression in the bedrock surface. Also, located potentially downgradient from former Building 41 or the Building E-319/318 area. Assess the extent of the gap in the silt layers encountered at MW16-14D and MW16-18D. |
| MW16-36D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) approximately 200 ft northeast of the eastern portion (potentially downgradient) of Building 318. |
| MW16-37D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) along Low Street in the old railroad spur area at the former SB16-29 location (280 µg/kg TCE detected in soil sample from 32-34 ft bgs) and MIP16-S21, where there was no significant ECD response at 34-42 ft bgs. Also, located potentially downgradient from former Building 41. Assess the extent of the gap in the silt layers encountered at MW16-14D and MW16-18D. |
| MW16-39D | | Assess the hydrogeology and extent of the CVOC plume in the deep overburden ground-water interval (for easement determination) approximately 500 ft east of MW16-19D where 390 µg/L total CVOC was detected. |
| MW16-41D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-11 location where there was no significant ECD response at about 29-41.9 ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |
| MW16-42D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the Stage I RI area at the former MIP16-17 location where there was a low ECD response at about 5-49 ft bgs and where 470 µg/L TCE and 3 µg/L total 1,2-DCE was detected in push-probe sample at 49 ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |
| MW16-43D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in the southwest corner of the suspected former FFTA south of the former EBS 28-GW-04 location where 570J µg/L TCE was detected in push-probe sample at 42-44 ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |
| MW16-44D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) southeast of the suspected former FFTA at the former MIP16-15 location where there was a 'trace?' ECD response at about 34-46+ ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |
| MW16-45D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) within the suspected former FFTA north of the former MIP16-12 location where there was a low to mid-level ECD response at about 47-49+ ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |
| MW16-46D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) northeast of the suspected former FFTA at the former MIP16-14 location where there was a very low to low ECD response at about 26-50+ ft bgs and north of the former EBS 28-GW-05 location where 210 µg/L TCE was detected in push-probe sample at 44-46 ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-47D | Deep Overburden (D) (Continued) | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) in northern portion of the former creosote dip tank area at the former MIP16-05 location where there was a very low to low ECD response at about 35-36+ ft bgs. Also, assess the quality of the bedrock between Davisville Road and MW16-03D. |
| MW16-48D | | Assess deep overburden ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) between Building E-107 and Seep-01 at the former MIP16-30 location where there was a trace ECD response at about 37+ ft bgs. |
| MW16-49D | | Assess the hydrogeology and extent of the CVOC plume in the deep overburden ground-water interval (for easement determination) within an interpreted depression in the bedrock surface approximately 450 ft east southeast of MW16-27D where 321 µg/L total CVOC was detected. |
| MW16-50D | | Assess the hydrogeology and extent of the CVOC plume in the deep overburden ground-water interval (for easement determination) approximately 500 ft east of MW16-28D where 121 µg/L total CVOC was detected. |
| MW16-51D | | Assess the hydrogeology and extent of the CVOC plume in the deep overburden ground-water interval approximately 500 ft northeast of MW16-05D where 2,208 µg/L total CVOC was detected. This location is approximately along the extension of the northeast trend through wells where total CVOC was detected in Phase I RI ground-water samples were greater than 2,000 µg/L (e.g. MW16-14D, -15D, -22D, -23D, -02D, -29D, and -05D). |
| MW16-52D | | Assess the hydrogeology and extent of the CVOC plume in the deep overburden ground-water interval within a low point at the northeastern end of the available data that shows an interpreted valley in the bedrock surface that extends approximately northeast from former Building 41. |
| MW16-54D | | Assess the hydrogeology and potential presence of CVOC in the deep overburden ground-water interval within an interpreted depression in the bedrock surface in this potential CVOC plume source area (historical Navy activity at Building E-319). |
| MW16-55D | | Assess the hydrogeology and potential presence of CVOC in the deep overburden ground-water interval within an interpreted depression in the bedrock surface in the area between Site 03 and Site 16. |
| MW16-30D | | Assess subsurface adjacent to the backfilled former vapor degreaser "pit" in former Building 41. A deep well was installed February 2002. |
| MW16-31D | | Assess subsurface adjacent to the backfilled former Cosmolene tank "pit" in former Building 41. A deep well was installed February 2002. |
| MW16-32D | | Assess the subsurface approximately midway between the backfilled former Cosmolene tank "pit" in former Building 41 and wells MW16-14D and MW16-15D, where CVOC has been detected in samples from the deep overburden ground-water zone. A deep well was installed February 2002. |
| MW16-05R | Shallow Bedrock (R) | Assess the hydrogeology and the nature of the CVOC plume in the shallow bedrock ground-water interval in the northeastern portion of the investigation area beneath MW16-05D, where 2,208 µg/L total CVOC was detected. |
| MW16-06R | | Assess the hydrogeology and extent of the CVOC plume in the shallow bedrock ground-water interval in the northwestern portion of the investigation area. |
| MW16-17R | | Assess the hydrogeology and extent of the CVOC plume in the shallow bedrock ground-water interval in the old railroad spur area. |
| MW16-36R | | Assess shallow bedrock ground-water interval (silt layer[s] presence, direction of ground-water flow, and VOC presence) approximately 200 ft northeast of the eastern portion (potentially downgradient) of Building 318. |
| MW16-44R | | Assess the hydrogeology and the nature of the CVOC plume in the shallow bedrock ground-water interval just southeast of the suspected former FFTA. |
| MW16-51R | | Assess the hydrogeology and extent of the CVOC plume in the shallow bedrock ground-water interval 500 ft northeast of MW16-05D where 2,208 µg/L total CVOC was detected. |
| MW16-52R | | Assess the hydrogeology and extent of the CVOC plume in the shallow bedrock ground-water interval 500 ft northeast of location V-D |
| MW16-55R | | Assess the hydrogeology and potential presence of CVOC in the shallow bedrock ground-water interval within an interpreted depression in the bedrock surface in the area between Site 03 and Site 16. |

| Boring/Well Designation (former location designation, if any) | Zone to be Screened | Purpose/Rationale |
|---|---|---|
| MW16-02R2 | Deeper Bedrock (R2) | Assess the hydrogeology and the nature of the CVOC plume in the deeper bedrock ground-water interval beneath MW16-02R where 3,110 µg/L total CVOC was detected. |
| MW16-15R2 | | Assess the hydrogeology and the nature of the CVOC plume in the deeper bedrock ground-water interval beneath MW16-15R where 4,710 µg/L total CVOC was detected. |
| MW16-55R2 | | Assess the hydrogeology and potential presence of CVOC in the deeper bedrock ground-water interval within an interpreted depression in the bedrock surface in the area between Site 03 and Site 16. |